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# Commentary: The Yearning for a Unifying Psychology and the Unhappy Consciousness<sup>1</sup>

**Abstract** In this volume, Aaro Toomela conducts an epistemological analysis of modern psychology according to which the discipline would be in a more primitive developmental stage than biology or physics. He uses basically two standards of scientificity: the satisfaction of four epistemological criteria (Is there an external world?/ Is this external world organized?/ Is this knowable?/ Is this world material?); and the kinds of Aristotelian causalities. Toomela concludes arguing for a “structural-systemic psychology” a once existent framework that would satisfy the epistemological standards and that, consequently, would constitute the potential path for a really scientific psychology. In the present commentary, I argue that the first scientificity standard is still embedded in a modern way of talking about sciences whose unsolvable problems have dragged epistemology to bankruptcy. On the other hand, the reintroduction of a variety of ways in which to understand causality seems more promising for integrating psychological studies in a coherent framework. Though the unification of psychology doubtless requires metatheory, this reconstruction must overcome the constraints of the inherited conception of science.

**Keywords** Final cause; Epistemology of psychology; Aristotle’s causes; Pragmatics of causality

## Introduction

In a world where the massive scientific production paradoxically deters knowledge gain by boosting the quantity of publications while undervaluing their quality—automatizing it to a statistical reckoning of the number of citations—Aaro

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Toomela's present work is certainly a rarity. A refreshing one. Thousands of empirical studies are monthly reported whose statistical complexity and/or technical sophistication is high enough to veil their theoretical dearth. The landscape of psychology is teeming with empirical studies—be these quantitative or qualitative—methodologically rigorous but theoretically poor. In this context, Toomela's contribution goes in a totally different direction. He makes a straightforward diagnosis of the present status of psychology as a science but offers, too, his prescription for developing it further. Toomela dares to make fundamental statements about psychology's scientificity and methodology. Even more, he sustains these statements with arguments from epistemology and the history of the discipline. By doing this, Toomela makes explicit his personal position concerning core issues about psychology's scientificity. It is precisely this feature of the book—that the author takes explicit position on what psychology is and should be—that makes its reading fluid and highly interesting.

The book starts from the statement that contemporary psychological science lies developmentally behind other sciences because of the impossibility to reach consensus around minimal ontological and epistemological tenets within the field. The aim of the book is to settle a new epistemological foundation to build a truly unifying psychological science. In what follows, I will summarize the argumentative structure of Toomela's book. After this, I show that the author offers two distinguishable and independent standards for evaluating scientificity, namely the epistemological axioms the theories assume and the notion of causality they accept. The search for epistemological axioms assumes tacitly that there is one and the same stable reality independent of the language chosen to refer it. This procedure leads to the imaginary possibility that an unknown reality could lie "out there," access to which is barred to us due to the limits of our human condition or our language—an anxious state of mind that was early labeled by Hegel as "unhappy consciousness." On the other hand, the second scientificity standard introduced by Toomela—the recovery of Aristotle's notions of causality—works better to support an integrative framework for the discipline. Although I agree with Toomela's thesis that psychology needs a unifying theory and that this cannot be reached without recurring to metatheory, I argue this will not be reached by subscribing the ontological dualism implicit in the four fundamental questions. An integrative view of the psychological—what Toomela would call "metaparadigmatic psychology"—demands the articulation of different language uses for distinguishing different aspects of the subject matter. This task is performed by recovering Aristotle's model of four causes.

### **Three Stages of Science and Four Fundamental Questions**

Toomela initially sets up a Kuhnian-Vygotskian model of the growth of science, according to which any science would advance from a pre-paradigmatic stage, through a paradigmatic one, up to a metaparadigmatic stage. In the first one, sciences would progress without direction insofar as there is no systematic worldview

orienting scientific inquiry. In the second stage, a variety of internally coherent frameworks emerge—the so-called paradigms, coexisting within the same discipline. Finally, in the last stage—the metaparadigmatic one—a general, unifying framework emerges and subsumes minor theories and models. The first and less organized stage, the pre-paradigmatic, is represented, according to Toomela, by the “qualitative approach” in psychology and elsewhere, where research is not oriented by common epistemological agreements about the very existence of reality and its ontological independence from the mind. The paradigmatic stage would be represented by contemporary quantitative psychology, due to the variety of coexisting theories, intra-theoretically consistent but inter-theoretically divergent. Finally, a good example of metaparadigmatic science is biology after the emergence and expansion of Darwin’s theory of evolution. This theory would no longer be “a special kind of theory; its object is not one or another group of organisms, or their parts...[t]he theory of evolution is about all living world on Earth” (Toomela, this volume, p. 9). According to Toomela, psychology would lack such a metaparadigmatic, unifying theory, although an incipient candidate existed right before World War II—the “structural-systemic approach,” whose renewal is part of Toomela’s ultimate proposal.

