



# THE TACIT DIMENSION OF THOMAS AQUINAS, OR *SCIENTIA* WITH MICHAEL POLANYI



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## ABSTRACT

*This article explores the common holdings of Thomas Aquinas and Michael Polanyi. More specifically, it suggests that Polanyi's post-critical philosophy retrieves multiple aspects of the pre-Copernican rationality of Aquinas. First of all, both believe that the faculty of reason is never impartial; it is always committed, driven by the intellect's appetite for satisfaction. Second, scientific knowledge requires habituation or know-how, which indicates that truth is not rational apart from bodily habitus. Third, reason operates only in a social body, and fourth, science can proceed only by faith in the authority of others. Along these lines, Polanyi relocates the modern scientist in something like a medieval body. Thus, some of Polanyi's most important ideas are incidental recoveries of the paradigm Aquinas represents.*

Science is nothing if not a work of faith. That claim, made by Michael Polanyi, is the central focus of this article. Though Polanyi was not the first of his century to say such a thing (William James had broken the same ground), his portrait of science was quite bold for its time. To him, the whole scientific endeavor bore a likeness to religion, because even the most expert scientist had to believe in order to understand (*PK*, 375). Might his views evoke the premodern paradigm represented by Thomas Aquinas? Polanyi himself would have dismissed the idea. To hear him tell it, St. Thomas was significant to science only on the wrong side, as partisan to the geocentric universe (*PK*, 146 n1). But Polanyi never studied Aquinas deeply; if he had, he would have found an impressive network of insights upholding his own. This article traces that network, letting Polanyi's intuitions guide a fresh reading of Aquinas on the conditions necessary for scientific inquiry.

That being our aim, we cannot encompass whole topics as Aquinas first laid them out. A proper treatment of *scientia*, for example, would range well beyond the main concentrations of Polanyi's thought. One needs only to begin the *Summa* to find that Aquinas defends sacred doctrine as a science, which goes beyond anything Polanyi said. Conversely, the modern sciences range well beyond their medieval parents in subject matter and technique. So if we are to see how Aquinas remains relevant to the philosophy of science, we

must draw from various portions of his corpus, then reassemble the material in a somewhat novel way. This does not distort his ideas, nor is it unprecedented; the interconnectivity of his thought rather lends to such work. Again, the point is not to reproduce a condensed version of Aquinas's system. It is to show that Polanyi rediscovered some of its primary elements, which continue to hold promise for the sciences.

To be sure, this is an eccentric route to the study of St. Thomas, and it virtually overlooks the legacy of his commentators. But it reflects a broad sympathy with their work, following a remark Alasdair MacIntyre once made: "We inhabit a time in philosophy in which Thomism can only develop adequate responses to the rejections of its central positions in what must seem initially at least to be unThomistic ways." (MacIntyre 1990, 2) This article is one such piece of unThomistic Thomism. It bypasses convention because, in all fairness, Thomists have routinely downgraded Aquinas when faced with the ascent of modern science. For example, Armand Maurer begins his translation of Aquinas on the sciences by saying this:

The center of attraction for St. Thomas and his contemporaries was not empiriological or mathematical science, but rather ontological or philosophical knowledge... The consequence of this optimism was the extension of philosophical analysis to areas in which it fails to achieve results (Maurer 1986, xii).

Such a concession starts readers on the wrong foot, because it offers only two choices. Either Aquinas should be thrown out whole (a move Polanyi followed without hesitation) or else he should be pardoned for the sake of his other merits. Not surprisingly, Maurer takes the second path, arguing that modern science cannot answer the big questions – questions about God, ultimate things, and the value of science itself. Aquinas, he believes, can offer the sciences a kind of metaphysical top layer, an icing that leaves the cake's ingredients unchanged. The same idea was also advanced by Jacques Maritain, a Catholic intellectual of Polanyi's generation. Maritain argued that Thomism was an accurate metaphysics for the sciences – one that would "do them no violence." (Maritain 1938, 83-84) He was bold enough to insist that metaphysics should regain its status as king of the sciences, given that every discipline rested ultimately on metaphysical assumptions about nature. But his stance, while more assertive than Maurer, still relegated the scientific value of Thomism to metaphysics.

