LOOKING TO CHARLES TAYLOR AND JOSEPH ROUSE FOR BEST PRACTICES IN SCIENCE AND RELIGION

by Matthew Walhout

Abstract. People discussing science and religion usually frame their conversations in terms of essentialist assumptions about science, assumptions requiring the existence (but not the specification) of criteria according to which science can be distinguished from other forms of inquiry. However, criteria functioning at a level of generality appropriate to such discussions may not exist at all. Essentialist assumptions may be avoided if science is understood within a broader context of human practices. In a philosophy of practices, to label a practice as "scientific" is to make a practically motivated provision for a way of speaking. Charles Taylor and Joseph Rouse have produced complementary philosophies of practice that promote this kind of understanding. In this essay I review the work of Taylor and Rouse, identify apparent residues of essentialism that each seems to harbor, and offer a resolution to some of their disagreements. I also criticize a form of essentialism commonly employed in Christian circles and outline an anti-essentialist view of science that may be helpful in science-and-religion discussions.

Keywords: aims of science; Christian philosophy; critical realism; essentialism; hermeneutics; objectivity; philosophy of practice; philosophy of science; Joseph Rouse; science and religion; scientific practices; Charles Taylor

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Mainstream science-and-religion discussions today often rest on the critical-realist assumption that objective theoretical descriptions can and should map out the fundamental, mind-independent elements of reality and the relationships between them. While it is assumed that human inquiry produces intelligible representations of these independently existing objects and relationships, the representations are understood to be approximate

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and subject to change. When conversations are framed in discipline-specific terms, such that concepts and types of explanations are regarded as belonging to either science or theology, two levels of realism are operating. One is the usual object realism specific to each form of inquiry—the kind of realism one may hold with respect to the particles of modern physics or the divine will of Christian theology. At the other level, specific forms or domains of inquiry are treated as objects or things with essences. The essences are taken to determine the appropriate ways of speaking about the different domains of inquiry so that conceptual distinctions such as that between scientific and religious can be consistently maintained.

In the context of a discussion understood to be cross-disciplinary, a fully developed articulation of critical realism should specify what it means to be critical at both the object-of-inquiry level and the domain-of-inquiry level. However, such questions typically are left open in science-and-religion dialogue. On neither level has much been said about what would make it needful and possible to improve the approximations contained in our conceptual maps of the world.

In this essay I use the term *essentialism* to refer to domain realism with respect to science or to any view in which scientists, when acting and speaking as scientists, are considered to be doing something essentially different from what nonscientists ever do. An essentialist philosophy of science, if not understood as a subspecies of science itself, would have the task of understanding the essential features of scientific inquiry in nonscientific terms. Such a philosophy may be hard put for an argument against either of the following claims: (1) that if science indeed has essential features, those features can be understood only in scientific terms, and thus there is no understanding of science to be had by essentialist philosophy; (2) that essentialism is a mere philosophical postulate and that scientific practices do not rely on it in any fundamental way. I endorse such claims and advocate in this essay for a philosophical alternative to essentialism.

In challenging realism at the domain-of-inquiry level, I want to maintain focus on the important question of what it means to be critical at that level. The shape and direction of science-and-theology discussions depend on how this question is (or is not) addressed. Thus, the first of my constructive aims is to outline a nonessentialist philosophical framework that can help to make sense of the tentative mapping effort of critical realists by accounting for the normative standards to which they hold themselves. The second is to open a line of science-and-theology discussion in the idiom of this new framework so as to focus critical attention on three conflicting versions of essentialism that dictate different ways of understanding science in its relationship to religion. Note that I aim not to undercut the discussions that are ongoing but only to sharpen the understanding of critical realism to which they often tacitly appeal.

The framework I have in mind is built from the "practice philosophies" of Charles Taylor and Joseph Rouse, who offer similar criticisms of traditional inquiry-as-mapping conceptions but have different religious motivations. When Taylor was awarded the 2007 Templeton Prize, science-and-theology scholars were alerted to a new set of critical interests. In much of his work, Taylor uncovers and analyzes the kinds of historical and social understanding that lurk only in the background for most previous Templeton awardees. Over the years he has sustained a particular focus on political philosophy in relation to historic forms of Christianity, one of which (Roman Catholicism) defines his basic intellectual commitments. By contrast, Rouse focuses more directly on natural science and aligns himself with the secular philosophical traditions of pragmatism and naturalism. Yet he bases his philosophical analysis on a conception of human practices that Taylor originally helped to develop. The remarkably parallel philosophical projects of Taylor and Rouse are my initial focus. I argue that the tension remaining between the two is sustained by their residual essentialist commitments and that these may be resolved in terms of a particular conception of how religious and scientific practices are related to each other. The overall discussion here thus can be read as an initial exploration of what can be learned when the science-and-theology dialogue is translated into the terms of philosophies of human practices.