To refine the description of the three developmental stages, Toomela defines four fundamental questions that any scientific theory, explicitly or implicitly, should answer. The answers to these questions define the stage of scientific development of the theory or discipline. The four questions are: (1) Is there a world external to my mind? (2) If there is one external world, is it organized? (3) Can we know the external world? or in a milder version: Can we know everything about the external world? and (4) Is the world only material? Any scientific theory has to answer to these ontological and epistemological questions. After pondering the answers to the same questions by selected classical philosophers—Aristotle, Descartes, Hume, Hegel, Marx, Engels—Toomela concludes that a science can aspire to be metaparadigmatic if and only if it answers affirmatively to each one of the four fundamental questions. Therefore, a metaparadigmatic science has to be realistic, materialistic and non-reductionist. A positive answer to (1) and (2) defines a realistic theory, while a positive answer to (4) profiles a materialist approach. Yet a *non-reductionist* materialism requires furthermore a positive answer not only to the fourth question, but also (and critically) to the third one, since metaparadigmatic science has to be open to knowing everything about the external world. According to Toomela, this is not the case of mainstream psychology, which would be constrained to knowing only observable appearances, leaving from the start important parts of psychological reality either out of focus (e.g., will, planning activities) or severely distorted by experimental needs (e.g., intelligence, emotion, motivation). That is why mainstream psychology is not good soil for building a metaparadigmatic science.

A better prospect for a metaparadigmatic psychological science existed before World War II. For Toomela, authors such as Lev Vygotsky, Pyotr Anokhin, Kurt Koffka, Wolfgang Köhler, Kurt Lewin, William Stern, Max Wertheimer, and Heinz Werner were decidedly oriented toward building a unifying psychological theory “aimed at understanding humans as wholes” (Toomela, this volume, p. 47). Among

them, Vygotsky stands out for constructing an approach that answers affirmatively to the four main questions: his psychology was realistic (assuming that a world external and ordered exists) and materialistic. But additionally, unlike quantitative mainstream psychology, Vygotsky

“...assumed that the external world is knowable beyond appearances...[h]e relied only on qualitative research methods – thus he did not assume that only covariations between observed events are knowable...[b]ut his qualitative methodology was also different from superficial and descriptive contemporary qualitative science...[h]is qualitative methodology was experimental; this methodology allowed him to construct justified theories about functioning of the mind *beyond appearances*” (Toomela, this volume, p. 47, italics mine).

The highest stage of scientific development will be also reached in psychology when methodologies go *beyond appearances*. At this point, the question that must be asked is what does it mean to go “beyond appearances.” This is a critical question in order to understand what exactly mainstream psychology is cutting off from its subject matter. In this respect, Toomela suggests this would be “structures and processes” (Toomela, this volume, p. 107) that cannot fit in the chain of *efficient* causes. Therefore, to overcome the paradigmatic stage, psychology needs to incorporate kinds of causes other than the mechanistic *efficient* one.

## Recovering Other Causes

An integrative psychology—“metaparadigmatic” in Toomela’s terms—should overcome the explanative reduction to efficient causes. According to Toomela, this turn can be conducted by re-introducing Aristotle’s four causes model (see Harré, 2012, for a similar conclusion). The next table shows Aristotle’s original definitions and examples for the four causes:

	Definition	Example
Material	That out of which a thing comes and which persists	The bronze of the statue and the silver of the bowl
Formal	The form of the archetype, that is, the statement of the essence and its genera	The formal cause of the octave is the relation of 2:1
Efficient	The primary source of the change or coming to rest	The man who gives advice is an efficient cause; the father is efficient cause of the child; and, in general, what makes of what is made and what causes change of what is changed
Final	In the sense of end or that for the sake of which a thing is done	To be healthy is the final cause of walking

The material cause corresponds to the matter of which a certain object is composed. It also includes the elements or parts of a whole. The formal one corresponds

to the essence of a thing or the entelechy of an organism—the whole composed by the material cause. The efficient cause is the immediate source of change or the agent whose action triggers a change. The final cause corresponds to the reason or intention that explains a state of affairs. Toomela points out that modern psychology reduced the four kinds of causes to just one: the efficient cause. The reason is that psychological theories would represent a *reductionist* variant of materialism: contemporary psychology limits its research to appearances, relinquishing the study of “structures and processes” such as intentions and motives for behaviors.