It remains to be seen how a Thomist metaphysics can 1) operate by its own methods, yet 2) defend its methods to modern sciences outside its idiom, and further 3) influence or even govern those disciplines, but 4) refrain from doing them violence. How can such a "first philosophy" exist in the present milieu? As Kant forcibly argued in the second preface of his *Critique of Pure Reason*, the medieval model is retired. Ever since Descartes, the sciences have been formally structured on the first principle of the skeptical knower. A corresponding arrangement of fields has replaced that of the medieval schools, in which all forms of knowledge were seen to derive from the truth of God's being.

That is why Polanyi's argument is nimbler and more incisive than Maritain's. Without making any strident metaphysical claims, he begins from the vantage point of the knower. For him, everything follows from a single, core idea: "*We know more than we can tell.*" (TD, 4) We would struggle, for example, to say just how we recognize a close friend's face. Though we could name a few distinguishing features, their composite might match any number of people on earth. Similarly, we could not say exactly how to balance a bicycle in motion; it is a thing learned by doing. These phenomena represent what Polanyi calls tacit knowledge, a mode of experience analogous to peripheral vision. Tacit knowledge eludes our focus while framing whatever we see, think about and explain. As this paper shows, tacit knowledge does entail a transcendent reality,

a moral goal not unlike the beatific vision of God. But for the moment, we are in a position to notice an impressive parallel on another plane.

### Commitment

In an essay written for Polanyi's seventieth birthday, Marjorie Grene explains his philosophy like this:

Knowing always expresses a personal commitment, because it entails the apprehension of a whole in terms of its parts, or of an aim in terms of a means to it. It entails, in Polanyi's language, both *focal* and *subsidiary* awareness (Grene 1961, 192).

Similarly, MacIntyre identifies the virtue of prudence as the key to knowing and doing:

The central virtue of the active life is the virtue which Aristotle names '*phronesis*' and Aquinas '*prudentia*.' ... it enables its possessor to bring sets of particulars under universal concepts in such a way as to characterize those particulars in relevant relationship to the good at which the agent is aiming (MacIntyre 1990, 41-42).

Despite their different terminologies, these quotations express a common view. Knowledge is always *aimed*, driven by a personal commitment to a whole truth. We know about particular things by inferring their context in a whole body, a whole world, a whole universe. The same is also true the other way around. We know about a whole universe, a whole world, or a whole body by committing ourselves to a totalizing view of its particulars.

Consider a physician making a diagnosis. (*SM*, 45; *PK*, 101) She has taken various things into account: lab values, clinical images, vital signs, and so on. These, along with her patient's history and physical exam, are pieces of a puzzle. They are not meaningful in themselves; their meaning is derived from the whole problem they conjointly define. A diagnosis represents a *knowing through*, just as the Greek indicates. *Dia gnosis*: the doctor knows the illness through its characteristic signs. We might also call the diagnosis a *putting together*, a *rendering whole*.

However, to render something whole in the genre of *problems* (which is what a diagnosis aims to do), the physician has tacitly understood an even greater whole. *This* human is unwell against the backdrop of a normal physiology, a unitive species called human (*PK*, 88-89). Medicine is an expression of the mind's enigmatic talent for identifying the kinds or natures of things. A physician, tacitly referencing *humankind*, is trained to judge *this* human's degree of wholeness. Which is not to say that a man is somehow less human when unwell. To the contrary, he is only treatable if considered unwell *as human*. Has the physician ever seen the human species in itself? Never. She has been trained to know it attributively through its members. (*PK*, 88-89) For her, the term "human" already narrates the *is* and the *ought* of those identified as such. A sense of nature's direction – or its directionality – pervades her work, as Aquinas understood clearly: "the physician strengthens nature, and employs food and medicine, of which nature makes use for the intended end." (*ST* 1a.117.1) Hence, an ethics of intent is tacitly present in the knowledge of nature. And precisely on this point, an open discourse on metaphysics would indeed serve the sciences.