Understanding Practices: Taylor and Rouse on the Role of Interpretation in Science

It is important to understand the notion of practices as a broadly applicable analytic tool that exposes the limitations of traditional ideas about science and provides an alternative characterization. A philosophy of practices begins with the recognition that human interactions in the world take place under both social and material conditions that must be interpreted in certain ways if the interactions are to make sense to people. Taylor and Rouse use comparable organizing principles to define practices in terms of this sense-making requirement: Interactions constitute a practice if they involve intentional human actions and if the actors share an underlying sense that their aggregate action is somehow important. History and language play key roles in understanding what is going on in a practice because it is only through inherited meanings, communicated between people over time, that interpretations can be understood, accepted, challenged, or modified. Thus, philosophies that employ a practice analytic often draw from philosophers who have examined traditional assumptions about temporality and language, such as Martin Heidegger and Ludwig Wittgenstein.

I do not undertake an in-depth examination of these philosophical sources here. It will be sufficient first to have a look at the way Taylor has

brought the idea of interpretive practices to bear on theories of social science and political philosophy and then to discuss Rouse's extensions and refinements of that idea in the philosophy-of-science context.

Throughout his career, Taylor has pointed repeatedly to the circumscription of our modern vision by a frame of mind shaped as much by social as by biological evolution. In an important essay titled "Overcoming Epistemology" (Taylor 1995, 1–19) he addresses the conception of knowledge that is typical today: "If I had to sum up this understanding in a single formula, it would be that knowledge is to be seen as correct representation of an independent reality. In its original form, it saw knowledge as the inner depiction of an outer reality." The essay reviews three conceptions of "the self" that are intimately connected to this notion of representational knowledge. The individual is (1) disengaged from the world that is known, (2) a free and rational agent in the world, and (3) the locus of individual purpose, which is the basis for explaining and constituting societies. Expanded treatments of these same themes can be found in Taylor's signature monographs, *Sources of the Self* (1989) and *A Secular Age* (2007). An important claim that recurs throughout these works is that modern intellectual history cannot be understood as a "story of subtraction" in which nonessential, ultimately delusional, religious elements of human understanding are stripped away as science takes its rightful foothold. Taylor contends that religious understanding has given way to secular modes of thought through a progression of social and political changes that are not chiefly the result of developments in the natural sciences. The implication is that history is conditioned more by human self-conception than by scientific knowledge of the external, natural world.

It may be helpful here to consider the context in which Taylor originally introduced this sort of criticism. His 1971 paper, "Interpretation and the Sciences of Man," took aim at the then-growing trend in political science and other social sciences to equate regular patterns of human behavior (in voting, for instance) with intentional actions motivated by specific desires. The empirical methods of the natural sciences were being transferred into a context of human science, and Taylor set out to rein in the logic of inference that this sort of program sought to employ. His argument called into question the very categories of theoretical analysis by showing that these categories themselves were the products of social agreements and practices. Social science, he claimed, was not rooted in "natural" structures of an external reality but rather relied on the intrinsically social, "normative" structures of human relations and shared understandings. Taylor's argument suggested that political theory could not be satisfactorily based on political science. Politics and governance, which had witnessed new pressures in the days of the Vietnam war, political assassinations, student protests, and hippie countercultures, would not have recourse to any kind of

irrefutable empirical support that can be detached from contestable human interpretations. This paper is now a classic in political theory, and many political theorists take its argument as a fundamental given of methodological limitations.

Of course, hermeneutics, social constructivism, and radical subjectivity were fresh in the air when Taylor published his critique; these were the birthdays of what we now call post-positivism, post-structuralism, and post-modernism. His article was an influential exemplar of the important work being done in social and political theory. However, it also has an exemplary place in a tradition that holds natural science to be above the hermeneutical fray. In making his point about the problem of interpretation in the human sciences, Taylor drew a comparison with the natural sciences, suggesting that these had a much more straightforward handle on reality. This conclusion was rooted in the notion that the natural sciences have access to the logical-empirical method of reliably grasping reality, bringing to bear the forces of two viselike jaws—mathematics and the laws of logic from one side, and the brute data of observation from the other.

Such notions are central to the first form of essentialism that I want to address: the view that there are two species of science, natural and human, and that the essence of natural science is its method of representing real objects and mapping their relationships—a method yielding a picture of the world that is independent of human interests, judgments, and interpretations. Over the years, Taylor and a few others have defended this sort of essentialism against criticisms of philosophers advancing a "hermeneutic philosophy" of natural science.[1] Among those who contributed to the development of the latter alternative were a number of trained natural and mathematical scientists who found poor alignment between their own experience of science and the logical-empirical characterization.[2] Of these, Thomas Kuhn stands out as the most widely recognizable. His *Structure of Scientific Revolutions* (1962) is an important touchstone for anyone wishing to trace the debate over the hermeneutical distinctions between the human and natural sciences.