As Aristotle’s examples are conspicuously cryptic, the four causes have unsurprisingly been the object of diverse and, partially, contradictory interpretations. This applies particularly to the first and the second causes, since both are strongly rooted in the Aristotelian *matter/form* distinction, which in turn assumes the Platonic division between immanence and transcendence. Thanks to the intellectual part of her/his soul (the *nous*), the human being is capable of discovering transcendental forms and essences behind immanent matter. Thus, material cause represents the matter of which a thing is composed and the formal one is the “essence” or “entelechy” that fills the piece of matter in such a way that we recognize it as the thing it is. Both causes are quite understandable when we think of stone and statue, clay and vessel, or silver and bowl. More difficult is to apply them to other ontologies such as time, life, meaning, and symbol. The main difference lies in the fact that in the first set of cases, the observing subject is not part of the object (I have a vessel in front of me, which is definitely not part of my body), while in the second set of things such separation is not so clear (*Time* is not out there like a vessel or a statue, but it is part of my subjective way of feeling my being-in-the-world; *life* is not an external thing that I can observe from the outside, etc.). But even accepting the perishable matter/imperishable form ontology, it is still difficult to understand matter and form as *causes*. Since a condition of possibility is not the same as a source of change or movement.

On the other hand, *efficient* and *final* causes are indeed contemporarily well understood as *causes*. Toomela shows quite convincingly that modern psychology reduces its research to efficient causes, that is, to the immediate agent that induces a movement or change upon another entity. Thus, you can identify a complex chain of events concatenated by cause–effect relationships without recurring to intentions or volitions. In fact, to construe a mechanistic device you need only efficient causes. Considering this, the challenge of recuperating Aristotle’s causes model consists ultimately in the recuperation of the *final cause*. It is in fact the final cause which informs us *why* a certain state of affairs exists. Final cause corresponds to the final end (the *telos*) to be reached by this event or state of affairs. While the motion of the eight ball can be *efficiently* caused by having been hit by the white ball, this does not inform us why is this the case. For understanding why this causal relationship took place, we have to take into account that this is a billiard game, so we have ground to suppose that this motion was purposely triggered by somebody in the context of a game involving at least two people. Having this meaning frame in mind makes it—explicitly or implicitly—possible for us to *understand* the (efficient) causal chain we are observing. Thus, the inclusion of the *final cause* involves the reincorporation

of the meaningfulness of the phenomenon to be explained. For inquiring into the reasons and motives of a certain event implies the question about the purposes of the agent that directly or indirectly produced the observed state of affairs. Asking for the final cause implies pondering the observed event as non-deterministic, intended action purposely executed by an agent with certain ends, which displaces the event from the mechanistic causal chain.

If this interpretation is right, then Toomela's argument can be paraphrased in this form: psychology will become an integrative science only when it overcomes the mechanism implicit in the search for efficient causes and advances to include the meaning/sense dimension of human behavior, which is implicit in final causes. There will be no real psychological science if we do not seriously approach the meaningful dimension of reality. I do think this is a fair interpretation of Toomela's thesis. Enigmatically enough, however, Toomela is reluctant to talk about *meaning* or *sense*. He argues for the need to incorporate final causes into psychological explanations, but he does not develop the corollary that this implies including the meaning frames inside which a certain behavior becomes an understandable action. The reintroduction of final causes allows him to include "structures and processes" that are "beyond appearances," but further developments of this idea are not easily found. Rather, such "structures and processes beyond appearances" are inferable by means of exemplary cases such as Koffka's *Gestalt theory*, Piaget's *structuralism*, Von Bertalanffy's *open systems theory*, and Vygotsky's *cultural-historical* approach. Now, considering the diversity of explanatory devices implied in these cases, it is not clear whether and how these theories include meaning frames to better understand the psychological subject. On the other hand, if the feature these theories actually share is the fact that they do include final causes in their explanations, must we expect that other non-psychological cases of metaparadigmatic sciences (like Darwin's biology and Einstein's physics) to also include intentions and reasons besides mechanical causes? This is a question that remains open in Toomela's analysis.

