

## Scientific Realism, Psychological Realism, and Aristotelian–Thomistic Realism

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In this paper, we examine the attractiveness of scientific realism as a philosophical underpinning providing a realist interpretation of psychology. We begin by discussing how psychology arrived at scientific realism as a kind of default position, and discuss some of the advantages of scientific realism relative to non-realist philosophical approaches to psychology. We then raise several potential problems with the naïve adoption of scientific realism for psychology. We argue that these problems show that scientific realism cannot provide a coherent and comprehensive realist underpinning for psychology, and that scientific realism, if taken seriously, has some quite pernicious effects on the field. In particular, scientific realism would divide all of psychology into the scientific and the non-scientific. However, because scientific realism has no clear criteria for what counts as scientific, this distinction, in practice, tends to collapse into a naïve materialist reductionism. We then describe Aristotelian–Thomistic (A–T) realism, and show how it might be adopted to provide a more coherent and comprehensive philosophical underpinning for psychology. We show that the A–T approach avoids the problems that we identified with scientific realism as a philosophical underpinning for psychology. Importantly, unlike scientific realism, the A–T approach maintains a clear realist orientation while providing clear principles for understanding the extent to which humans have epistemological access to reality by matching appropriate methods of inquiry for various subjects of rational inquiry, rather than elevating the scientific method to the status of a principle. Thus, we argue that the A–T approach could provide a solidly realist philosophical underpinning to the whole field of psychology that does not suffer from the defects common to the naïve acceptance of scientific realism.

Keywords: scientific realism, Aristotelian–Thomistic philosophy, metatheory

When pressed to explain their “philosophy of science” for psychology, most psychologists would present some psychological version of scientific realism, holding that the psychological states and their interactions investigated by psychology actually exist in the animal and human subjects studied and can be described and verified through the usual scientific methods. For example, Paul Meehl (1993), who later in his career characterized himself as a scientific realist, said this regarding the general intelligence factor, “g”:

What sort of existential status . . . do we — and ought we — impute to factors? For a scientific realist, a factor is presumably a physical entity possessing a quantitative property. The physical entity exists in the person; hence in the brain. The general intelligence factor *g* is “in” the CNS. (p. 5)

The scientific realist claim made by Meehl is more than just a philosophy of science claim; it is also an ontological claim about the nature of the reality of “g” and perhaps an epistemological claim about how that reality comes to be known. Hence, the claim of scientific realism in psychology is about the ontology of psychological realities and how these realities are known.

In this paper, we begin by discussing the potential strengths of scientific realism, and what makes it attractive to psychologists. We then point out a set of issues that we believe make scientific realism less attractive as an underpinning for psychology than, perhaps, most psychologists realize. Finally, we point out that there is another form of realism, namely Aristotelian–Thomistic realism, that could underpin psychology and that has some advantages over scientific realism.

### *Scientific Realism*

Any discussion of the strengths of scientific realism must begin with a review of its philosophical predecessors, operationism and logical positivism, two distinct but intertwined underpinnings of psychology dating from the 1920s and, in fact, is still with us today. In 1927, Bridgeman published *The Logic of Modern Physics* in which he proposed an operational analysis of all the concepts in physics (space, time, velocity, mass, etc.) with the aim of *eliminating* all abstractions from the field. He did this because he was convinced that “metaphysical abstractions” had led to serious errors in physics. As a correction, he proposed that all concepts of physics are constituted by and defined by a set of operations; and he asserted the following: “the concept is synonymous with the corresponding set of operations” (1927, p. 5). Criticism forced Bridgeman later to acknowledge the need for including some theoretical constructs.

Logical positivists initially endorsed many of Bridgeman’s ideas but, by the late 1930s, they rejected his brand of operationism as an oversimplification.

Ultimately, they came to see that no set of operations ever exhausts the meaning of a scientific concept. Hence, though operationism and logical positivism shared similar ideas, the two have distinct histories.

Although physics never embraced operationism, psychology did. In fact, somewhat ironically, it was Herbert Feigl, a member of Vienna Circle and a logical positivist, who influenced Harvard psychologist E. G. Boring and his student S. S. Stevens to take up Bridgeman's operational attitude. During the same time frame, Edward Tolman was influenced by Moritz Schlick, founder of the Vienna Circle, and Tolman became an eager advocate of operationism. However, Tolman turned Bridgeman's operationism on its head. Whereas Bridgeman sought to eliminate "metaphysical concepts," Tolman eventually introduced the notion of the "intervening variable," referring to psychological theoretical constructs he was attempting to operationalize. As stated by Green (1992) in his excellent review of operationism: "Where Bridgeman sought to rid science of metaphysical concepts, Tolman sought to legitimize them by attaching them to related physical operations" (p. 296). Many influential theory-building psychologists, with the notable exception of B. F. Skinner, took up Tolman's version of operationism, although, as clearly demonstrated in the 1945 *Psychological Review* symposium on operationism (Langfeld, 1945), there was little consensus on the specifics of the program. In fact, Rogers (1989) has argued there were a number of operationisms in vogue during the 1930s and onwards.

By the late 1940s, operationism was coming under heavy attack within psychology. MacCorquodale and Meehl (1948) and Cronbach and Meehl (1955) presented refined statements in an attempt to answer criticisms; however, serious critiques continued by Koch (1959) and others. By the 1970s, both operationism and logical positivism were largely discredited within philosophy itself (see, e.g., Fotion, 1995). Nevertheless, Tolman's view of operationism refused to die and elements of operationism continue even to this day (see Green, 1992, for an extensive and convincing treatment of this topic). One reason why Tolman's version of operationism has been so long-lived is that it is, in many respects, simply a reductionist approach — psychological entities are legitimated only by being tied to the purely physical. We will return to this point when we discuss the ways in which psychologists have adopted scientific realism.

