



The Early Modern Attack on Teleology and the Politics of Contemporary Psychology: Intellectual Roots of Current Dilemmas

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Abstract

The paper takes up the relationship between teleological explanation and psychology. Teleological explanation—given in terms of purpose, intention, and value—is generally viewed unfavorably in psychology and science broadly. Biophysical mechanistic explanations are generally regarded as more scientific. The paper argues that the contemporary hostility to teleology needs to be understood in the context of the early modern political-philosophical struggles against organized religion. European philosophers of the sixteenth and seventeenth centuries saw that teleology was an essential part of how organized religion justified its political power. René Descartes and Baruch Spinoza are analyzed as philosophers who both attacked teleology, and contributed to the critique of organized religion. The early modern attack on teleology and the development of mechanistic science thus both had political as well as philosophical motivations. The tension between teleological and mechanistic explanation is shown to persist into the present, with the work of Carl Rogers and B.F. Skinner used as more recent examples. Rogers argued that humanistic psychology required a teleological understanding of both human and cosmic processes, whereas Skinner staunchly denied the reality of teleology and unfailingly championed behavioral, mechanistic science. Both Rogers' and Skinner's claims, moreover, can be traced to the early modern attack on teleology. It is then shown that contemporary research continues to grapple with the question of teleology. More specifically, the paper claims that contemporary writing fails to distinguish adequately between extrinsic and intrinsic teleology. The paper concludes advocating for a serious reckoning with the problem of teleology, and claims it is essential for genuinely scientific psychology.

Keywords Humanistic psychology · Behaviorism · Teleology · Carl Rogers · B.F. Skinner

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Introduction: Teleology, Psychology, and the Politics of Early Modern Philosophy

In his recent paper “From Teleology to Psychology,” Jeppe Olsen (2020) argues that teleological explanation—those given in terms of purpose, intention, and value—has an ambivalent status in modern psychology. Teleological explanation has seemingly been discredited in favor of ostensibly more scientific accounts given in terms of efficient causation: material, mechanistic, and behavioral (See Nagel, 2012; Dennet, 2010; Skinner, 1971).¹ Olsen (2020) claims that teleological explanation collapsed most fully after Charles Darwin, whose work on evolution supposedly demonstrated the self-sufficiency of efficient causation in biological development (See also Jonas, 1982; Deacon, 2012). Darwin’s blow to teleology, however, was prefigured in the work of his predecessors, Baptiste Lamarck and Georges Cuvier (Olsen, 2020).

Olsen’s (2020) goal is primarily negative: to analyze the rejection of teleology so as to prepare the way for a positive understanding. This procedure is important, as we are culturally and historically predisposed to favor a mechanistic or reductionist view of living organisms, and are highly averse to teleological explanation (Jonas, 1982; Thompson, 2010). An important part of reintegrating teleology into science or psychology will thus be understanding our aversion to it, as well as our inclination towards mechanistic explanation (see Olsen’s comments on “teleonomy”; or see Dennet, 2010; Thompson, 2010; Nagel, 2012).

Olsen (2020) claims that assessing our aversion to teleology means, in part, understanding the legacy of Aristotle. Aristotle, according to Olsen (2020), occupies a peculiar place in the history of science: “Aristotle is usually praised as the archaic founder of the scientific worldview. Meanwhile, the defining tenets of his philosophical system [i.e. teleology] have had a hard time throughout the history of modern science.” The status of Aristotle does indeed call for explanation: How can it be that Aristotle stands at the birth of science, if one of the defining features of his philosophy (teleology) has been essentially abandoned? Olsen (2020), I think, correctly claims that Darwin and his near theoretical predecessors are an important part of this story. There is, however, a deeper history of teleology that is worth understanding.

Mechanism and Teleology in Early Modern Politics, Philosophy, and Religion

In this paper, I offer an expanded historical and philosophical context to consider the rejection of teleology: the early modern conflict between organized religion and politically active philosophers. Two to three hundred years before Darwin, philosophers like Niccolò Machiavelli, Francis Bacon, René Descartes, and Baruch Spinoza were waging an intellectual war against organized religion, most notably the Catholic Church and burgeoning Protestantism. Armed with the printing press and a slew of subversive rhetorical strategies, they sought to discredit the authority of religion, and promote governments based on reason and science (See Da Costa, 2014; Darnton, 1985; Davis, 1988; Jones, 2001; Kennington et al., 2004; Melzer, 2014; Patterson, 1984; Rahe, 2009; Roecklein, 2014).

¹ In this paper, I use a variety of terms more or less interchangeably: materialism, physicalism, mechanism, and efficient causation. Each term has a unique emphasis and I use them when it feels appropriate. But they all refer to a general view in which the world is fundamentally composed of discrete physical parts obeying predictable physical laws; or, at the very least, the view in which science *methodologically* excludes factors other than material or efficient (i.e. teleological causation).