## Causality After the Pragmatic Turn

The modern concept of causality exhibits still another important deficiency. Not only is it restricted to the *efficient* causal relationship, but it implicitly conceives the causes as isolated events that, again, can be identified as such from an objective point of view. This means that events such as *giving a piece of advice*, *being a father*, or *wanting to be healthy* are per se causal events. After the pragmatic turn in philosophy (Egginton & Sandbothe, 2004), it has been increasingly accepted that the identification of *causes* (be these *efficient* or *final*) requires the consideration of the *communicative context* within which a certain cause is selected as explaining a certain state of affairs. That is, the concept of cause is tightly connected with the definition of *explanation*. A cause is also an event that explains the emergence (or change) of another event—singled out as *effect*. Thus a cause is, pragmatically

understood, always an answer to a (implicit or explicit) question (Bromberger, 1966; van Fraassen, 1981). The cause of the collapse of the Twin Towers is tantamount to asking the question: *Why did the Twin Towers fall down?* This question is asking for a cause for an event, but the kind of answers we can give are quite diverse, depending on the context of utterance. So, if asked in a congress of metallurgy and materials science, an answer pointing to an efficient cause such as “Because fire exceeded 2500 °F, which is the fusion temperature of steel” might be considered acceptable by the hearers, although it would be remarkably inappropriate in a congress of political science. Even more, philosophers of science have noticed that depending on the prosody, different answers/causes are expected: *Why did the Twin Towers fall down?* (and were not merely damaged); *Why did the Twin Towers fall down?* (and not other buildings).

Of interest for Toomela’s (and our) purposes is that the why-question of the example can ask for efficient causes or for final ones. It is the communicative context that demands one or another kind of causes, so that one and the same event can be explained either appealing to efficient or to final causal events. We in fact use—and are commonly requested to use—(efficient) causes or (final) motives why this or that is the case. The role of context in understanding explanation and cause is nicely summarized by Bas C. van Fraassen as follows:

The discussion of explanation went wrong at the very beginning when explanation was conceived of as a relation like description: a relation between a theory and a fact. Really, it is a three-term relation between *theory, fact, and context*. No wonder that no single relation between theory and fact ever managed to fit more than a few examples! Being an explanation is essentially relative for an explanation is an *answer*... it is evaluated vis-à-vis a question, which is a request for information. But exactly... what is requested differs from context to context (van Fraassen, 1981, p. 156)

A corollary of a pragmatic approach to the causality problem is that to restrict psychological explanations to efficient causes on behalf of an alien methodological protocol is contradictory with the implicit pragmatically explanative requests that we ourselves set and satisfy in ordinary life when dealing with human affairs. Thus, final causes are required in psychology not only to satisfy some scientific standards, but also to avoid a flagrant performative self-contradiction.

## Metatheory, Yes; Epistemology, No

The affirmative answer to the four questions is, according to Toomela, the main feature of a metaparadigmatic science. A negative or partially negative answer to the third question (*Can we know everything about the external world?*) defines a science as paradigmatic (other questions being affirmatively answered). Conversely, a negative answer to whichever other questions, qualifies the respective science as pre-paradigmatic. Now, it is important to carefully ponder the perspective from which these questions are formulated. Who is the agent that seeks answers about external reality? External to whom? Which is the implicit “internal” reality? Who is the “we” that asks if “we” are able to know everything about the external world?

The very formulation of the first ontological question (*Is there an external world?*) assumes the privileged position of a reflective subject who doubts about his/her knowledge, having plenty reason and linguistic capacities to make distinctions “out there.” It is a sort of Robinson Crusoe—an adult, illustrated man with reflective capacities, who suddenly realizes he is in the middle of wild nature and has to construe from scratch a complete theory of it, its things, and properties (including a certain kind of thing which seems to be minded). The question about the existence of an external world (organized or chaotic, knowable or not, material or immaterial) starts from the methodological division of an external part of the universe and an internal one.