Introducing Aristotle's *Metaphysics*, Aquinas claims that all the sciences are ordained to one thing: human perfection (*hominis perfectionem*), which he also calls *beatitudo*, variously translated "happiness" or "blessing." (*CDM*, prologue) We have just seen that such a goal is apparent in medicine, but are all the

sciences driven by a such a commitment? Does the same commitment extend to theoretical physics, or to the mathematician with little interest in the application of his research? The modern reader is likely to accept one of two views on this. He can either affirm without difficulty that science is teleologically formed, or he can believe the popular history of the Enlightenment, which says the opposite. Take the story often told about Copernicus, which Polanyi cites frequently. Many writers, he says, extract the following lesson from the Copernican revolution: we ought to “see ourselves objectively in the true perspective of time and space.” (*PK*, 3) The injunction already sets a moral goal for knowledge, but let us leave that inconsistency aside. We are told to shed our biases and see the facts, to detach ourselves from all prejudicial commitment and accept evidence contrary to our beliefs. If this is the true posture of discovery, in what sense was Copernicus its harbinger?

Thomas Kuhn, very possibly under Polanyi’s influence, answers the question well.<sup>1</sup> The Copernican theory was “neither simpler nor more accurate than Ptolemy’s system. Available observational tests... provided no basis for a choice between them.” (Kuhn 2012, 76) So the question is not how the Copernican view was proven but rather what was involved in its public rectitude. Like Kuhn, Polanyi dismisses the idea that Copernicus and his adherents took an impartial stance, finding facts without prejudice. The real lesson here is about “the greater intellectual satisfaction he derived from the celestial panorama as seen from the sun instead of the earth.” (*PK*, 3) The same satisfaction was later felt by Kepler and Newton, who were so taken with the Copernican model that they worked to answer problems no other model suggested. The model was enjoyable, delightful, stimulating; that was its great merit. Paul Dirac, a Nobel Prize winner in physics, said the same of relativity. Einstein’s theory was accepted largely because “there is a beautiful mathematical theory underlying it, which gives it a strong emotional appeal” (Grene 1961, 193). Let us take the expert’s word for it: theories gain acceptance not because they are proven but because they are gratifying. A good proof *gratifies* the intellect; gratification is the greater power. Tacitly, it is the moral goal of science.

As Polanyi understood, science follows our desire for the Beautiful: “The affirmation of a great scientific theory is in part an expression of delight. The theory has an inarticulate component acclaiming its beauty, and this is essential to the belief that the theory is true.” (*PK*, 133). If that does not sound controversial, perhaps it is because intellectual satisfaction is a common experience. Who has not known the pleasure of a good answer found after a great deal of puzzling? But, in granting that such pleasure is real, the scientist requires a theory of knowledge that no longer sustains the popular view of objectivity. Is the intellect a satisfiable entity? If so, we had better revise “objective” to mean something other than impartial or impersonal. The intellect must be partial to what it finds satisfying. It must prejudicially incline to the most appealing object of truth, the most fitting answer. In that sense, every science is indeed concerned with human happiness.

We have thus worked out a notion familiar to Aquinas: that of the intellectual appetite, otherwise known as the will. For Aquinas, the will is not primarily assertive but desirous. To will is to want; the wanting is what controls us. As David Burrell puts it, “Ends are consented to, not chosen.... Only means are chosen, and that with a view to their appropriateness in attaining the end” (1979, 125). Humans are moved by intellectual hunger, which for Aquinas does not nullify the doctrine of free will. It rather sets the conditions for freedom in the context of *beatitudo*. Our hunger for truth is the same as our will to be satisfied (*ST* 1a.82.1, 4). Science, then, is a most poignant example of desire gone right. It is not sustained by dispassion but rather by an amorous commitment to the pleasure of truth. Polanyi thus reclaims a very old line of

thought when he says, “Science exists only to the extent to which there lives a passion for its beauty, a beauty which is believed to be universal and eternal” (*PK*, 281).

### Embodiment

In highlighting the appetitive nature of knowing, we are marking an opposition between two accounts of scientific knowledge. The first is distinguished by feats of detachment or by the claim that good science is impersonal and unbiased. The second is what Polanyi calls *indwelling*. Kepler and Newton, for example, indwelled the Copernican system. Satisfied by it, they committed to a description of reality on its premises. To use another of Polanyi’s terms, they *interiorized* the model.

To rely on a theory for understanding nature is to interiorize it. For we are attending from the theory to things seen in its light, and are aware of the theory, while thus using it, in terms of the spectacle that it serves to explain. This is why mathematical theory can be learned only by practicing its application: its true knowledge lies in our ability to use it (*TD*, 17).