The authority of religion, significantly, was intimately bound up with notions of teleology, largely in the form of Aristotelian Thomism (Hassing, 1997). Saint Thomas Aquinas, modifying Aristotle for his uniquely Christian purposes, argued that the world was heading towards a divine cosmic telos. Strictly Aristotelian teleology, by contrast, is more applicable to the analysis of individual organisms; thus, his famous invention of the word “entelechy” in his analysis of life (Aristotle & Shiffman, 2011; Olsen, 2020). Cosmic teleology, though discussed by, was perhaps less crucial for Aristotle (Aristotle & Shiffman, 2011; see also Hassing, 1997). As Olsen (2020) argues, it is crucial to note the difference between *internal or intrinsic teleology* (which belongs to individual organisms) and *external or extrinsic teleology* attributed to cosmic or divine processes. It is possible, for example, that an animal lives its life by purposefully pursuing perceived value (having an intrinsic teleology), while having no connection to an extrinsic (divine, cosmic, etc.) *teloi*. Aristotle seems to have been most assured about intrinsic teleology (Aristotle & Shiffman, 2011). But as early modern philosophers sought to discredit the cosmic, extrinsic teleology of religion, teleology (intrinsic included) seems to have been generally invalidated (Khrouski, 2010; Jonas, 1982). Fortunately, Hassing (1997), Thompson (2010), and Jonas (1982) have all shown that *local* (intrinsic) teleology, or individual entelechy, does *not* require *cosmic* (extrinsic) teleology.

I am therefore imitating Olsen’s (2020) procedure: I am preparing the ground for a serious consideration of teleology as a viable form of *scientific explanation*. In order to do this, we must of course consider Aristotle, as Olsen (2020) does. But we must also take stock of the early modern attack on teleology and its place in a larger philosophical-literary campaign against organized religion.

To this end, I will offer an analysis of Descartes and Spinoza, two of the most influential philosophers of the seventeenth century, showing that their writings are rife with attacks on teleology. It is crucial to understand that the early modern attack on teleology was *explicitly political*: intended to both discredit religious authority and promote a politically useful mechanistic science. In attempting to discredit the authority of organized religion, Descartes and Spinoza laid the groundwork for our current aversion to teleological explanation. Understanding that their arguments were, in part, politically motivated, should help us see that our inclination towards mechanistic science is at least in part ideological and political, not simply scientific or philosophical.

Mechanism and Teleology in Twentieth-Century Psychology: B.F. Skinner and Carl Rogers

Understanding the historical origins of our aversion to teleology will illuminate a more recent dialogue in modern psychology: Carl Rogers and B.F. Skinner’s disagreement over the role of mechanism and teleology in modern science and psychology. Skinner, the great behaviorist of the twentieth century, was unwavering in his commitment to mechanistic, behavioral explanation. Rogers, on the other hand, staunchly argued that humanistic psychology required a teleological understanding of *both* human beings and cosmic process broadly. Human beings, he argued, are naturally inclined to growth, development, and positive change, which he called the “actualizing tendency.” The actualizing tendency, he argued, could not be understood without reference to a larger cosmic tendency towards order, interrelatedness, and complexity, which he called the “formative tendency.” Thus, Rogers argued that humanistic psychology was a challenge to the deterministic views of both behaviorism and the modern mechanistic sciences that undergird it.

Teleology Today

The tension between Skinner and Rogers is an instance of a larger tension within modern thought that stems from the rejection of teleology, a tension we still live with. As Sherman and Deacon (2007) argue, “For the most part, the history of the natural sciences during the past two centuries has been characterized by a systematic effort to eliminate teleological explanation” (p. 874). Disciplines requiring teleological explanation, like the humanities, religion, or psychology, treat teleology as an “ineffable mystery” or “purely epiphenomenal” (Sherman & Deacon, 2007, p. 874). Ultimately, however, Sherman and Deacon (2007) argue, “lack of a constructive scientific account of *telos* is a dilemma for any more modest view that holds to both the rigor of science and the undeniable reality of teleological phenomena” (p. 874). It seems to me that there is no consistent stance within contemporary psychology on the role of teleological explanation. Like Olsen (2020), Rogers, and Sherman and Deacon, however, I think a serious reckoning with teleology is necessary for a genuinely scientific psychology. Without a scientifically legitimate account of teleology, we content ourselves with half-truths about ourselves and other living things: analyzing “behavior,” tracking neural correlates, and denying the central role of value in the activity of living organisms, human, and otherwise (Thompson, 2010; Nagel, 2012; Deacon, 2012).

Politicized Metaphysics and the Rejection of Teleology as an Attack on Organized Religion: Descartes and Spinoza as Metaphysical-Political Conspirators

In this section, I will examine Descartes’ and Spinoza’s criticisms of teleology. Their attack on teleology, I claim, must be understood in the context of a philosophical-literary struggle against the authority of organized religion. The crucial fact about early modern philosophers like Descartes and Spinoza is that they wrote in radically different social-political circumstances than us: the threat of persecution was real, alive, and deeply conditioned their thinking and writing. Descartes spoke openly, for example, of his concerns surrounding religious persecution (Descartes & Kennington, 2009). Descartes was very aware that the Church had recently persecuted Galileo for developing a physics comparable to his own (Descartes & Kennington, 2009, Part 6). And Spinoza (1982), similarly, had been excommunicated from the Dutch Jewish community for discussing heretical ideas.