As noted above, many serious psychological theorists, including many former operationalists, such as Meehl, began to advocate for scientific realism as a replacement for operationism. Others, who followed postmodernist trends asserting that "foundationalism" was dead, presented philosophies based on anti-realist positions, such as social constructionism (Gergen, 1994) and hermeneutic theory (Messer, Sass, and Woolfolk, 1988), though these were clearly minority positions among psychologists. We will focus on scientific realism, and it should be noted again that scientific realism is a philosophy of science, an ontology, and an epistemology.

*Scientific Realism: The General Theory*

Chakravartty (2011) describes scientific realism as follows: “Scientific realism is a positive epistemic attitude toward the content of our best theories and models, recommending belief in both the observable and unobservable aspects of the world described by the sciences” (p. 1). This description implies variations in positions taken by scientific realists; and, indeed, that is the case. Most claim epistemic truth or approximate truth of scientific theories or, at least, aspects of those theories. Most make the same claim for both observable and unobservable elements of scientific theories. In the end, all variations hold that the best scientific theories produce true, or increasingly true, descriptions of the world.

Chakravartty (2011) identifies three features common to all scientific realism positions: (1) a metaphysical commitment to a “mind-independent” existence of the world; (2) semantic realism regarding scientific theories and findings; and (3) an epistemological commitment to scientific inquiry leading to knowledge of the world as it exists outside the mind. The metaphysical commitment to the “mind-independent” existence of the world is central to scientific realism, and, indeed, any form of realism. The realist metaphysical commitment was opposed by various figures in modernity, so much so that some questioned whether one could be certain about the existence of the world outside the mind. By contrast, scientific realism maintains that atoms, molecules, universes, and biological entities all exist as “things” and interact. The psychological extension of scientific realism is that psychology’s theoretical entities can and should be considered in exactly the same way as the other scientific “things.”

Semantic realism relates to the truth claims made by scientific theories and their findings. This is perhaps the heart of the scientific realist position, and is described by Chakravartty (2011) thusly: “Claims about scientific entities, processes, properties, and relations, whether they be observable or unobservable, should be construed literally as having truth values, whether true or false” (p. 3). Unpacking this statement from the perspective of a psychologist adapting scientific realism, we find that “scientific entities” includes all objects of scientific inquiry from the subatomic to political attitudes to any “thing” that can be investigated via the scientific method of knowledge generation. “Properties” are, of course, all of those qualities or traits belonging to “things,” from size and shapes to motivations, feeling states, and beliefs, again all subject to study according to the scientific method. “Processes” and “relations” can perhaps be combined in the sense that these terms describe the interactions of “things,” be it chemical binding of molecules or regularities found in mob violence.

“Observable” generally refers to the “things” of science that are directly perceivable by the senses and measureable in some form. “Unobservable” refers to many of the “things” of science which are theoretical and not directly observable but are postulated as causes: electrons or features of black holes, and from the

psychologists' perspective, anger, beliefs, etc. Finally, the claim of scientific realism is that scientific propositions, laws, and even hypotheses are subject to a "true or false" judgment. If true, or approximately true, scientific realism claims them as true of the mind-independent world.

Finally, scientific realism holds that science produces true knowledge of the world. This is the epistemological claim, and is closely tied to semantic realism. It is countered by antirealist claims of all stripes which attack some or all of the three features noted above.

So, how do scientific realists support these claims? Putnam (1975) holds for the "miracle" argument which is basically that the principles of scientific realism are the only ones that explain the vast accomplishments of science; without scientific realism the history of science can only be explained as a miracle (see Lyons, 2003, Frost–Arnold, 2010, for more recent presentations). The corroboration argument (Hacking, 1983) is brought forth to support scientific realism's claim regarding unobservable entities. This claim is that, if a theoretical entity can be detected by two or more different instruments of measurement, this constitutes a basis for defending realism. Explanationists (Kitcher, 1993; Psillos, 1999), again in support of the reality of unobservables, assert that, when our best theories require unobservables and their interactions to predict, that fact supports the reality of those unobservables. Entity realism (Cartwright, 1983; Giere, 1988) makes a similar argument about unobservables, specifically, that, when the interactions of unobservables can be manipulated and produce the same outcomes over a number of trials, this fact supports their existence as real.

It should be noted that antirealists have produced counters to all of the supporting arguments stated above and, in fact, have provided counters to all of the principles of scientific realism (Gergen, 1994; Laudan, 1981). Indeed, these arguments in many respects actually require a mind-independent world in order to provide any real support for scientific realism, and thus appear to argue, at least partially, in a circle. Nevertheless, the vast majority of scientists across all disciplines continue to believe they produce knowledge regarding a mind-independent world. Psychologists are no different from physicists in that regard. Now that we have examined scientific realism as a general theory, it is time to turn attention to scientific realism as psychologists see it.