For my purposes, much of this debate can be distilled into questions about the parallels between Taylor's 1971 paper and Kuhn's famous book. In retrospect, the hermeneutics debate may be seen as a disagreement over which of these two great works offered the more general account of human inquiry. Taylor's paper came in the wake of Kuhn's book and might be read as refracting some of Kuhn's insight and bringing it into focus in the realm of social science, although it was not straightforwardly intended in this way. Those wanting a sharp distinction between human and natural science could argue that Taylor had added something new to Kuhn's account, generalizing it with hermeneutical considerations that come to bear specifically in the human sciences. An opponent of this view could claim that Kuhn implicitly included such considerations and that, however useful

Taylor's contribution was, it merely highlighted, clarified, and strengthened a key element of Kuhn's theory. On this latter view, to take Taylor's as the more general account would be to risk missing other important features in Kuhn's *Structure* and therefore to risk missing its overall point: that one cannot understand natural science in terms of paradigms without paradigms being shot through with the collective interpretations of practicing scientists. Such a reading gives Kuhn credit for exposing errors in the traditional conceptions of natural science as a domain of apolitical inquiry, of scientists as disinterested inquirers, of scientific objects as uninterpreted things, and of disembodied scientific laws as the basis for things being what they are and doing what they do.

Joseph Rouse understands Kuhn to have had this kind of critique in mind but to have struggled in its articulation.[3] His way of reading Kuhn and his translation of the argument in Taylor's 1971 article have helped to establish a philosophy of scientific practices wherein even objective descriptions of the natural world rest upon socially normative modes of articulating human interest and intention. Rouse aims to persuade the essentialists in the hermeneutics-of-science debate that Taylor's "Interpretation" critique was more general than it was originally intended to be. He uses Taylor's work to register criticisms within philosophy of natural science, philosophy of language, sociology of science, and natural science itself. All of this is part of Rouse's larger, positive project, in which the analytic of practices serves as a connective tissue unifying and strengthening these various areas of scholarship, incorporating them into a better articulation of what the natural sciences are and are about.

Rouse argues that practices can be labeled loosely as being of certain types. There may be good reason to speak of religious, cultural, philosophical, or scientific practices, even though there is no specifiable criterion for establishing clear boundaries between them. Furthermore, Rouse insists that practice typologies must allow for different practices to overlap significantly, and possibly even to be nested one within another, by virtue of their common interest in a particular set of activities.[4] For instance, one can understand the nineteenth-century Englishman James Prescott Joule as being involved in scientific practices aimed at understanding energy, in business practices aimed at quality control in breweries, and in religious practices aimed at serving and understanding God. The scientific and business practices can be said to overlap in their concern for precise thermometry. One might further say that this pair of practices was nested within Joule's religious practice because both served to articulate a Christian frame of mind. The important point here is that typological description of this sort is relevant to those interested in telling Joule's story. This example shows how a conception of two or three overlapping practices can serve yet another practice, in this case the practice of historical storytelling.

It may help also to have a contemporary example of roughly defined practices with overlapping domains. Consider the search for evidence of water on Mars, which is part of a scientific practice inasmuch as the scientists involved articulate scientific interests in the search. It is also a part of a broader cultural practice that subjects various historical understandings of the significance of life on Earth to questions about the possibility of life on other planets. Here the narrower and broader practices overlap significantly by virtue of the fact that both find value in the same set of human interactions in the world, namely planetary probe missions and biochemical modeling of life-supporting environments. These interactions are structured by both material and social constraints; moreover, the two forms of constraint are largely inextricable from each other. The question of whether to equip a space probe with a mass spectrometer is clearly significant in a mission-strategy meeting, and this significance is rooted in an inherited interpretation of the physical interactions considered to be relevant in such a device. Thus, a shared practical understanding of material interactions is, by design, part of the equipment that ultimately is deemed relevant to the concerns of both scientific and cultural practices.

Seen in this way, scientific practices are no exception to Taylor's interpretation rule. They have the historical and social character of intentionality that no methodological distillation can remove. It is not merely the case that we must interpret objects that we have in our scientific grasp; more important, the very means of grasping come to us through interpretation. We must interpret the world conceptually in order to render it scientifically objectifiable. Any conceptual framework, even the vise grip of logic and observation, must be forged in such a process of interpretation.