Early modern writers were thus far more careful and at times indirect about expressing heterodox views. They at times convey messages in subtle ways like purposeful error, allusion and allegory, or communicating in cipher (See Melzer, 2014; Patterson, 1984; Darnton, 1985; Jones, 2001). Descartes, for example, offered to discuss Nicollo Machiavelli in cipher while corresponding with Princess Elisabeth, as he was apparently uneasy about openly discussing such a controversial author (Sumberg, 1994). The existence of indirect or veiled methods of communicating controversial ideas has been extensively documented both historically and contemporaneously (Melzer, 2014; Patterson, 1984; Jones, 2001; Havel & Wilson, 1992; Milosz, 1990).

In approaching figures like Descartes and Spinoza, then, we need to understand them as potentially obfuscating the radicality of their views. Read this way, Descartes and Spinoza can be seen as political conspirators, working in concert to circulate subversive ideas for the sake of reducing the influence of religion. Peculiarly, however, these early modern writers were committed to attacking teleology, while simultaneously advocating mechanistic forms of science. Their attack on teleology and advocacy for mechanistic science must

both be understood politically. The attack on teleology undermined the logic of religion, and the mechanistic sciences led to myriad technological achievements that could better the lot of humanity, and give philosophers a role closer to government. We cannot make sense of our aversion to teleology, or our commitment to mechanistic explanation, unless we understand that both arose in the midst of philosophical conflict with a teleologically justified theocratic order.

A key feature of modernity, in other words, is the search for “effective metaphysics”: ideas that could be of service in resisting organized religion. Indeed, there is much evidence that mechanistic science was a political and moral issue in the sixteenth and seventeenth centuries (Merchant, 1989; Rahe, 2009; Roecklein, 2014, 2017). Our intellectual and political situation is colored by this legacy.

Several writers have argued that this tradition of effective metaphysics was initiated by the sixteenth-century Italian politician and philosopher, Niccolò Machiavelli (Roecklein, 2014, 2017; Rahe, 2009; Schall, 1962). Machiavelli, they claim, was the first modern philosopher to conceive of philosophy as a form of propaganda, and to call for philosophy to play an active role in combating religious authority (Roecklein, 2014; Strauss, 2008). To this end, Machiavelli revived ancient forms of atomistic philosophy, specifically through the Roman Epicurean poet Lucretius (Rahe, 2009; Roecklein, 2014). Machiavelli’s writings were of significant influence across educated Europe, and all of the major early modern philosophers discussed here were familiar with his writing (Schall, 1962; Sumberg, 1994; Spinoza et al., 1982; Kennington, 2004). It is plausible, moreover, that Machiavelli’s attack on Platonic-Aristotelian political idealism is an implicit attack on teleology, as it was the metaphysical basis of their political views (Machiavelli et al., 1977; Hassing, 1997).

Thus Descartes’ must be understood as a political conspirator, working in Machiavelli’s wake (Schall, 1962), and his dualistic metaphysics as ultimately serving political ends. Such a reading is plausible, thanks to scholars like Richard Kennington, Michael Davis, and Robert Roecklein. All three show in different ways how Descartes’ views on science, religion, and nature were thoroughly motivated by his resistance to organized religion. It is in this context that we must appreciate Descartes’ advocacy for radically mechanistic philosophy. He spoke openly in his *Discourse on the Method* of how mechanistic science could “make [us] like us like masters and possessors of nature,” and that it will benefit all human beings through technological and medical progress (Descartes & Kennington, 2009, p. 49). His metaphysical dualism then allows him to ostensibly preserve the immortality of the soul, saving face with the Church. Indeed, Descartes essentially admits in the final section of his *Discourse* that the Church’s persecution of Galileo has prevented him from publishing his scientific works. He chose, nevertheless, to publish the *Discourse*, hoping to show others how to rely on their own reason, and how to adopt a stance of mechanistic control over nature. Thus, a century after his death D’Alembert, a prominent French Enlightenment philosopher, called Descartes “the first of the conspirators,” and praised him as having courage to “rise against a despotic and arbitrary power and who, in preparing a resounding revolution, laid the foundation of a more just and happier government, which he himself was not able to see established” (Quoted in Melzer, 2014, p. 252).

Descartes’ *Meditations* contains a direct attack on teleological explanation (Descartes et al., 1971). In the sixth meditation, Descartes explains he has been using the term “nature” in two distinct senses: first, to mean efficiently caused, mechanistic behavior, and second, to mean teleological, end-driven action (Descartes et al., 1971). He concludes that teleology can ultimately give way to mechanistic explanation: “In this sense, ‘nature’ [as teleological] is a term depending on *my own way of thinking*,... on *my comparison* of a sick man, or an ill-made clock, to a conception of a healthy man and well-made clock; *it is something extrinsic to the object it is ascribed to*” (Descartes et al., 1971, p. 120, my emphasis). Causation or action, in

other words, is not intrinsic to human and animal bodies, but imposed from without by mechanistic causation. Intrinsic teleology is denied to nature; things, rather, have their ends imposed by the human mind. There are complexities with this interpretation, of course (Detlefsen, 2014, Chapter 8), as it is possible that Descartes reserved a place for teleology within human activity in other ways. Regardless, I think Descartes is largely hostile to teleological explanation in its major forms, especially as it undergirded religion.