### *Weaknesses of Scientific Realism as an Underpinning for Psychological Realism*

Although above we have argued that most psychologists assume some form of scientific realism as a valid underpinning for the knowledge claims that they make (as do most scientists), and furthermore that scientific realism is a better approach than most of the others that have recently held sway (see also, Stedman, Sweetman, and Hancock, 2008), here we wish to point out several weaknesses of scientific realism precisely as a realist underpinning for psychology. To begin, we argue that most

psychologists are, naively, psychological realists. In short, most psychologists adopt a realist perspective that exactly parallels scientific realism, in that they believe (a) that a world outside the mind exists; (b) that the theoretical claims of psychology are properly claimed to have truth values; and (c) that psychological inquiry can and does lead to truth or at least to increasing truth over time. Given this set of beliefs, it is easy to see the attraction of scientific realism for such psychologists — it is a way of understanding psychology as being contiguous with the rest of science, such that arguments for scientific realism become, *de facto*, arguments for psychological realism, as well. Thus, psychologists are free to go about their business, assuming that the question of the ontological, semantic, and epistemic status of their theoretical concerns has been (at least) largely settled.

However, we see several weaknesses in scientific realism that are particularly damaging to its ability to serve psychology's need for a realist underpinning, the first three of which relate to the final of the three general characteristics outlined above, the epistemological claim, and the final one of which relates to the nature of the arguments supporting scientific realism. First, because scientific realism makes an epistemological claim specifically for scientific inquiry, and is, at best, agnostic about the value of any non-scientific inquiry, scientific realism can only underpin a science. This limitation of the scope is critically important to scientific realism, because without this (and the related semantic claim that scientific theoretical entities — but not necessarily other theoretical entities — are to be treated as having truth values), scientific realism would simply be unqualified realism. Yet, historically one of the great difficulties for psychology as a field has been to determine whether and to what extent psychology is, in fact, a science. This argument continues to the present day (see, e.g., Kraus, 2013). Indeed, scientific realists can and do disagree about what counts as science, and hence, what kinds of claims can be warranted. Given the critical importance of the science vs. non-science distinction in scientific realism, one might expect that scientific realism has a clear way of making the distinction. Indeed, it seems clear that scientific realism must assume that there is some way of determining science from non-science, even though no such criteria are included in the descriptions of scientific realism given above. It is critical to note that the difference between science and non-science itself is not subject to scientific inquiry, and therefore, by scientific realism, whatever conclusion one might reach about whether something is or is not a science is of questionable warrant as a truth claim! Clearly, even if it is true, scientific realism cannot fully warrant psychological realism without auxiliary assumptions about how to differentiate science from non-science, and the assumption or demonstration that psychology in fact falls on the science side of that differentiation. Thus, adopting scientific realism as the underpinning for psychological truth claims sets up the possibility of a division between the scientific and non-scientific within psychology, as well. Is all of psychology a genuine science? Is none? Is only some? What are we to make of the truth claims of the

“non-scientific” part? To put it bluntly, then, there is a serious question as to what extent scientific realism can actually underpin psychology as a whole. Scientific realism provides no resources for answering the question about what parts of psychology have warranted truth claims, and so scientific realism re-introduces or exacerbates the science vs. non-science divisions within psychology. Thus, psychologists’ assumption that scientific realism is obviously convertible to psychological realism is problematic.

Second, often the epistemological claim of scientific realism is made even stronger, such that any truth claim not advanced as a result of scientific inquiry is deemed to be, not only potentially unwarranted, but simply nonsense (Williams, 2015, pp. 5–17 provides some history of this way of thinking, along with some recent examples; note also the parallel to earlier positivist and operationist claims). Thus, the stakes of the possible division of science vs. non-science within psychology are raised dramatically, as all non-science psychology (should any exist) is presumptively nonsense. This idea is problematic for many reasons, not just because of its effects on psychologists. For one thing, if taken seriously, it would mean that scientific realism itself is nonsense, as scientific realism is established and supported (as noted above) via various philosophical arguments, not via scientific inquiry. Furthermore, the idea that non-scientific claims should be treated as nonsense is rather clearly not something established via the scientific method! Note further that neither mathematical nor logical truths are established via the scientific method, so if taken seriously this scientific realism claim would also rule out mathematics and logic. Still, this rather obvious problem has not kept some psychologists and others from claiming that any non-scientific claim is presumptively nonsense (again, see Williams, 2015).

Third, despite the fact that scientific realism (as extended to psychological realism) might be taken to underpin psychological theoretical entities, psychologists (and others) very often resort to reductionist positions to make the transition from psychological entities to physical entities. It would be trivially easy to pull hundreds of quotations from the literature (indeed, see the discussion of “g” with which we open this paper, or the discussion of Tolman’s operationist-inspired attempt to legitimize psychological constructs by linking them to physical operations), but as one example, consider the following, taken from Tuomela (1977, p. 39, original emphasis and punctuation): “It should be emphasized that thoughts thus understood are *actualities*, some goings on in the person’s ‘mind’ (in the first place, though they ultimately will presumably turn out to be propositional brain processes).” It is important to notice that even here, in a book dedicated to a functionalist and realist description of human action and the theories thereof, the author finds it necessary to put the word *mind* in quotation marks, and to claim immediately that thoughts, despite being actualities, are not actualities in their own right, but instead are brain processes. In addition, of course, there is the difficulty about what exactly could count as a “propositional brain process” in the first place, and how some state or

series of states of purely physical objects could be “propositional” in themselves, in any meaningful sense. However, our main point here is that even in a book dedicated to what is a psychological realism approach to human action, the author feels compelled to distinguish what is actually scientific from what is not, and that this distinction, in effect, comes down to what is purely physical. Indeed, the author wants to say that thoughts are actualities — real things — but cannot even get to the end of the sentence without conceding that they are not! Thus, scientific realism here does *not* in fact function to underpin psychological realism, except in the special case of a purely reductive, physicalist approach to psychology — in essence, scientific realism underpins psychological realism by simply removing the psychological.