A theory *is* a practice. The actual form of a theory is know-how. Consider again the physician diagnosing her patient: she knows what is wrong because she knows *how to tell* what is wrong. Polanyi’s approach here coincides with Aristotle’s insight about a “second nature,” which Aquinas understood in terms of *habitus*. Modern education tends to place theory and practice in distinct domains, but Aquinas and Polanyi think of the two as inextricably combined. To make that point, Polanyi uses language that inadvertently repeats a notion Aquinas calls the *proximum principium* (*SBT* 2.2, reply to 7). A theory taken for granted, he says, is like one’s shoulder—*proximal* to one’s hand. When I reach out to grasp something, I do not need to focus on my shoulder, though I do need to articulate my shoulder to grasp the object. For Polanyi, this is more than a metaphor. It is simply how human knowledge works—a point he strengthens by considering the use of instruments. When I use a hammer, I do not focus on the hammer but on the nail I am driving (*TD*, 11–12). The hammer, being proximal to the nail, becomes an extension of my arm. I know the hammer best when I use it on something else. The same is then equally true for computational and theoretical instruments. While they are not always physical tools, they indicate that we are habituated as bodily knowers.

But must we say *bodily*, if we are referring to such an austere task as deduction or calculation? Yes, because the alternative is incoherent; humans cannot perform a sheerly mental act (Grene 1968, 43). We can certainly study the mind instead of the body, but the body must tacitly serve us in saying anything about the mind. After all, language itself is bodily (*KB*, 41). In becoming fluent, we did not abandon the use of our tongues, ears, eyes, or hands. Nor did language operate without instruments like pens, computers, books, and so on. Despite the famous attempt of Descartes, we cannot base truthful deduction on a dismissal of the body or sensation.

Now, it is somewhat tempting to see a proto-Cartesian duality in Aquinas. He says that the intellect is to body as form is to matter (*ST* 1a.76.1). But unlike Descartes, he uses classical language to bring out a unity. Intellect is the first principle *inherent* to the body; for anyone possessed of the human form, the body is inseparable from its first principle, the intellect. If that sounds a bit woolly, Aquinas clarifies things in his comments on Aristotle’s *De Anima*. Sensation, he says, belongs not only to the body or to the soul but to the composite (*SDA* 3.2, *lectio* 2–3). This is a far cry from Descartes, especially since Aquinas observes

with Aristotle that nonhuman animals have a souled nature. The human soul is distinct, however, in being rational. We humans are drawn to fit our experience deductively into one intelligible whole.

Polanyi never used the word “soul,” but he must have seen that “proximal” indicates proximity to something core, something integrative and essential to all coherent knowing. What he did describe in detail is how the intellect can know itself only in relation to other objects. The intellect is never self-enclosed, a self merely observing itself, as in Descartes’ *cogito ergo sum*. The intellect is invariably communal and embodied in the world of things. Science, then, is an expression of both finitude and commonality, energized by the collective effort to make sense of reality. On this point, Polanyi mirrors Aquinas, who quotes Dionysius on the difference between angelic and human knowledge.

Souls have the power of reasoning in that they approach the truth of things from various angles, and in this respect they are inferior to angels; but inasmuch as they gather a multiplicity into unity they are in a way equal to the angels (*SBT* VI.1, reply to 3).

For Aquinas, angels do not learn or deduce truth the way humans do. The angelic nature simply contemplates the real (*ST* 1a.58.1). We humans, by contrast, come to know reality by employing reason—synthesizing information, drawing conclusions, and working together in collective bodies. All such efforts display our appetite for the whole truth while displaying our un-angelic form. As stated above, Aquinas often contrasts the human species with irrational animals, but the contrast in this case highlights our animal nature. By comparing us with pure spirits, Aquinas indicates that our animal bodies manifest our rationality. The human’s physical development reflects our unique intellectual potential. Hence, any epistemological detachment from the body—whether by impersonal objectivity or by doubt of the senses—de-forms the human. The human is a physical intellect, an embodied soul committed to the satisfaction of unified knowledge.