Some may see this as a radical and potentially dangerous proposal because it threatens to undermine the cultural status of natural science and to deflate modern objectivist ideals. Yet deflation may offer something positive by way of its openness to improving and furthering an understanding of the relationships between practices of different types. Rouse acknowledges freely that his own project may take him beyond the pragmatic and naturalist assumptions of his philosophical tradition. This open-ended ontological commitment may make his work inviting to scholars in science-and-theology circles. There need be no essence of science if practices are only provisionally identified as scientific. Scientific practices can be seen as extensions and refinements of more common human practices. Justification for science may come not by way of philosophers' epistemological arguments but by way of a broader context of human stakes and concerns. Here we may see an invitation to understand scientific practices in the context of religious practices, which seem to engage a broader category of inherited and shared concern.

Two Correctives Offered by a Theory of Scientific Practices: Rouse's Reading of Kuhn

One may still be tempted to identify the essential job of science as putting theory through the mill of experiment, so as to put the cleanest possible edges on our concepts and understanding. By establishing our theoretical knowledge of worldly objects, scientific practices may meet the epistemological concerns of other practices. This would be an attempt to sharpen Taylor's essentialist conception of the natural sciences. But it still misses some important features of science that appear naturally in Rouse's account of normative practices. It will be helpful to focus on Rouse's discussions of Kuhn in order to clarify two facets of scientific practices that typically are left out when science is conceived as having mainly theoretical aims.

First, theoretical knowledge is not just a goal, nor is it the only goal, of scientific practices. And experiments are not just a means to that end. The practical interplay between theory and experiment is caricatured if the aim of science is taken to be merely theoretical representations of reality. Rouse underscores this point by distinguishing "theoretical hermeneutics" from the "practical hermeneutics" that makes fuller sense of actual scientific work:

> . . . the differences between theoretical and practical hermeneutics do not just represent alternative ways of picking up the same stick. . . . Theoretical hermeneutics takes interpretation to be a concern for what is the case, reflected in the attempt to represent things accurately. Practical hermeneutics takes interpretation to be a concern for what matters, reflected in the attempt to live meaningful lives. (Rouse 1987, 62–64)

Scientific practices both depend on and generate the array of concepts and terms that scientists use to understand and to speak about their interactions with the material world (and with each other). All terms in a scientific discussion are preinterpreted so as to have meaning in scientific practices, and it is only in the practice context that the terms and interpretations can be understood and modified. This linguistic dynamic, which determines what is right to say in a given context, underlies the normative aspect of scientific (and most other) practices. Rouse makes use of Kuhn's idea of a scientific lexicon to describe this situation:

> "Lexicons" in Kuhn's sense are structured vocabularies acquired and *used* in specific settings. They are thus not *merely* verbal, but are rather an inextricable configuration of words and things; mastering the lexicon means acquiring the skill to recognize its appropriate application in various settings, and to encounter the world in those terms. The intelligibility of the world through the use of a lexicon is less a presupposition than a practical commitment. . . . Of course, one can share a lexicon, *using* words in commensurable ways, without having *acquired* it in quite the same way, and without agreeing about what to say in its terms. . . . Kuhn thus continues to block the inference from shared practices to shared beliefs or experiences. (Rouse 1998, 46–47)

This way of speaking undercuts the traditional emphasis on abstract belief (or knowledge as justified true belief) and gives priority to meaningful living, which requires one to make only provisional commitments in order to cope in a social-material context. It avoids essentialism by demanding no distinction between what science is and what science is for. Mapping the world may be seen as for coping—or as coping itself.

The second key element in Rouse's practices is an intrinsic temporality and future-orientation. There is never a time when all practitioners are in agreement over the stakes and aims of their practice. These are issues to be worked out, and as such they are what matters. This feature of science is often ignored when the history of science is told as a story of stepwise convergence toward true theories. In telling such stories, the historian falls prey to anachronism, allowing her own terms to define the limiting endpoint of truth. The stories she tells are not the scientists' stories, because the latter would involve a conception of truth that would have meaning in the scientists' own terms. Such a truth conception is always at stake in scientific practices, though there is no stage of history in which that notion receives a final articulation or even a consensus. Rouse takes a step toward an alternative historiography that emphasizes scientific practices in order to understand scientific lexicons of the past. Discussing Kuhn's similar move, he says:

> *Translation* is not merely a matter of rendering words, but of disclosing the way the world hangs together in the use of an interconnected set of concepts. For that, one must capture the ways in which things correctly exemplified concepts, and recognize the ways in which those concepts were used in ongoing practices.
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> Kuhn's reason for thinking that translatability fails is thus not that *truth* is relative to a conceptual scheme or a "world" of research practice, for only truth-*values* depend upon conceptual practices. Rather, the upshot of his arguments is that many commonplace utterances from past scientific practices do not have truth-values in our modern lexicon. (Rouse 1998, 49)

While generally appropriating most of Kuhn's practical hermeneutics, Rouse goes on in this same paper to criticize Kuhn for not meeting his own standards of historiography.