One might reasonably ask why one should jump to reductionism, if scientific realism supports psychological realism — why, if scientific realism allows us to treat our theoretical constructs as real and as having truth values, do we feel the need to remove the “psychological” from those constructs? The obvious attraction of reduction is that the resulting level of inquiry is, naively speaking, clearly scientific. But, there are well-known and serious philosophical problems with attempting to understand psychological entities (such as thoughts or social processes) in purely reductionist ways (see, e.g., Madden, 2013, Ch. 5 for a very readable overview), so if scientific realism can only underpin psychology to the extent that psychology is reducible to a “real science,” then scientific realism provides no actual realist underpinning for psychology as a whole.

Of course, this strong wish to link to something that unquestionably counts as “science” is a rather obvious consequence of conditioning the acceptance of a realist orientation on the scientific mode of inquiry. Given that scientific realism provides no way to show whether something is or is not a science, the only real option for psychologists is to try to link psychological entities to something that will be accepted as scientific, even in the absence of any argument. Hence, psychologists often assume that the psychological entities entirely reduce to something physical, and then presume that scientific realism allows them to take a realist position about anything physical. Seen in this light, psychological realism is simply a purely reductionist and materialist metaphysical and epistemological philosophy of psychology.

Finally, as we noted above, most of the arguments specifically for scientific realism (the miracle argument, the corroborationist argument, the explanationist argument) are primarily epistemological arguments in favor of the reality of unobservable scientific entities, but they all, at a deep level, rely on the fundamental realist position that a mind-independent reality exists. Thus, for example, if we remove that basic realist assumption then the miracle argument loses all force — the consistent success of science is not a miracle if, in fact, it reflects only a mind-constructed, non-independent reality. And, obviously, if the corroboration of a measurement by different techniques only reflects the consistency of a mind-created reality, it tells us nothing about the



mind-independent reality of that measurement. In short, arguments for scientific realism mostly assume realism, and focus on establishing that science provides an epistemological framework that allows one to access reality. Of course, other arguments for realism can also support scientific realism, so long as they provide support to the basic realist assumption without undermining the epistemological arguments for scientific realism, and similarly, they could provide support to psychological realism as so long as they neither undermine scientific realism or the adoption of scientific realism as a way to get psychological realism. Unfortunately, as we argue above, some of scientific realism's own claims make the extension to psychological realism questionable. Hence, a realist position that is more deeply grounded in metaphysical argument, as opposed to a primarily epistemological argument, and that could then be clearly extended to psychological entities, would be helpful.

In sum, we argue that scientific realism, despite the advantages that we discussed above relative to anti-realist accounts of science, turns out to be seriously flawed as a way of underpinning psychology, and that these weaknesses derive rather directly from scientific realism's epistemological and semantic claims that condition the reality of theoretical entities on their position within a scientific mode of inquiry. In the next section, we describe a different way of underpinning psychological realism, by adopting an Aristotelian–Thomistic form of realism.

### *Aristotelian–Thomistic Realism*

In this section, we describe Aristotelian–Thomistic (A–T) realism as a set of general metaphysical principles based on a philosophical worldview, and show how this approach (particularly in the work of Thomas Aquinas) can be developed into a form of psychological realism. There are a few critical differences from traditional scientific realism. First, although A–T realism amply meets all three of the criteria put forward by Chakravartty (2011) as definitive of scientific realism, and thus has no problem with scientific realism's claims for the domain of physical science, its claims have a greater scope than do scientific realism's. More specifically, A–T realism does not limit our ability to determine truth to the scientific method (though the scientific method is certainly an appropriate method for finding truth in some areas of inquiry). A–T realism maintains limits on our ability to determine truth as appropriate to the particular topic of investigation. In this regard, it is important to recognize that the scientific method is not "the gold standard," but rather the method that is best adapted to the investigation of the physical. For example, mathematical truths do not need to be established by the scientific method, but by the method of proof. However, mathematical truths (and logical truths) are, in A–T realism, even more certain than any truth of the physical world, no matter how well established via the scientific method (if indeed, any mathematical or logical truth could ever be said to be established via the scientific method). Second, unlike scientific realism, A–T realism is a basic or

fundamental outlook regarding the world, which can be developed in a manifold of directions, and allows different sorts of inquiry to cohere with each other. Thus, everything from what today we would call the hard sciences, to the psychological sciences, to the other social sciences, to the structure of scientific inquiry itself, to a study of logical inferences, and many things besides are not kept in isolation from each other. Rather, they are integrated into a holistic picture, in which each topic area has its own proper kinds of truth claims and methodologies. Third, any contemporary form of A–T realism is, at base, a philosophical approach to reality that is acutely aware of the problems of skepticism and induction, and the various forms of antirealism, and proceeds — with full knowledge of these issues — to describe the world as it is.

Those are some of the salient differences between A–T realism and scientific realism, but just what is A–T realism? At its most basic level, it is a comprehensive approach to reality as reality is and as it is manifested to humans by rational inquiry. The sort of “rational inquiry” that is undertaken is going to be different depending on the sort of subject matter that is being inquired into, such that some forms of inquiry are more certain or stable than others, and such that different methods of rational inquiry are more or less appropriate to the different sorts of subject matter. There is a type of hierarchy to different kinds of human knowing from more to less certain, with mathematics being the most certain. The physical sciences are less certain (they are not apodictically true or true a priori), but the physical sciences are still sufficiently grounded to believe that the propositions of the physical sciences are, roughly, true (if open to revision). Even granting such differences in subject areas, we can still distill several common metaphysical principles that range across this comprehensive worldview.