Such a perspective allows us to read Descartes' *Discourse* as a sort of propaganda pamphlet, inviting others to join him in a project of mastering nature. Indeed, the final part of the *Discourse* speaks openly of intergenerational collaborative scientific projects (Descartes & Kennington, 2009, pp. 54–57). In this way, Descartes' *Discourse* is more like Marx's *Communist Manifesto* than it is Aristotle's *De Anima* (see Descartes & Kennington, 2009; Aristotle & Shiffman, 2011). Descartes and Marx hope to inspire political action. Aristotle's politics are perhaps more ambivalent (Aristotle & Shiffman, 2011; Melzer, 2014). Thus, Stanley Rosen (1980) and others (Roecklein, 2017; Kennington, 2004) argue that Descartes' advocacy for mechanism, and rejection of teleology, is intimately tied to a political program of undermining the authority of organized religion. The attack on teleology is thus a core feature of Descartes' philosophy, and it is inherently connected to his attempt to discredit the logic of organized religion.

Spinoza's *Ethics* also reveals significant hostility to teleological explanation. Spinoza's hostility to teleology is implicit in the outset of the book when Nature and God are said to be identical: both are the total system of bodies obeying mechanical laws (Spinoza et al., 1982). At the end of Book I, after completing his explication of God-Nature, Spinoza mounts a critique of teleology that is similar to Descartes': when we seem to perceive natural ends in the world, he claims, we are projecting, and not perceiving, our own fictions (Spinoza et al., 1982). Defining God in terms of efficient causation, Spinoza says in the Appendix to Book I, is meant to correct a variety of prejudices, teleology chief among them (Spinoza et al., 1982). "Now all the prejudices which I intend to mention here *turn on this one point*, the widespread belief among men that all things in Nature are like themselves in acting with an end in view" (Spinoza et al., 1982, p. 57, my emphasis). Goods and ends do not live in nature, Spinoza claims, but only in human minds.

The attack on teleology is rearticulated at the beginning of Book 4. Again, Spinoza takes up the question of value in nature, asserting "Nature does not act with an end in view; that the eternal and infinite being, whom we call God, or Nature, acts by *the same necessity whereby it exists*" (Spinoza et al., 1982, p. 153, my emphasis). This explicit attack on teleology can illuminate one of Spinoza's more opaque and oft repeated claims that: "The human mind does not perceive any external body as actually existing except through the ideas of affections of its own body" (Spinoza et al., 1982, p. 83, emphasis omitted). The mind, in other words, does not meet nature, but only itself and its own body. Thus, when we perceive purposes in nature, we perceive only ourselves and mistake it for the nature of things.

Spinoza's attack on teleology, moreover, is meant to strengthen the authority of human reason, and minimize that of religion. Stanley Rosen (1963), for example, argues that Spinoza's conception of God, nature, and teleology are meant to enable a constructive critical dialogue with religion. Spinoza's goal, Rosen (1963) says, is ultimately a reformulation of religion and government along philosophical lines. Rosen (1963) claims that Spinoza regarded religion as necessary for human life, but regarded the prevailing organized religion as unjust and preventing the growth of philosophy and science. Thus, like Descartes, Spinoza's attack on teleology needs to be understood as attempting to undermine the authority of organized religion.

I conclude my demonstration that Descartes and Spinoza were actively hostile to teleological explanation. I claim, moreover, that this attack on teleology is not simply

philosophical, but explicitly political. Both writers were highly controversial, regarded as radicals, and suspected of atheism by their contemporaries. They were in the business of eroding organized religion and envisioning governments founded upon human reason. The discrediting of teleology is thus connected to the attack on the authority of religion. The political logic of the attack on teleology is clear: If we regard nature as lacking intrinsic ends, then human reason is given license to *impose* rather than *discover* order. We are free to do what we please with things, as they have no intrinsic ends of their own (Schall, 1962; Merchant, 1989).

I am sympathetic to their project and regard it as an admirable one; religious war had ravaged Europe, and they hoped for better. But there have been unintended consequences. In particular, we are still grappling with the role of value and goodness in nature (Sherman & Deacon, 2007), still witnessing the destruction of the environment (Merchant, 1989). Much science and psychology still incline towards Spinoza's views: efficient causation is the only reality, and the attribution of teleology, an error. This bias must be corrected, I claim, if we are to make sense of the current dilemmas that vex psychology and its branches.

Teleology, Mechanism, and the Metaphysics and Politics of Psychology: Or on What Is Alive in the Skinner-Rogers Debate

Descartes and Spinoza, and perhaps even Darwin, may feel historically distant. Yet teleology is still a live issue for contemporary psychology. In this section, I will show that two of the most prominent American psychologists of the twentieth century, B.F. Skinner and Carl Rogers, were explicitly involved in the debate between mechanism and teleology. Their work on this problem, moreover, has direct roots in the early modern period.