> Kuhn's insistence that *only* a quasi-ethnographic reconstruction of untranslatable lexicons can count as history may thus mark a residual commitment to a *semantic* realism about the discursive practices of past science. But Kuhn himself often reminded us that as philosophers we can dispense with the rhetoric of correspondence to already-determinate facts without thereby doing away with the sciences' accountability to how the world is manifest within their ongoing practices. Historical interpretation is in this respect not significantly different. For if the lexicons of past science are not already-determinate structures, applicable only to a limited domain of things correctly characterizable in their terms, the same is true of the language we now deploy in making sense of past science. (1998, 50)

This sets the stage for me to register a comparable criticism of Rouse. Although I happily accept much of what he says about science and its

practices, I want to point out how a methodological commitment in his project—the commitment to philosophical naturalism—resembles the residual historical realism for which he faults Kuhn. I also offer a way around my criticism in the form of historical sensitivity to religious meaning, and this then motivates further conversation with Taylor, whose practice-philosophy exhibits such sensitivity.

Questioning the Naturalist Commitment

I suggest that if Rouse's own philosophical practices are to have the same reflexivity that he recommends for Kuhn's historiography, it may be useful for him to understand his naturalist commitment as emerging (at least historically) from broader, religious practices. By way of this particular suggestion I aim to interject a general question into science-and-religion discussions: What does it mean *practically* to speak of distinct scientific, naturalistic, and religious practice-types?

In the introduction to *How Scientific Practices Matter* Rouse embraces "the Nietzschean philosophical commitment not to accept or rely upon what is mysterious or supernatural" as an essential part of his naturalism (2002, 4). I take this to imply the prohibition of concepts and explanations that are commonly called *religious*. Now, the fact that the prohibition is stated at all is an admission that the mysterious (or religious) has some meaning; it is meaningful enough to be identified with what is unwanted and inadmissible. Of course, the meaning is minimal and merely proscriptive. Nevertheless, *religious* is a term that labels a kind of explanation or experience that is understood to be unacceptable because it obscures articulation and understanding in a certain way. The naturalist project is thus defined in terms of its prohibition of the supernatural.

In terms introduced above, practitioners of naturalism commit themselves to maintaining and developing lexicons containing no religious words or concepts. More precisely, in the practice of articulating naturalist understanding, no religious words are required or permitted to make sense. However, just as the playing of a game is implicitly structured by the general understanding of what is explicitly against the rules, naturalist philosophy relies on a sense of how religious notions would break the rules of its scientific lexicon. Thus, the excluded concepts are meaningful concepts—meaningful both to the rule-set of naturalism and, in a more positively articulated sense, to nonnaturalist practices. So, while providing a necessary basis for speaking within the practice of philosophical naturalism, this lexicon is in some sense incomplete because there are other meaningful practices, in particular religious ones, that cannot be fully articulated in its idiom. Yet these practices may be broad enough to encompass scientific ones. Indeed, there are many religious practitioners who are also scientists (in the mold of Joule, perhaps) who can articulate this idea meaningfully.

Let me incorporate this point into a model that links practices to the kind of lexicon that Rouse has addressed in his discussion of Kuhn. I mean to do this while respecting the demand that "scientists in practice do not employ a lexicon with a definite structure [but] talk about things within an ongoing, self-transforming practice of disclosure, a practice not confined to the settings in which it can be coherently systematized" (Rouse 1998, 50). I want to point out a tension that arises between this demand for ongoing transformability and the philosophical commitment to naturalism. In describing naturalism as continuous with science, Rouse seems to imply that a naturalist lexicon should not extend much beyond a (provisional and indefinitely structured) scientific lexicon. This implication rests upon the general provision allowing for the identification and nesting of practice-types. At the same time it seems to limit the kinds of nesting schemes that are allowed. Herein lies the tension. It is precisely the nesting scheme articulated by the religious scientist that seems to be beyond the naturalist's horizons of real possibility.

When scientific practices are allowed to lie entirely within religious practices, the scientific lexicon itself becomes a nested structure. Its character is something like that of a subgroup in algebraic group theory. It may exist within nonequivalent, successively nested structures, just as, under the operation of addition, the group containing zero and all multiples of ten is nested within the group containing even integers, which is itself nested within the group containing all integers. I offer this simplistic analogy only to raise the possibility that a naturalist hoping to expand his philosophical lexicon by way of expanding its internal, scientific articulations may ultimately have little hope of "leaving the nest."[5] The naturalist's operational rules provide no access to the space of extrascientific religious meanings. Except by a change of rules, there is no way to expand a subgroup to encompass elements of the larger group. If this is a valid way of construing Rouse's project, it suggests that his commitment to naturalism may prove to be either more reductionistic or more precarious than he originally intended it to be.