What follows is an introduction to A–T realism by way of presenting several important metaphysical presuppositions or principles.<sup>1</sup> To begin, beings exist and knowledge is of beings. That is to say, there really are things in the world and our knowledge really is of those things. This principle shows the fundamentally realist position of the A–T worldview. Second, our knowledge of things is conveyed to us, fairly reliably, via the senses. A–T realism, then, is grounded on empirical presuppositions. Third, the principle of non-contradiction (i.e., a thing cannot both be and not be at the same time in the same respect) holds across all human inquiry, and its logical corollary, the law of non-contradiction, holds for how we reason about things. Thus, our reasoning follows a pattern that is itself established in reality. Fourth (and this is related to the previous principle), there is a basic mirroring of reality in human cognition. This is not to say that the human cognition is infallible or completely reproduces external reality, but that

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<sup>1</sup>This listing is compiled from across the Thomist and Aristotelian corpus. There is no place in either body of writings where either Thomas or Aristotle lay out their metaphysical principles in a wholly systematic way.

cognition operates in a basically reliable way, as the processes of nature do too. The human mind, a part of nature, picks up on the regularities found in nature and internalizes them through physiological and psychological processes. Fifth, and this is perhaps the most distinctive and controversial aspect for a contemporary reader, the whole of reality is looked at through the lenses of actuality and potentiality. To clarify, a given object of inquiry — a tree, say — is analyzed by its current act and the ways in which it could potentially act. This will quickly become an account of things in the watchwords of Aristotelian metaphysics: “form” and “matter,” the former of which is a sort of correlate to actuality, while the latter is related to potentiality. The human being, again, a part of nature, is also submitted to this sort of analysis and looked at through the lenses of actuality and potentiality, as is human cognition itself.

To be sure, we can (and various historians of philosophy have done this in different ways) reconstruct an A–T philosophical anthropology, epistemology, or psychology, but those are disciplines which post-date both Aristotle and Aquinas. Instead, we believe that it is more instructive to see what is going on with respect to an account of the human being (philosophical anthropology), a justification or description of knowledge (epistemology), or an account of psychological processes such as human cognition (psychology) as embedded into the larger metaphysical framework of the A–T view. We should note that although we focus in this discussion on human cognition, but it is important to recognize that A–T realism can underpin the whole range of modern psychology, whether human or non-human animals, whether one is primarily interested in cognition or emotion, and so on.

Aristotle’s and Thomas’s descriptions of human psychological processes are accounts of the metaphysical relationship between the human mind and the things that humans know. The result is a metaphysical account of cognition, precisely because it aims to describe the relation between the knower and the object of scientific inquiry. This is a realist perspective *par excellence*, because both relata are presumed to be real and an account of the relation between the relata is what is sought. Clearly A–T realism is comprehensive in its scope, and, we think, superior to a naïve version of psychological realism, which uncritically accepts scientific realism. What, then, would a psychological realism formed within the backdrop A–T realism look like? We turn to that in our next section.

### *Aristotelian–Thomistic Psychological Realism*

Aristotelean–Thomistic realism accounts for change in the world according to causes and effects, for, according to the whole Aristotelian tradition, knowledge is understood to be knowledge of a thing’s cause(s). Now, A–T psychological realism is part of this larger approach to reality but specified down to human psychological processes, wherein those processes are understood to be one kind

of change among others (again, we concentrate here on cognitive processes but the A–T analysis applies to other psychological processes, such as the emotions, as well). As such, A–T psychological realism shares the same basic methodological approaches as A–T realism and accounts for cognition as one kind of change among others. While the biologist looks to understand the causal mechanisms that make an organism be the sort of organism it is, the psychologist seeks to uncover the causal mechanisms that allow for a human to cognize an organism (or any external thing). In both cases, understanding the causal story of the thing investigated is key, even if the causal mechanisms differ somewhat between those that govern objects of the external world and those that govern how the mind comes to know an external thing.

On this account, the task of the psychologist is a bit more complicated than that of the scientist who studies the external world (be it a biologist or physicist or whomever), because the causal nexus the psychologist investigates is itself more complicated. That cognitive causal nexus includes the external object, the medium through which the information is relayed, and, especially, the active and passive aspects of the mind that are necessary for human cognition to occur. What immediately follows is a brief exposition of the causal story of how cognition occurs, according to Aristotelean–Thomistic psychological realism.<sup>2</sup>

Let us begin with an ordinary object of inquiry, say, an American Elm tree. How does cognition of this external thing occur on the A–T account? In the first instance, as a form of realism, Aristotelean–Thomistic psychological realism assumes the elm exists independently of any mind inquiring into it.<sup>3</sup> Moreover, the larger A–T worldview dictates that the elm is currently in act in various ways, its “actuality,” and has various possible states of actuality that aren’t being currently actualized, i.e., its “potentiality.” The actuality of the tree, or “form” is conveyed

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<sup>2</sup>It should be noted, briefly, that while we are calling this an Aristotelian–Thomist psychological realism, what follows is more a description of how Thomas Aquinas, in particular, specified the Aristotelian texts that he had before him. Many years had passed between Aristotle’s time and that of Aquinas, and Aquinas was the beneficiary of a robust commentary tradition that had been trying to make sense of Aristotle for more than fifteen hundred years. Aquinas makes use of a more technical vocabulary than what one finds in Aristotle himself, due to this commentary tradition.