B.F. Skinner, the radical twentieth-century behaviorist, is significant in that he both championed mechanistic thinking and rejected teleological explanation. Skinner, moreover, was a highly influential writer. Audrey Watters (2018) claims that despite dying in 1990, Skinner is “one of the most important theorists of the twenty-first century.” Skinner's radical behaviorism, in other words, continues to have implications that ripple out into contemporary psychology. Much of contemporary psychology and psychotherapy is behaviorally inclined (Gnaulti, 2018). The core procedure of behaviorism, since at least Watson's (1913) inaugural paper, has been to claim that all seemingly internally generated action can be reduced to externally generated “behavior.” The reduction of action to behavior, moreover, is asserted to be more “scientific” than the alternative, a claim often repeated by Skinner (1971). Behaviorism, in other words, is committed to the mechanistic explanation of the seemingly teleological. In this way, psychology can allegedly imitate the natural sciences and their foundation in mathematics and physics (O'Donnell, 1985).

Skinner, as far as I know, never grants the legitimacy of teleological explanation, and seems to presuppose that “science” is exhausted by its mechanistic and physicalist forms. Yet he seems ambivalent about the deeper philosophical questions, arguing that “The basic issue [of scientific psychology] is not the nature of the stuff of which the world is made or whether it is made of one stuff or two stuff but rather the dimensions of the things studied by psychology and the methods relevant to them” (Skinner, 1964, p. 79). At the same time, however, Skinner (1964) insisted that psychology adopt the physicalist methods of modern science, insisting that “Private and public events have the same kinds of *physical* dimensions” (p. 84, my emphasis). His ostensible ambivalence about mechanism is contradicted by his practical commitment to quantitative, physicalist methodology. In *Beyond Freedom*

and Dignity, for example, Skinner argues that science has revealed the illusory character of “autonomous man,” i.e., that seemingly teleological human action can be explained behaviorally. “Autonomous man,” Skinner (1971) thus writes, “serves to explain only the things we are not yet able to explain in other ways. His existence depends on our ignorance, and he naturally loses status as we come to know more about behavior” (p. 12). Skinner, therefore, is committed to the rejection of teleology and adheres strictly to mechanistic explanation. Like Descartes and Spinoza, Skinner (1971) regards the attribution of goals and ends as the projection of an illusion, bound to give way to “scientific” (i.e. mechanistic) explanation (Descartes et al., 1971; Descartes & Kennington, 2009; Spinoza et al., 1982).

Skinner’s attack on teleology, moreover, has direct connections to early modern philosophy. Skinner, in fact, was a devout reader of one of the most important early modern writers: Francis Bacon. Relevant here is Kennington’s argument that Bacon served as an important bridge between Machiavelli and Descartes (Kennington et al., 2004). According to the historian Laurence Smith (1992), Skinner’s autobiography reveals that he “immersed himself in the works of Francis Bacon while in the eighth grade, reading not only Bacon’s *Essays*, *New Organon*, and *Advancement of Learning* but also biographies of Bacon and books on his philosophy” (p. 217) This fascination extended into Skinner’s adult life, Smith (1992) reports: “It is with a tone of reverence that Skinner... told of picking up a book on Bacon later in his life, of its deeply calming and inspirational effect on him, and of being reminded how ‘thoroughly Baconian’ he is...” (p. 217). Indeed, Smith (1992) argues that many parts of Skinner’s utopian novel, *Walden Two*, “are patterned directly after Bacon’s *New Atlantis*, which was the first utopian work that Skinner read” (p. 217). Additionally, Skinner (1971) identifies Descartes as the first proto-behaviorist, further connecting him to the early modern attack on teleology (p. 14). Skinner’s connection to the early modern attack on teleology is thus explicit in his Baconian leanings and his suggestions about Descartes.

If Skinner was a notable champion of mechanistic explanation in twentieth-century psychology, Carl Rogers was one of its great critics, and a champion of the scientific legitimacy of teleology. In his published conversation with Skinner, for example, Rogers claimed that “human freedom exists alongside the complete determinism of modern [mechanistic] science as a paradox” (Rogers et al., 1989, p. 85). In other places, however, Rogers uses the word “nature” to imply that it has meanings otherwise than mechanical. Rogers spoke, for instance, of therapeutic success as consisting in part of individuals “valuing and trusting the deeper layers of their nature...” (Rogers et al., 1989, p. 83). These two references—to “complete determinism” and “deeper layers of their nature”—correspond precisely to Descartes’ usage, quoted above. In the first case, “complete determinism” refers to material nature, explicable in terms of predictable mechanistic or efficient causes, thus making human freedom seem like a “paradox.” In the latter quotation, alternatively, Rogers means “nature” teleologically: as an inherent, internal impulse to growth and healing.