Polanyi, making a similar case, situates humanity a little lower than the angels, honoring the body as an instrument of human knowing. For both men, science is a *habitus* of skill and mastery, an embodied practice of thinking from certain proximal givens. Scientists learn by doing, effectively confirming the famous dictum of Aristotle: “Men become builders by building and lyre players by playing the lyre” (Aristotle 1998, II.1).

## Faith

Builders, musicians, scientists, and all others gain knowledge by practice. What we know is inseparable from how we know it. Clearly then, as finite knowers, we cannot master every field. The musician who wants her home remodeled must have faith in her builder. She must believe not only in his ability to do good work but also in his intention to do her good; he is a good builder only if he demonstrates both aspects. Or let us again consider the physician diagnosing her patient. Without her skill, the patient would not know what is wrong, let alone what to do about it. His knowledge comes strictly by faith in her word.

For Polanyi and Aquinas, faith may be highly attuned and critical, but there is no true knowledge without prior belief. This is where Polanyi comes closest to sensing his own medieval bearings, quoting Augustine’s famous words: *nisi credideritis, non intelligitis* (Unless you have believed, you do not understand [*PK*, 266]). For centuries, the phrase marked the entrance to Christian orthodoxy, but it now serves Polanyi’s theory of knowledge in general. Had he known to look, he would have found the statement comparably

widened in the *de Veritate*, where Aquinas defends it by citing Aristotle and Averroes, a pagan and a Muslim (QDV 14.1, response). While Aquinas elsewhere discusses faith as a particularly Christian virtue, he also thinks of it as commonplace among humans, operative prior to salvation. Grace indeed changes our object of belief, but we are always already believers by nature.<sup>2</sup> Discussing the phrase “I believe” in the Apostle’s Creed, Aquinas says this:

If one were willing to believe only those things which one knows with certitude, one could not live in this world. How could one live unless one believed others? How could one know that this man is one’s own father? Therefore, it is necessary that one believe others in matters which one cannot know perfectly for oneself (*CI*, 17).

By contrasting matters of certainty with matters of faith, Aquinas does not mean to diagram two distinct zones of knowledge. Belief is woven into the fabric of certainty; we believe what we are certain is true. Polanyi says the same: “Our basic beliefs are indubitable only in the sense that we believe them to be so” (*PK*, 267). The point, however, is that belief also extends well beyond matters of certainty. It is the larger of the two modes, fully encompassing certainty but also surpassing it. Our wellbeing depends on this. We must uncritically believe many things we could doubt, such as our own paternity. As Aquinas asks rhetorically, how could someone possibly doubt all doubtable things?

We can add a similar question to his: how could one express doubt without expressing belief?<sup>3</sup> If one indeed doubts that this man is one’s own father, it is only because one believes otherwise. Doubt does not offer the assurance of faithless certainty (again, despite the famous attempt of Descartes); doubt is plausible only when fixed to an alternative belief (Polanyi 1950, 27–37). It is true that modern science rises from Cartesian skepticism, and there is no denying that it has furnished us countless analytical tools. But has it fundamentally changed our situation? We can now verify paternity with a DNA test, but we cannot avoid the expert reading its results. What validates evidence, if not a social interplay of trust? Like children, we must believe the expert whose knowledge goes beyond our own. The argument of Aquinas holds as firmly now as it did when he wrote it: faith is our recourse when the answer to a question exceeds our ability. The same line of reasoning permits him to claim that humans only know God by faith (since the nature of God transcends human reason), but the argument works by way of analogy. Certain forms of knowledge exist in excess of what any one person knows. Scientists gain understanding by erudite proofs or deductions (*demonstrationes*), but laypeople and novices must believe in order to understand (*CI*, 17).

However, a distinction between scientists and laity is deceptive. No scientist has finally rested his mind on faithless certainty. Nor does there exist a simple two-tiered politics of knowers and believers because, as we have seen, there is no separation between certainty and faith. Polanyi repeatedly stresses the fact that belief operates collaterally among scientists (*TD*, 63–64). The astronomer, for example, must believe the findings of other astronomers, whether because they are in different locations or because they have better instruments. More to the point, the astronomer believes in models he cannot prove, especially in those developed outside his discipline. Compared to a nuclear chemist, he is a layman. Yet he must believe in nuclear fusion to explain the energy and life cycle of stars. Aquinas thus makes a valid observation:

Sometimes the proximate starting point of a science is belief, as is clear in the subalternated sciences. The proximate source (*proximum principium*) of their conclusions is belief in truths presupposed as established by a higher science. Their primary source, however, is the

knowledge of the higher scientist, who, through his understanding, is certain about these matters of belief (*SBT* 2.2, reply to 7).