Rouse suggests that Kuhn fell into the very form of semantic realism that he wished to criticize. In adopting a naturalist commitment, however, Rouse risks a comparable reflexive inconsistency. He claims that his own philosophical-naturalist practices are closely tied to scientific practices, but this link comes with a normative stipulation that scientific practices not employ "mysterious" or, I take it, religious concepts. Thus, like Taylor, Rouse appears to cling to a form of essentialism that his own philosophy of practices may require him to jettison. He has much to teach Taylor with regard to hermeneutics in the natural sciences, but he still could take a cue from Taylor's project, which demonstrates the relevance of religious understanding as positively meaningful within various practices. Acknowl-

edging the possibility of this relevance may motivate one to understand how, to a large extent, religious understanding seems to have collapsed into the limited idiom of naturalism. To the modern imagination this transition has seemed irreversible; we might call it the lobster-trap effect—we seem to have wandered into the reduced world of naturalism, and we can't find our way out. However, following Taylor, we can acknowledge that it was not an inevitable transition or one that can be recounted as a subtraction story. To be sure, the transition has been profound in that many claim to understand only the articulations connected to scientific practices; they accept the scientific language game as the only game in town. Perhaps this is why it doesn't seem much like a game. It cannot be seen as contingent, contextually limited, or interpreted; it appears to be simply *the* way one speaks about and understands the world. But our practice theorists (even Rouse himself) provide grounds for denying that this is forever how the game must be played.

Questioning a Familiar Theological Account of Science

So far I have outlined some of the basic elements of a practice-philosophy of science, and I have suggested that Taylor and Rouse seem to draw from two different essentialist conceptions of scientific practices. I now want to comment on some possible implications of practice philosophy for specifically religious discussions about science. I am thinking about the kind of conversation in which Christians talk to each other about science—the kind of conversation in which I have found myself holding a minority view. I believe that it is possible to be faithful to the Christian gospel without affirming an essentialist view of science. The anti-essentialist view that I advocate entails a construal of language as pragmatic, of theoretical explanations as provisional and only contextually meaningful, and of science mattering to people in different ways that can never be fully articulated. In these terms it may sound like I am offering Christians a dizzying postmodern cocktail! Let me explain why I think this might be just the cure for what ails us.

In much Christian talk about science there is a longstanding interpretation at work. Elsewhere I have referred to this as "Objective Description as Decryption," or the ODD interpretation of science (Walhout 2009). It is rooted in the idea that scientific descriptions of empirically accessible objects and laws are translations of the divine principles of creation into human ideas and language. Science is how we disclose the hidden, prefabricated objects of the creation. This image is the third and final essentialist view of science that I wish to address. It is guided by assumptions about the world, about human capability, and about divinely ordained moral duty: Objective principles of order have been built into and can be read out of creation, humans can identify and decipher these principles, and God wants

humans to pursue this decoding activity as a basic good. The ODD interpretation took root during the seventeenth century, when it funded Galileo's adaptation of the medieval "book of nature" metaphor, the Keplerian hope of "thinking God's thoughts," and a lot of British empiricism. Many of the original ODD phrases are still repeated today in Christian accounts of science.

I will not state here all of my previous objections to this interpretation,[6] but I do offer two comments to motivate seeking an alternative. First, in its image of the world, the ODD interpretation gives in to the secularizing notion that creation is divisible into the "natural" of science and the "supernatural" of religion. This allowance sacrifices religious meaning in order to simplify scientific meaning. It is no wonder that Christians are put on their heels by evidentialist challenges after they accept this ODD image of the world. Second, the ODD interpretation of science draws from inadequate conceptions of divine ordinance and Christian calling. These limitations allow it to slip into a concern for knowing the contents of God's mind, and this strangely Platonic emphasis can eclipse the concern for, as it were, what God has in mind for us, or for faithful obedience.

Speaking in terms of a hierarchy of concerns may help me specify the ways in which my own Christian inclinations and Rouse's philosophical program overlap. Rouse argues that what matters in scientific practices is not simply reducible to the goal of describing the way the world is. Beneath that goal lies a complex set of human interests that feed into collective judgments about what parts of the world are worth describing and what qualifies as adequate description. Following Heidegger, he links these interests to an ongoing and contextually focused concern for the future, to an array of projected possibilities. This emphasis parallels my understanding of Christian faith as a future-oriented gift or covenant. A Christian is called above all into loving relationships with God and others and is given responsibility for managing certain possibilities of these relationships. Such responsibility is the grounds for what amounts to a secondary, and therefore pragmatic, concern: that of understanding possibility in terms of its logical and material conditions. This is a nested concern, and it is characteristic of Christians engaged in scientific practices.