Rogers understood that humanistic psychology should be impossible based on the behaviorist account of human nature, which presupposes a mechanistic account of nature in general. But humanistic psychology does seem possible, and therefore demands nature be rethought to include purpose, healing, and value. Humanistic psychology, that is to say, requires an account of organisms in which they possess natural *intrinsic* teleology; i.e., they pursue their own goods by nature. Thus, Rogers developed an account of the universe, a *cosmic* teleology, that explains the origin of beings with intrinsic teleology. Intrinsic teleology is what Rogers calls the actualizing tendency. Cosmic teleology is what Rogers calls the formative tendency. In this way, the formative tendency (extrinsic cosmic teleology) is supposed to be a foundation for the actualizing tendency (intrinsic teleology of organisms).

Thus, Rogers explicitly theorized about teleology, the formative tendency, in an attempt to ground humanistic psychology in a theory of cosmic development. "I hypothesize that there is a formative directional tendency in the universe," Rogers (1995) thus wrote of the formative tendency, "which can be traced and observed in stellar space, in crystals, in microorganisms, in more complex organic life, and in human beings. This is an evolutionary tendency toward greater order, greater complexity, greater interrelatedness..." (p. 133). Rogers saw that a full account of humanistic psychology required an account of natural teleology. The rationale for his critique of mechanistic science are indicated in his conversation with Skinner (Rogers et al., 1989), and are made explicit in his writings on the formative tendency (Rogers, 1978, 1995).

Like Skinner, Rogers' work on the formative tendency has direct links to the early modern period and thereby the political attack on teleology. In *A Way of Being* Rogers (1995) explicates the intellectual lineage of his teleological hypothesis. In particular, Rogers (1995) names the "chemist-philosopher Ilya Prigogine" as offering an alternative conception of nature that is "probabilistic, rather than solely deterministic" (p. 131). Rogers (1995) notes that Prigogine understood his work to resemble the philosophers A.N. Whitehead and Henri Bergson (p. 132). Bergson (2007), one of the great writers on time, evolution, and cosmology of the nineteenth and early twentieth century, was responding largely to Kant. Kant, moreover, was responding directly to Descartes, Spinoza, and the rest of the early moderns who had attacked teleology a century prior (Bloom, 1990). Rogers' (1995) use of Prigogine, then, demonstrates a direct lineage that connects the notion of the formative tendency to the redefinition of nature that took place in the early modern period. From Descartes to Kant, Kant to Bergson, Bergson to Prigogine, and Prigogine to Rogers, we are in the grips of the same dilemma regarding natural teleology.

I would briefly like to note that these different approaches towards nature color the political orientations of Skinner and Rogers. Skinner was primarily interested in the way behaviorism could be used to create "deterministic environments" that would shape happiness. He spoke openly and often of designing cultures, and I believe his work has intonations of transhumanism (Skinner, 1971). Skinner's (1960) politics, moreover, have an explicitly theological character in that he speaks of "god-like" control. Rogers (1977, 1995), on the other hand, was highly concerned with mitigating the politics of domination that he perceived as endemic to the behaviorist orientation. Humanistic psychology, Rogers (1977) claimed, effectively allowed the client to be the expert, inverting the normal power relations of the clinical encounter. This is a vital point: fully grappling with the meaning of teleology means grappling with the complex relation between mechanism, teleology, and the mastery of nature as a staple of modern politics (see Kennington et al., 2004).

In the debate between two of the great psychologists of the twentieth century, we see that the tension between mechanism and teleology is alive and well in contemporary psychology. I agree with Rogers that if we are going to be consistent about the existence of humanistic psychology (or adequately account for human experience), we need some account of natural teleology. In looking to understand the significance of teleology, we would do well to remember the Skinner-Rogers debate.

Indeed, there is a growing literature on developmental systems and self-organization that corroborates Rogers' arguments about the formative tendency. Evan Thomspson (2010), for example, has argued that life is constituted by self-contained, self-producing organisms that establish autonomous identity and normative relationships with their environment. Life, in other words, is naturally teleological: directed towards the maintenance of healthy and stable relationships with its environment, and driven by a sense of value. Terrence Deacon (2012) has similarly developed a complex account of how teleological phenomena could emerge from mechanistic processes (see also Olsen, 2020). Meanwhile, the philosopher

Thomas Nagel (2012) has argued for the necessity of teleology at a cosmic level, casting doubt upon the idea that inert matter spontaneously or accidentally generated life. Nagel (2012) hypothesizes that there may be teleological laws governing the self-organizing processes of matter, and that these teleological laws may ultimately incline towards the generation of life. Nagel (2012) is skeptical of our ability to grasp such teleological laws, but believes they are necessary to explain the obvious existence of beings driven by an *intrinsic* relationship with value, or intrinsic teleology. We see, again, that the existence of intrinsic teleology in organisms is more apparent than cosmic teleology. At the same time, however, the intrinsic teleology of organisms seems to imply questions about cosmic process, and thereby cosmic teleology. Similarly, Olsen (2020) turns to the work of Niels Engelsted, Terrence Deacon, Spyridon Koutroufinis, and others, to show that there is significant contemporary work being done on teleology. Indeed, from philosophy to physics and psychology, teleology is a question of great significance.