Here again is the *proximum principium*, synonymously used by Polanyi. Some sciences, in order to exist, must base their line of inquiry on the findings of more basic sciences. Aquinas thus envisions a hierarchy of disciplines, although we would be mistaken to think that authority exists solely on the basis of scientific provenance. It is grounded in *persons*: authority comes from the higher scientist (*scienti*). In the same text, Aquinas says that a physician is obliged to trust a physicist, but he does not expect that a physicist could practice medicine (*SBT* 2.2, reply to 5). The physicist is finite, trained particularly as such. If he were to become ill, he could do nothing but submit himself to the master of a lower science. Hierarchy cannot therefore indicate the absolutism of any one field, because authority does not derive merely from higher disciplines. It derives from responsible masters, each of their own discipline. Seen this way, the social psychology of truth is dynamic, even self-governing, because each expert must yield in good faith to the authority of others.

### Authority

We have found another overlap with one of Polanyi's central conclusions:

Science will appear then as a vast system of beliefs, deeply rooted in our history and cultivated today by a specially organized part of our society. We shall see that science is...shared out for cultivation among many thousands of specialized scientists throughout the world, and shared receptively, at second hand, by many millions (*PK*, 171).

Philosophers of the Enlightenment tended to redraft this basic tenet, claiming that reason was free to dismiss traditional authority. Such an ideal opposes the social form Aquinas defended, and it conflicts with the hermeneutics of trust that Polanyi advocates. When the Enlightenment changed the old model of authority, truth was not supposed to derive from people; it was derived from *facts*, taken to be impartial and impersonal. We today have not officially departed from that ideal, despite its grave implications. Not quite a century ago, Bertrand Russell wrote a well-regarded book on education, the effects of which can still be felt in classrooms. He said this:

I should not urge my own views upon the pupils. What I should do is to put before them the ideal of a scientific attitude to practical questions. I should expect them to produce arguments that are arguments, and facts that are facts.... I should make it my object to teach thinking, not orthodoxy, or even heterodoxy (1923, 284).

Despite what he says, Russell is espousing an orthodoxy. The ideal teacher is to remain hands-off, respecting the student's autonomy, stepping in only when the student's reason veers off track. The same ideal can be found in Rousseau's *Emile*, written some 160 years prior (1979, 168). And before that, Rousseau's sentiment had long been crystalized in the Royal Society's motto, *Nullius in verba* ("Take no one's word for it"). The refusal of dogma is nothing if not a tradition, and it is a tradition with two faces. One side prizes autonomy, and the other demands its pupils submit to reason. Autonomy thus looks and feels very much like submission to dogma, and as such, it is difficult to envision in pure form.

In Polanyi's day, Paul Feyerabend proposed a new age of scientific anarchy. No longer should "the experts" hold sway, he said. Science ought to be pluralized, its absolute methodologies abolished (Feyerabend

1978, 127). Such a notion, while sounding radical, repeats the same traditional stance, and it is captured by its own problem. As Polanyi said, “All modern revolutionaries since the Jacobins demonstrate likewise that dissent does not seek to abolish public authority, but to claim it for itself” (*PK*, 209). Because Polanyi believed scientific freedom rested on trust, he argued that authority was simply part of the fabric of knowing. There could be no free inquiry without the establishment of mastery. Thomas Kuhn shared a similar view. Like Feyerabend, Kuhn rejected the idea that science must have an explicit method, but he adhered more closely to Polanyi when he argued that scientists learn “by doing science rather than by acquiring rules for doing it” (Kuhn 2012, 191). In saying this, Kuhn defended the convention of Aristotle: the novice scientist is initiated into a tacit knowledge by the hands-on example of an expert whose highly personal skill is likewise “embedded in shared exemplars.” Science is a tradition of apprenticeship and mastery no less than carpentry or plumbing. A scientist therefore makes discoveries, or detects anomalies and problems, by adopting the way of a master. Polanyi agreed with Kuhn:

We have seen that tacit knowledge dwells in our awareness of particulars while bearing on an entity which the particulars jointly constitute. In order to share this indwelling, the pupil must presume that a teaching which appears meaningless to start with has in fact a meaning which can be discovered by hitting on the same kind of indwelling as the teacher is practicing (*TD*, 61).