I contend that a desire to deal responsibly with this concern should undermine our confidence in the ODD interpretation of science. The ODD interpretation provides assurance that scientific work is pleasing to God, but it ignores important normative elements in its essentialist construal of science. It confers goodness on science itself with little regard for norms relating people to each other and to the material world. It rests on the unwarranted assumption that such norms can be sorted into strictly scientific and nonscientific categories. These criticisms are, I suggest, an echo and a refinement of Taylor's criticisms of the secularization of Christen-

dom. However, while drawing from the spirit and content of Taylor's analysis of intellectual history, they address social and political contexts beyond the ones in Taylor's sights. I offer them so that the hermeneutical elements of natural science can be brought into perspective and given due relevance in a Christian conception of humanity's place in the world.

Practices as Setting a Course of Conversation

I have suggested that Taylor's and Rouse's theories of practices provide a way of discussing the relationship between science and religion. I have emphasized a particular model for this discussion, one in which scientific practices are a part of religious practices but are not simply related to the latter through divine affirmations of theoretical knowledge. This model poses challenges both to practitioners of naturalism and to religious practitioners who think of science as a divinely ordained decryption project. But I think it also holds promise for each of these parties. Philosophical naturalists can expect to utilize and extend the rich philosophical resources that Rouse's program exemplifies; their only risk is discovering points where their conceptions of rationality and practices have to be expanded. With respect to religious practices, my model does not threaten anyone's commitment to respond appropriately to the divine; only the the conception of what is appropriate is at stake. For Christians in particular, the model may help reform the terms that have facilitated too easy a division between religious and scientific ways of speaking.

Traditionally the "law" concept in science has been one key to the easy division, but we can see past this concept through the lens of practice-philosophy. Drawing from Kuhn and others, Rouse has argued that law can now be understood as being less metaphysically connected with nature and more ethically connected with human responsibility. Drawing from Taylor's work and my own doubts about the ODD interpretation of science, I would offer Christians a parallel, theological deflation of the law concept that is faithful to the gospel and remains critically engaged with the history of Christian philosophy. At the heart of the essentialist understanding of science, which practice understandings attempt to reject, lies an assumption that science principally aims to formulate or produce theoretical knowledge of the laws that are manifested in material reality. But knowing is not merely the full or proper cognition of statements representing objects and laws. (I think my fellow practicing scientists and my fellow practicing Christians will agree with me on this.) Knowing involves interpretation and is contextually and practically rooted; it emerges within practical hermeneutics. We do not map reality simply for the sake of having the map. We do it so that we can cope—and cope well—in the world. What appears on our map depends on our interests. If this much is accepted, practical knowledge of laws, understood in the broad milieu of human

possibility and intention, takes priority over the abstract, theoretical knowledge traditionally thought to be the product of essentially disinterested science.

What comes into view here is the question of why scientific practice is important, of what purpose or *telos* it serves. This issue typically is obscured in science-and-theology discussions. Although it might be admitted that human interest is part of the real world, it is considered relevant only to the inquiries of theology, politics, aesthetics, or ethics. Carried on in this mode, dialogue can draw from various, mutually inconsistent, essentialist assumptions that provide a clean conceptual separation between what science is and what it is for. Philosophies of scientific practice do not require any such assumptions and consequently can bring the key idea of scientific *telos* into focus. Moreover, focusing at this level reveals certain conceptual contours that are otherwise part of a blurry background.

As the comparison between Taylor and Rouse shows, new questions and disagreements arise in the analysis of practices. Rouse thinks that practices are responsible not only for the propagation but also for the genesis of any sense of directedness or *telos* in what people do. But can practices be both the seed and the seedbed of human purpose? From a Christian standpoint, it is only the seed of faith that ultimately gives direction and meaning to all practices and only God who plants this seed. Thus, Christian intellectual projects such as warranting belief or providing evidentialist apologetics aim not to implant faith but only to cultivate it. Taylor's study of cultural history also serves this kind of cultivation project, explaining how shifts in the landscape of human practices have left vast tracts in which the seed of faith has ceased to take root. I consider both Taylor and Rouse to be tilling the dense sediments of the same intellectual soil. The difference is that Rouse has taken preventive measures against the invasion of religious *teloi*, whereas Taylor's story is that such a seed has already been planted and that in many places it has produced shoots, branches, and desirable fruit.