The critical point is that the four questions are based on the modern axiom that there exists a point of view from which it is possible to get acquainted with reality in a neutral, uninterested, and absolute way. This axiom resides at the core of the philosophical subdiscipline called *epistemology*. It assumes a strict separation between the knower (*res cogitans, subject*) and the known (*res extensa, object*). After the linguistic turn (Rorty, 1967), the same dualism works under the scheme of *language* and *reality*. In this variant, the axiom reads like this: in reality there are material referents and we need a language (a lexicon and grammatical rules) to refer to them. Things preexist words. If everything goes smoothly, I have at my command a language to satisfactorily cover the whole set of things out there. But it can also happen that my language does not cover all of reality. Then I have the unpleasant feeling that a part of reality escapes my comprehension because of my linguistic blind spots. This “unhappy consciousness” accompanies my intellectual apprehension of the world: I know I cannot *really* know the world as it is, since my language or my being human impedes my accessing it without distorting it with my own conceptual or cultural schemes.

By constructing an epistemological foundation for a unifying psychological science, Toomela situates himself in the tradition of looking for the point of view from nowhere that theoretically would quench our unhappy consciousness. This is clear when he establishes that the affirmative answer to the four questions is the standard for a *metaparadigmatic* psychology. The best science is realist, materialist, and non-reductionist. Psychology, in other words, should follow the example of the natural sciences that allegedly have conquered positive answers to the four fundamental questions.

Defining scientificity based on epistemology implies accepting from the start the modern separation between language and reality. This separation, and the aporias to which it leads, have been criticized in philosophy of science since at least the beginning of the twentieth century. Of course, this is not the place to summarize the development of the progressive liberalization of philosophy of science along the last century. Just to mention an early milestone of this evolution, Popper’s critical rationalism states that no brute facts exist without a theory (or hypothesis) that sustain them (Popper, 1935). As a consequence, what we see is determined by the theoretical framework from which we approach reality. That is the reason why our theory is, at best, i.e., when nothing falsifies it, a reasonable *conjecture*, which we must abandon as soon as we obtain evidence contradicting it. *Conjecture* means here: we really do not know how reality is (and unhappily never will!), but the present

hypothesis works so far. From Popper onward, many philosophers and science historians have remarked that reality, events, and things are strongly related to the kind of language that we use to describe them. Thus the metaphysical dogma that there is a reality-in-itself, unbound from a certain language/culture, is simply a faith article that cannot be resolved either by rational arguments or by empirical evidence. It has no solution, but dissolution. The latter comes when we realize that there is not a non-human reality to be referred (transcendental, a-linguistic), so we do not have reason for an unhappy consciousness.

## Conclusions

The crucial difference between Toomela's *paradigmatic* and *metaparadigmatic* sciences lies in the fact that the first would be reductionist while the second is non-reductionist. And this feature, in its turn, lies in their respective dismissal and acceptance of the Aristotelian *final cause*. Therefore, my point regarding Toomela's position can be summarized this way: the unifying psychology we yearn for will be reached when we are able to incorporate the intentions and motives of human action as legitimate causal instances. Yet for grounding such integrative psychology we do not need epistemology—if by “epistemology” we understand the modern philosophical subdiscipline whose aim it is to provide an indubitable “first philosophy.” We do instead need metatheory, that is, the analytical tools to inquire about the consistency of our theories, and about the appropriateness of our methods to access the phenomena of interest. In this sense, I am sympathetic with Toomela's conclusion: let us construct a unifying psychology. But this means, in my view, recovering the sense and meaning of psychological life—via Aristotle's *final cause*—while avoiding the old metaphysical requirement to strive for a chimeric reality-in-itself.

## References

- Bromberger, S. (1966). Why-Questions. In R. G. Colodny (ed.), *Mind and Cosmos*, pp. 86–108. Pittsburgh: University of Pittsburgh Press.
- Egginton, W., & Sandbothe, M. (Eds.). (2004). *The pragmatic turn in philosophy: Contemporary engagements between analytical and continental thought*. Albany, NY: Suny Press.
- Harré, R. (2012). The brain can be thought of as a tool. *Integrative Psychological and Behavioral Science*, 46, 387–394. <https://doi.org/10.1007/s12124-012-9195-x>.
- Popper, K. (1935). *Logik der Forschung: Zur Erkenntnistheorie der modernen Naturwissenschaft* [Logic of research: On the epistemology of modern natural science]. Vienna: Springer. [English translation 1959].
- Rorty, R. (Ed.). (1967). *The linguistic turn: Essays in philosophical method*. Chicago: The University of Chicago Press.
- Toomela, A. (this volume). *Towards epistemological foundation for the unifying theory of psychology*. New York: Springer.
- van Fraassen, B. C. (1981). *The scientific image*. Oxford: Clarendon Press.

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