<sup>3</sup>The contemporary A–T realist knows that she may be deceived (she has read her Descartes et al.), but thinks that it is simply more rational to get on with the project of inquiring into the object of inquiry, rather than submitting everything to critical scrutiny. The skeptical currents that have had such a profound impact on modern philosophy (and thereby contemporary psychology) are often attributed to Descartes and Hume. In fact, these skeptical ideas have much deeper roots than either Descartes or Hume. Indeed, “Skepticism” had a long and noble academic pedigree even during Antiquity. The medievals, in particular, knew of various kinds of skepticism (often in a more radical form than what one finds in their modern forms) and usually decide that it is simply more rational to describe the processes of human cognition, rather than submit everything to critical doubt. In this sense A–T realism is clearly of a piece with how most contemporary scientists get on with their job of describing reality according to empirical standards rather than seeking to justify the project of knowing external things.

to and impressed upon the proper sense organ(s), either through a medium (like air or water) or immediately through contact, as in touch or taste. Upon initial reception, the form is communicated from the sense organs to the “interior senses,” which is how the mind initially unifies disparate sense data and allows for the internal reception and retention of the form. At this point, there is an “intention” in the mind, which is to say that there is a cognition of the tree, but only the tree as a particular sensible object. That intention can be recalled when the object is not present and, as one encounters the elm more and more, one experiences it exhibiting different states of actuality, for example, with leaves in the spring and summer and bare in the winter. These different states of actuality can be recalled by the mind and contrasted to each other.

At this point in the cognitive story, the form of the external thing has been impressed upon what today we would call the brain of the cognizer, but only at the particular level.<sup>4</sup> That is certainly a kind of cognition, but it does not attain the universal status that is required for full-fledged understanding, for which the cognizer needs more than the particular intention of the cognized object. Indeed, for understanding one needs to cognize something about the thing that ranges over a multitude of similar things. For instance, if one had never encountered a tree but then suddenly did, one does not really understand what the tree is by simply sensing and retaining/recalling a sense image of that tree in the mind. That is to say, one does not really understand what the tree is by way of a particular cognition, even though one does know some things about it: at times it has leafy things on it, it has such and such colors, different textures in different parts, and so on. But, until one is able to classify it as a plant, tree, elm, and most specifically, as an American Elm, one does not really understand it. What is needed is a “concept,” that is to say, some sort of universal understanding of the tree that accounts for how individual trees fit into a larger classificatory scheme.

The A–T tradition marks an important difference between humans and non-human animals, specifically in the capacity to form full-fledged concepts and then reason about or from those concepts. To account for a concept, the A–T psychologist will turn from the passive aspects of cognition (in which humans and higher animals are quite similar) to something “active” in the human mind itself. Aquinas calls this active component to human cognition the “agent intellect” whereas Aristotle calls it the “active intellect.” In spite of this terminological difference both figures are insisting that there must be something

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<sup>4</sup>The term “brain” here is anachronistic. The term used by the Aristotelian tradition is typically “soul.” Today, “soul” has the connotation of something ghostly or immaterial, whereas for the Aristotelian tradition anything that is alive and material has a soul, for the soul is simply a way of demarcating material things that are alive and material things that aren’t. Aquinas does say, however, that there is a particular organ located in “the middle part of the head” that is responsible for this kind of cognition, which is why we’ve used the word “brain” above.

active in the human mind itself to account for human understanding.<sup>5</sup> The primary active cause in the sensorial process, i.e., the sensed object, is not seen as sufficient to cause understanding, which grasps something universal about the particular sensed object.

The causal cognitive story of human understanding picks up at the point where the sensorial process stops. For higher animals and humans alike, the external object is sensed by means of the actuality or form of the thing being conveyed to the sense organs and from there to the appropriate organs for internal reception and retention of the form. Due to these physiological and psychological processes, the agent intellect has this particular intention before it and is able to see what is universal about that particular intention. As per our previous example, the human intellect is able to form a concept of the American Elm by which it understands why this particular tree is in the same class of things as other American Elm trees.

Another example that might make the issue more evident is that of triangles.<sup>6</sup> Sensible cognitions of triangular things occur all the time for humans and non-human animals alike, but that kind of cognition does not recognize the properties that make a triangle a triangle. So, at the sensorial level, we can cognize the triangular thing in front of us, determine whether to pursue, avoid, manipulate, or ignore it, but, until we have a concept of the triangle, we do not understand the features that make it a triangle, e.g., that it is a three-sided polygon. Coming to understand the triangularity of the triangle completely escapes the sensitive powers, because the external object (i.e., the triangular thing) only causes a particular intention of the thing. When the agent intellect sees what is universal in the particular it “abstracts” the universal from the particular that is presented to it via the sensorial process and forms a concept of the thing. Note here that the universal is not just abstracted in the sense of averaged — an averaged sensory triangle is no more triangular than a single sensible triangle is, and it is just as much a particular. It still has a particular (average) size, color, area, distribution of angles, etc. The key point is that the intellect abstracts from all of those particulars.

Now, this whole process, which results in a concept, is both empirically grounded and realist. It is realist insofar as the mind-independent existence of the object of inquiry is taken for granted and insofar as the term of the inquiry is in accounting for the mind’s relation to other things. In terms of being empirically grounded,

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<sup>5</sup>For Aristotle’s use of the term see *De anima* III, chapters 4 and 5. For Aquinas’s see, for example, *Summa Theologica* Ia, qq. 84–85 — though the term is found throughout his writings. The difference of vocabulary is due to the robust commentary tradition that Aquinas has inherited and which has specified Aristotle’s vocabulary considerably. We employ Aquinas’s terminology.

<sup>6</sup>Mathematical objects are, according to the A–T worldview, a bit easier to comprehend and use as examples than objects like trees, which itself works as a caution from seeking the same sort of certitude in other avenues of inquiry as one finds in mathematics, as, for example, in our knowledge of the physical world.

there is an Aristotelian dictum that the whole A–T tradition takes as basic: “There is no understanding without a sense image.”<sup>7</sup> As such, a concept must always be traceable back to something sensed and conveyed to the intellect via the story we have rehearsed here.