Relevance for Contemporary and Ongoing Research

The history I have sketched here—from the early modern attack on teleology to the Skinner-Rogers debate and beyond—has relevance for ongoing psychological and philosophical research. Teleology figures significantly in the psychology of religion (Roberts et al., 2021), developmental psychology (Juvrud & Gredebäck, 2020a, 2020b; Carruthers, 2020), and education studies (Stern et al., 2018).

Intrinsic and Extrinsic Teleology Revisited

A crucial upshot of this paper is the necessity of distinguishing intrinsic and extrinsic forms of teleology: the former referring to the ends of individual organisms, the latter referring to the ends of historical, cosmic, or divine processes (Hassing, 1997; Thompson, 2010; Olsen, 2020). The theological-political motivations of the early modern attack on teleology, and thus our intellectual legacy, often conflate these two conceptions of teleology. Put simply, as writers like Descartes and Spinoza attacked the extrinsic teleology of Christianity, they also discredited any more modest proposals of intrinsic teleology (Khroutski, 2010).

Awareness of the theological-political history of the rejection of teleology should help us be more sensitive in distinguishing intrinsic and extrinsic teleology, with the former being more essential for psychological research. Recent work on Lev Vygotsky, for example, claims that appreciating his work requires distinguishing cosmic and historical senses of (extrinsic) teleology from more modest, ontogenetic (intrinsic) views of teleology (Doria & Simao, 2018, p. 774).

The Psychology of Religion and Extrinsic Teleology

Other researchers, however, are less careful about distinguishing intrinsic and extrinsic teleology. Roberts et al. (2021), for example, in researching the psychology of religion, concern themselves primarily with extrinsic teleological explanation, focusing on artifacts (which have extrinsic teleology), and teleological explanations of ecosystems (i.e.,

“Earthworms tunnel underground in order to aerate the soil”) (p. 1723). Ramsay et al. (2018) similarly concern themselves with the relationship between religious orientation and teleological explanation, observing how individuals explain their daily experiences in relation to larger narratives of divine or cosmic purpose (i.e., extrinsic teleology). Stern et al. (2018) also occupy themselves with the relation between religion and teleology. In researching teleological misconceptions in undergraduate biology students, Stern et al. (2018) distinguish “design teleology” that belongs to artifacts (and is misapplied to nature), and “selective teleology,” which explains how the parts of animals (unintentionally) develop in functional relationship to the environment. Stern et al.’s (2018) research, however, does not systematically distinguish intrinsic and extrinsic teleology, and thus blurs many questions about cosmic/divine purposes, the purposes of organisms, and the purposes of artifacts. It is worth clarifying this distinction between intrinsic and extrinsic teleology, as it will have implications for future research. It would be reasonable, for example, to argue that a worm has its own purposes, while not serving any larger divine, cosmic, or ecological purpose. Similarly, distinguishing intrinsic and extrinsic teleology would clarify our understanding of artifacts, which have their purposes extrinsically imbued to them by agents with intrinsic purposes, like humans.

Child Development and Intrinsic Teleology

Psychological and philosophical research on child development, by contrast, tends to focus on intrinsic teleology. Researchers concerned with child development are able to inquire into the ways infants and children learn to detect purposes in people and objects around them. Juvrud and Gredebäck (2020b), for example, concern themselves with how infants learn to perceive teleologically, emphasizing how a “teleological stance” emerges by triangulating goals, constraints, and actions. Although Király and Oláh (2020) take issue with Juvrud and Gredebäck’s (2020a, 2020b) specific formulations around the acquisition of the teleological stance, both sets of researchers are concerned with intrinsic teleology, justifiably (though not explicitly) excluding questions of extrinsic teleology. Carruthers (2020) similarly takes up, from a philosophical angle, the development of intrinsic teleological perception in infants. Carruthers (2020) offers evidence that children quickly develop the ability to perceive and represent the intentional (i.e., teleological) features of human activity. Some philosophical research, however, could benefit from more carefully distinguishing extrinsic and intrinsic teleology. Korman and Khemlani (2019), for example, argue that the legitimate use of teleological language applies to *both* biological parts and artifacts. While there is legitimacy to this conflation, it is arguably inappropriate to say that a hammer and an eye “have purposes” in the same sense. A hammer is an artifact created by an intelligent being and thus is imbued with *extrinsic* teleology, whereas an eye is a functional part of an organism that possesses an *intrinsic* teleology of living its life.

Teleology, Psychology, and the Experimental Paradigm

The most radical upshot of focusing on intrinsic teleology is that it raises questions about the experimental paradigm in psychology, and problematizes the mechanistic ideal of precision that psychological research often strives for. Intrinsic teleology, as evinced by Rogers’ therapeutic orientation, is most salient in clinical and practical, as

opposed to experimental, settings. In recent work on Jungian analysis, for example, Rees and Whitney (2020) discuss the teleological richness of dreams and images, claiming “they [dreams and images] provide self-portraits of the psychic life process and can be utilized for their objective insights into the psyche’s *teleological directedness*” (p. 23, my emphasis). Similarly, Woody (2018) argues that our ethical lives demonstrate the teleology of our desires. Woody’s (2018) work on desire thus leads to the question of “how to assess and to discern the desires that *move us forward* in this process of perfection as opposed to those that isolate and stifle” (p. 117, my emphasis). Thus, intrinsic teleology more readily concerns concrete therapeutic and practical questions of individual lives.