To summarize, science requires faith in the well-habituated authority of others. Yet after Descartes, scientists have generally masked that faith, suggesting a reversed relation of person and truth. Whereas the medieval scholastics derived *scientia* from the great *auctores*, modern science ostensibly derives knowledge from matters of fact. Truth must now stand on its own, apart from all trust in authority. As recently as 2010, Stephen Hawking gave an interview where he said as much: “There is a fundamental difference between religion, which is based on authority, and science, which is based on observation and reason. Science will win, because it works.” That statement and others like it are exercises in misdirection. They are precisely why Aquinas, read with Polanyi, may prove abundantly fruitful—or at least disruptive enough to clear the ground for a germinal idea.

By officially removing science from its divine syllabus, we have lost its proper context. Once, truth was a practice of caretaking. It was understood as a shared effort of trust, known in a community and guided by a tradition of belief. That is why Aquinas could classify self-evident principles as “self-evident *to us*” (*SCG* I.11; Dougherty 2006, 625–626). Self-evidences were not obvious to everyone. They existed insofar as they were common goods of a tradition, made conspicuous only by initiation and education. They were part of an exercise, a communally habituated pattern of reasoning, something like a physician’s diagnostic data. They were intelligible as part of a greater, beatific unity, learned under the authority of others who pursued the same good.

## Conclusion

As with any piece of writing, this essay has left many things out. We have not explored serious disagreements that may yet exist between Aquinas and Polanyi. Nor have we harvested what would promise to be a rich account of scientific virtue from their collaboration. We have merely made the first step in either direction, tracing the following argument. Science is always an act of commitment to the whole truth, but

humans are partial in two senses of the word. First, we know in part, as the Apostle Paul said (1 Corinthians 13:8); second, we are partial to what we find satisfying. We are drawn by the hunger to know, a hunger shaped by and shaping tradition. Partiality is therefore not to be discarded for the sake of truth. It is the very condition of our knowledge.

We are thus left with four conclusions: 1) There is no way to start telling the truth except by first believing. 2) Telling the truth is a skill, a bodily practice. Just as we cannot detach our intellect from the desire for gratification, we cannot disengage our rational functions from the body. 3) Embodied habits are what grant us the ability to think and reason together. Just as we cannot disengage from the body in order to know the truth, we cannot disengage from collective bodies of knowledge. 4) Good science is therefore based not only on know-how but also on know-*who*. True knowledge depends on faith in the authority of those who know better. Along these lines, Polanyi urges a full-orbed resettlement of science, and, remarkably, the medieval environs of Aquinas are hospitable to the occupation.

### ABBREVIATIONS

For the works of Polanyi:

*KB* = *Knowing and Being*

*PK* = *Personal Knowledge*

*SM* = *The Study of Man*

*TD* = *The Tacit Dimension*

For the works of Aquinas:

*CDM* = *Commentary on the Metaphysics (of Aristotle)*

*CI* = *Catechetical Instructions*

*QDV* = *Questiones Disputatae de Veritate*

*SBT* = *Super Boethium de Trinitate*

*SDA* = *Sententia libri De Anima*

*ST* = *Summa Theologiae*

*SCG* = *Summa contra Gentiles*

### ENDNOTES

<sup>1</sup>Martin X. Moleski has written a helpful comparison of Kuhn and Polanyi, suggesting that the former owed an unexpectedly deep debt to the latter. See Moleski 2006, 8–24.

<sup>2</sup>This is not a standard Thomist conception, but it nestles quite nicely with the position of Eleonore Stump and (though more vaguely) Rudi Te Velde, who see Aquinas employing reason in the service of Christian faith. That is, reason and faith are never separated as entirely distinct domains. Belief is already operative, already granting truths that rational discourse assists one in believing. See Stump 2003, 374, and Te Velde 2006, 26.

<sup>3</sup>Under Polanyi's influence, Charles Taylor made a similar argument in *Sources of the Self*. See Taylor 1989, 74–75.

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