As noted at the beginning of this section, A–T realism accounts for change in the world according to causes and effects, and knowledge is understood to be a knowledge of a thing’s cause(s). Cognition is itself one kind of change, among others, for clearly there is a change of some sort in someone who does not cognize something but who then does cognize it. Moreover, there are different sorts of causes and effects referred to in accounting for cognition on the A–T model. At the sensorial level, the primary active cause is the external object which is impressed upon the sensitive cognitive processes and effects a sensible image in the cognizer. This sensible image then stands as the content upon which the intellect operates and from which it abstracts, which is necessary for the production of a concept of the thing.

#### *Advantages of A–T Psychological Realism*

In our description of the A–T account of cognitive processes, we found it useful to employ two different examples: one of an American Elm tree and one of triangles. The former is an ordinary object of scientific inquiry, whereas the latter is an object of mathematical inquiry. The latter is easier to comprehend and use as an example, because of the clarity and certainty that come along with mathematical objects, over and against things like trees, which we experience as always in some sort of motion. Aristotle and Aquinas were aware of the difference and used it as a warning to not expect the same kind of certainty in different modes of inquiry.<sup>8</sup> Thus, we can have clear and certain knowledge about many objects of mathematical inquiry, whereas certainty is not as achievable in the physical sciences, and is arguably even less achievable in the social sciences or other areas of rational inquiry. To expect the same level of certainty across different domains is to court error or skepticism or reductionism, and, as such, is not a wise path to follow.

In the first part of the paper we presented a series of complaints about the deleterious effects of an uncritical acceptance of scientific realism by psychologists, the first of which was that scientific realism provides no way to differentiate science from non-science, and thus no way to account for the scientific status of psychology. Aristotelean–Thomistic realism allows for an account of just this issue. In the first instance, psychology is simply not as certain as mathematics, but then neither are physics or biology. Secondly, as noted above, the task of the psychologist

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<sup>7</sup>Aristotle, *De anima*, III, 7.

<sup>8</sup>See Aristotle’s *Ethics*, Book I, chapter 3 (1094b12–15) and Aquinas’s commentary upon the same text.

is more complicated than that of the biologist and the physicist, because to have knowledge in those domains is just to have knowledge of the causal story of the object of inquiry. In the case of the scientific study of an American Elm tree, the arborist understands how the tree comes about, what the tree's development should look like, how it will reproduce, and so forth. For psychologists, by contrast, the causal story includes aspects of those issues, but also includes an account of how mind and behavior relate to the things in the real world. Of course, the basic realism of the A–T approach includes not only that of psychologists focused on cognitive theory, or on explicitly observable behavioral responses, but also on psychologists interested in emotions, sensation, social and cultural relations. So, the A–T realism includes not only the cognitive account of, say, the concept of an elm, but also an emotional or esthetic response to the elm, or a memory evoked by the elm, or perhaps a specific cultural meaning associated with elms. One should expect the endeavor, by virtue of its complexity, to be more difficult and, yes, less certain. That does not mean that psychology is not a science, but that it is a difficult science that requires careful examination of assumptions, informed by empirical inquiry. Aristotelean–Thomistic realism, then, helps place psychology as a science and as the kind of science it is, while also allowing that different areas of psychology could themselves be more or less amenable to the scientific method, be more or less certain, and so on, but still be perfectly valid subjects for rational enquiry, and for the discovery of, or at least approximation to, truth about real psychological entities and processes.

A second complaint we raised was the extent to which scientific realism often does not admit the truth of any claim that is not advanced by scientific inquiry or, more seriously, that it dismisses any such claim as nonsense. This is, of course, self-referentially incoherent, since scientific realism is itself not the product of scientific inquiry. By contrast, A–T realism is quite assertive about its (reasonable) presuppositions: there are real things in the world and we can investigate them through rational processes. Different methods will be useful for different sorts of things and the scientific method, as practiced today, is entirely consonant with this approach. The scientific method, as incorporated by A–T realism, does not ground anything except the empirical inquiry and experimentation for which it is appropriate. Similarly, mathematical methods are appropriate for mathematical enquiry, logical methods for logical enquiry, and both produce results that are more certain than those of the scientific method (even when the scientific method is entirely appropriately applied to physical sciences). By the same token, philosophical methods are appropriate to philosophical enquiry, but may be more or less certain than the scientific method, depending on the specific area of philosophic enquiry. Again, the certainty or lack thereof is due to the nature of the subject of enquiry, and in all cases the appropriate method is also determined by the nature of the subject of enquiry. The scientific method is not, on the A–T model, converted unwittingly into a metaphysical standpoint. On this view, then, psychological methods (which are



often very closely related to the methods of physical sciences, but also often not identical, and in some cases are quite different) are appropriate for psychological enquiry.

Third, we noted a persistent temptation to a very naïve reductionism, largely driven by the desire for psychology to be treated, without dispute, as science. Applying scientific realism to psychology uncritically results in a need to reduce psychology to the purely physical, in order that scientific realism can underpin realism for psychology. Because there is no other way for scientific realism to determine science from non-science, one must assume that the subject of the enquiry is purely physical — very few doubt that science, whatever else it is or does, applies to the purely physical. Thus, in the attempt to provide a realist underpinning for psychology, we remove the psychological as a valid area of enquiry in its own right. Psychology is only valid in as much as it is a “way of talking about” entities that are actually purely physical. In effect, we have to destroy psychology to save it, or at least to save a realist underpinning for it. This is simply not an issue for A–T realism. In the A–T approach, semantic and epistemological realism does not depend on an area of enquiry being amenable to the scientific method, in the way that scientific realism suggests. Instead, A–T realism is based on the whole, coherent A–T approach, from metaphysics through to the physical sciences and on to psychology, social sciences, and other areas of enquiry.