The clinical and practical significance of teleological thinking puts it in tension with the experimental frame of much contemporary psychological research. Skinner, unlike Rogers, was largely an experimental thinker who had far less to say about the clinical implications of behavioral (mechanistic) explanation. More recently, Gaj (2021) has argued that psychology is divided between experimental-statistical approaches (like Skinner) and teleological explanation of individual activity (like Rogers). This divide is well captured in the distinction between mechanistic *causes* and teleological *reasons*. Gaj (2021) argues that a genuinely teleological psychology may have to reevaluate the standards of precision implicit in experimentation: “Indeed, dependence on experimental methods... constrains the scientist to zoom out from individual and subjective properties to focus on aggregate data and the identification of general properties” (p. 440). Genuinely teleological psychology, by contrast, would mean “endorsing frameworks that focus on the personal domain of reasons driving self-determined behaviors, rather than on the domain of impersonal cause,” and perhaps “reframing experiments as case studies” (Gaj, 2021, p. 441).

Gaj’s (2021) insights about the limits of experimental psychology strike me as crucial. For, unless we are to be seduced by the sometimes misleading precision of psychological measurement, there must be some reckoning with the actual messiness of human life. Teleology, in its genuine, intrinsic sense, is indeed a messy domain of individuals striving after what they perceive to be good. Indeed, as Aristotle argued, every science “should [strive to] attain the clarity that accords with the subject matter. For one should not seek out precision in *all* arguments alike...” (Aristotle et al., 2012, p. 3). It is my conviction that scientific psychology cannot, without a price, conform to the precision appropriate to physics or chemistry. Indeed, the philosopher Spyridon Koutroufinis (2020) has similarly argued that experimental and theoretical biology consistently misrepresents the nature of living organisms by rendering life in misleading mechanistic and mathematical terms (pp. 260–263). It seems both biology and psychology are beholden to standards of precision that distort their actual subject matter.

It is worth noting, moreover, that the advent of the experimental paradigm in early modernity was motivated in part by a desire for control rather than a desire to simply understand (Kennington et al., 2004; Descartes & Kennington, 2009; Smith, 1992). It is not surprising, then, that much of psychology continues to be useful for political control; spuriously individualizing distress, and offering biomedical rather than social-political solutions (Cabanas & Illouz, 2021; Fisher, 2010; Whitaker, 2002). The political meaning of psychology is an ongoing issue, one that can be observed in the persistent tension between mechanistic and teleological explanation.

Conclusion: Teleology and the Meaning of Scientific Psychology

I have been arguing that psychology needs to reckon with its aversion to teleology, and its inclination towards mechanistic explanation. I am of the mind that desire, purpose, goals, and value are genuine sources of causation, and not mere illusions of mechanistic process. I have followed Olsen's (2020) lead and taken a largely negative approach. A positive account of teleology, a genuine hearing of the idea, is not possible unless we understand why we are so averse to it, and why we so heavily favor mechanistic explanation. To this end, I have offered an analysis of Descartes' and Spinoza's political agitators, aiming to weaken the influence of organized religion. Teleology comes under sustained assault in the early modern period in precisely this context of a philosophical struggle against the political powers of organized religion. I then argued that the more recent Skinner-Rogers debate is a fruitful source of reflection on the tension between mechanism and teleology in contemporary psychology. Lastly, I tried to show that contemporary research could benefit from understanding this legacy.

The world as it appears to us is not a world of blind mechanistic causation. It is a world of love and desire, goals and hopes, fears, and aspirations. I do not know how else to envision a genuinely scientific account of life, a genuinely scientific psychology, apart from a reevaluation of natural teleology. Without teleology, we have essentially decided that we cannot or will not *observe* or *witness* ourselves and the other living beings we want to understand. We have convinced ourselves that we can only impose shape, categorize, and make them useful. This is not science, in its proper sense. This is a single analytical and metaphysical paradigm that is now euphemistically referred to as "science." Science, in its proper sense, is far more expansive than our modern, physicalist, data-driven sciences.

This, perhaps, is the greatest task: to recover an understanding of science in which it is identical with sustained rational inquiry into a definite subject matter. On this view, a science must adopt the level of precision that is appropriate to its subject matter. There are, of course, aspects of reality that are best dealt with through mathematical and statistical precision. But we should not lament the fact that human things resist such precision. We must stop insisting that "science" means "quantifiable mechanistic analysis." For what Rogers, and Aristotle, offer is the beginnings of a genuinely scientific human psychology. The displacement of science, in the broadest sense, for "science" as mechanistic mastery, is the greatest consequence of the attack on teleology.

The revitalization of teleology, as I and Olsen (2020) have argued, will have to proceed through an analysis of our hostility to teleology. Positive statements of teleology are more than possible (Aristotle et al., 2011; Jonas, 1982; Nagel, 2012; Thompson, 2010; Sherman & Deacon, 2007; Deacon, 2012), and I, too, will produce one in future papers.

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Consent to Participate Not applicable.

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