There are other differences between Rouse and Taylor that I have not delineated here. On some of the issues, especially those relating to the interpretive character of the natural sciences, I favor Rouse. I think that the science-and-theology dialogue has much to gain from his understanding of science and other forms of human practices. His work seems, for the most part, to fit the following description that Taylor once used to describe his own critical project:

> It accepts the wider or deeper definition of the task: overcoming the distorted anthropological beliefs through a critique and correction of the construal of knowledge that is interwoven with them and has done so much to give them undeserved credit. Otherwise put: through a clarification of the conditions of intentionality, we come to a better understanding of what we are as knowing agents—and hence also as language beings—and thereby gain insight into some of the crucial anthropological questions that underpin our moral and spiritual beliefs. (Taylor 1995, 13–14)

Only with respect to these last, spiritual, beliefs has Rouse's project yet to prove itself, by which I mean it has yet to admit meanings of a religious sort into its practices. One outstanding question for discussion is how a naturalist commitment could ever give way to such an admission. My hunch is that the notions of rationality and inquiry would have to be unpacked and found to provide a place for the possibility of divine revelation. Taylor's historical and social philosophy is premised upon this very possibility, because his motivation is rooted in the Christian revelation that already exists as a natural and normative part of his religious practices. My own religious rootedness in Christian practices may explain why I find Taylor's project deeply compelling, even though I find fault with the essentialism that lingers in his distinctions between the natural and human sciences.

To conclude: What might come from further conversation between naturalist and religious philosophies like those exemplified in the work of Rouse and Taylor? I believe that such a conversation would enrich various threads of the ongoing science-and-theology dialogue because it would promote reexamination of the modern habit of partitioning human practices into religious and scientific types. It might lead to an acknowledgment that this classification scheme is merely provisional and methodological and does not necessarily reflect a fundamental or essential aspect of an external reality. Carrying on such a conversation, however, would require further evaluation of the assumptions embedded within popular notions of critical realism, including those assumptions about the metaphysical mapping function of language that engendered the sharp distinctions between practice types in the first place and continue to give false footing to essentialist understandings of science.

Notes

A version of this essay was presented at the Venice Summer School on God and the Laws of Nature, 2008.

1. A summary and analysis of Taylor's commentary on this issue can be found in Abbey 2000, 152–65. Hubert Dreyfus is one who has advocated for a distinction between human and natural sciences that is mostly in line with Taylor's view (Dreyfus and Spinoza 1999; Wrathall and Malpas 2000, 313–22). In Tully 1994, Clifford Geertz offers a number of criticisms of the distinction and Taylor's use of it; Taylor's response is also in that same *Festschrift* volume.
2. Nancy Cartwright, Martin Eger, Patrick Heelan, and Mary Hesse, among others, belong to the category of philosophers with scientific training who have found fault with the logical-empirical characterization of natural science.
3. In fact, my discussion of Kuhn and Taylor follows the discussion in Chapter 2 of *How Scientific Practices Matter* (Rouse 2002), where Rouse offers a far more detailed analysis than I give here.
4. Rouse draws heavily from philosopher Robert Brandom to extend the notion of practices in this way. The extension allows practitioners in a set of nested practices to share a notion that something is at stake in their practices even if they disagree on what, precisely, that something is. This extension differs in some ways from Taylor's more communitarian understanding of practices. Rouse's reliance on and criticism of Brandom is developed in detail in his *How Scientific Practices Matter* (2002).

5. In the jargon of linear algebra, a scientific lexicon spanning only a subspace has the structure of a sub-block in a block-diagonal matrix. In this sense, the naturalist project may have difficulty "getting out of the blocks."
6. My criticisms of the ODD interpretation are developed in Walhout 2009.

References

Abbey, Ruth. 2000. *Charles Taylor*. Princeton: Princeton Univ. Press.
Dreyfus, Hubert, and Charles Spinosa. 1999. "Coping with Things-in-themselves: A Practice-based Phenomenological Argument for Realism." *Inquiry* 42:49–78.
Kuhn, Thomas S. 1962. *The Structure of Scientific Revolutions*. Chicago: Univ. of Chicago Press.
Rouse, Joseph. 1987. *Knowledge and Power: Toward a Political Philosophy of Science*. Ithaca, N.Y.: Cornell Univ. Press.
———. 1998. "Kuhn and Scientific Practices." *Configurations* 6.1:33–50.
———. 2002. *How Scientific Practices Matter: Reclaiming Philosophical Naturalism*. Chicago: Univ. of Chicago Press.
Taylor, Charles. 1971. "Interpretation and the Sciences of Man." *Review of Metaphysics* 25:3–51.
———. 1989. *Sources of the Self: The Making of the Modern Identity.* Cambridge: Harvard Univ. Press.
———. 1995. *Philosophical Arguments*. Cambridge: Harvard Univ. Press.
———. 2007. *A Secular Age.* Cambridge: Harvard Univ. Press.
Tully, James, ed. 1994. *Philosophy in an Age of Pluralism: The Philosophy of Charles Taylor in Question.* Cambridge: Cambridge Univ. Press.
Walhout, Matthew. 2009. "Teaching Vocation and (Other) Unsafe Scientific Practices." *Christian Scholar's Review* 38:259–82.
Wrathall, Mark, and Jeff Malpas, eds. 2000. *Heidegger, Coping and Cognitive Science*. Cambridge: MIT Press.