### *Questions About A–T Realism and Psychology*

In this final section, we address several issues which arise from our previous exposition, and which are likely to stand as objections to adopting A–T realism as a way of providing a realist underpinning for psychology. First, we have not provided much detail about why the A–T realist avoids the problem of skepticism. The A–T approach, as we noted, assumes that external things are real and that our sensation of those things is basically reliable. Obviously, Aristotle pre-dates the modern versions of skepticism, and his cognitive theory did not present itself as opposed to such approaches, though this hardly means that his thought or, especially, later appropriations of Aristotelian thought is naïvely realist. Skepticism was an active school of thought in late antiquity (St. Augustine himself famously became a Skeptic for a period) and Aquinas clearly knows about the skeptical challenge to knowledge, but is simply more interested in a descriptive account of knowledge than being agnostic on the issue and thinks that the Aristotelian, descriptive approach has more to commend it. A contemporary advocate of the A–T approach will be very familiar with the skeptical currents that have so profoundly shaped modern philosophy, and with full awareness of these issues, will decide that it is simply more rational to get on with the project of providing an account of reality, than it would be to submit every piece of knowledge or the project of human knowledge as such to critical scrutiny. In this, the A–T realist shares much in common with the contemporary scientist (or scientific realist theorist, for that matter) who will

not want to get bogged down in skeptical questions, but wants to describe things. The A–T realist is a realist because of a prior decision that a description of reality as it comes to us via the senses is more advantageous than the laborious and the never-quite-satisfactory task of justifying our knowledge of reality. To be clear, as we argued above, scientific realism shares this prior judgment — that is why, as we noted, the main arguments for scientific realism actually assume realism, and then go on to try to prove that the scientific method is a good way to learn something about the real.

Second, while we have emphasized that the A–T approach is thoroughly realist in orientation, and simultaneously that it limits the semantic and epistemic truth claims by (a) the nature of the subject being investigated and (b) the limitations of the methods attached to those subjects, we have said relatively little about the deeper limits on the human ability to identify the truth. Earlier, we clarified, “This is not to say that human cognition is infallible or completely reproduces external reality, but that cognition operates in a basically reliable way, as the processes of nature do too.” It is now time to unpack this statement. Scientific realism limits the human ability to “get to truth” by limiting the realist orientation to those cases in which the scientific method applies. The A–T approach sees the limits in the subjects and their correlated methods, but also in the nature of the human intellect itself. Thus, A–T realism is a very far cry from a naïve realism, indeed. What does it mean to “operate in a basically reliable way, as the processes of nature do too”? For one thing, it means that the human intellect *is* a process of nature, in a broad sense. Just as, in nature, an acorn tends to develop into an oak tree, the human intellect tends to grasp reality. However, just as an acorn might fall into bad soil, or be poisoned by someone and thus not grow into a mature oak, the intellect similarly can fail to obtain truth because the person does not have the proper training, or knowledge, or is misled by someone, or uses the wrong method of inquiry, or simply gets misleading data from the world. In short, “basically reliable” means that the human, in rational inquiry, tends toward grasping the truth, but that tendency can be disrupted, just as any other natural process can be disrupted for a variety of reasons and therefore fail to develop in the usual manner. Thus, A–T realism recognizes both the normal human tendency to grasp reality via rational inquiry, but also the obvious capacity for human error. Importantly, in the A–T view, this pattern is true across all areas of rational inquiry, with appropriate caveats and cautions for the inherent differences among subjects of inquiry. There is no one gold standard that guarantees truth across substantially different domains, nor is there a case to be made for making a metaphysical or epistemological principle out of a single method.

Third, we have claimed that one of the advantages of the A–T approach is that it is a coherent system of ideas that can build all the way from the most fundamental metaphysical notions to philosophy of mind and even to empirical work in psychology. Some might wonder whether a philosophic underpinning based on the

A–T approach makes any difference to how one does psychology. Although the A–T approach is currently somewhat out of fashion, we have found aspects of the A–T approach very helpful in our work in philosophy of psychology (Spalding, Stedman, Hancock, and Gagné, 2014; Stedman, 2013; Stedman, Spalding, and Gagné, 2016; Stedman, Sweetman, and Hancock, 2006, 2009) and in various areas of the empirical psychology of human cognition (Gagné, Spalding, and Kostelecky, in press; Spalding and Gagné, 2013, 2015). Others have also recently found the A–T approach helpful across a wide spectrum of areas within psychology (see e.g., Butera, 2010; DeRobertis, 2011; Freeman, 2008; Prasada and Dillingham, 2006, 2009). And, of course, historically, there was a time when some scholars considered all of psychology to be consistent with the general A–T approach to psychology (see, e.g., Maher, 1909; Mercier, 1918).

### Conclusions

We hope to have shown that scientific realism, as commonly adopted as a realist philosophical underpinning for psychology, does not, in fact, provide a coherent and comprehensive underpinning for the whole field of psychology. Rather than giving up on a realist underpinning, however, we propose that psychology would benefit from a rediscovery of the Aristotelian–Thomistic version of realism. We have argued that the A–T view could be applied to modern psychology in a way that avoids the problems of scientific realism, while providing a solidly realist underpinning.

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