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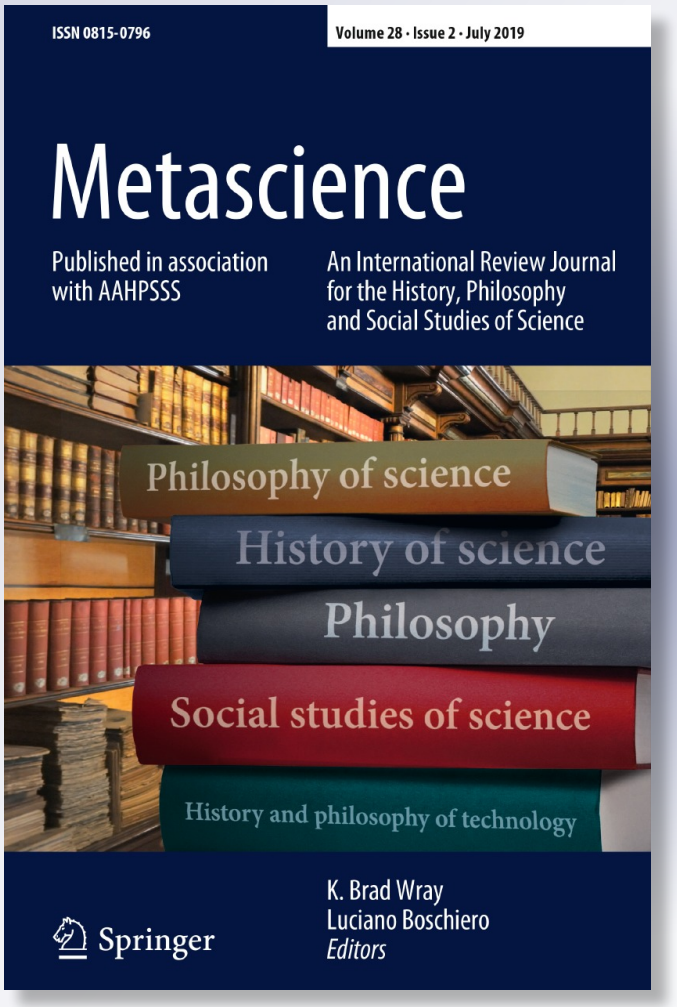

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SYMPOSIUM

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Yves Gingras: Science and religion: an impossible dialogue. Maiden, MA: Polity Books, July 2017, 272 pp, $26.95 PB

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Of the many issues raised by Yves Gingras's hard-hitting *Science and Religion,* I wish to briefly respond to three: the distinction he draws between faith and reason; his notion of dialogue; and the profound debt modern science owes to Christianity, of which he remains oblivious.

Faith versus reason

Gingras rightly distinguishes reason from the kind of unquestioned conviction he terms faith. However, he writes as if to be deemed rational, science is obliged to rest on reason alone. This, I believe, is a grave mistake. In verb form, "to reason" is to infer logically, which when upheld as a standard, implies a commitment to follow through one's endorsements to their logical conclusions and to maintain the body of one's beliefs as a logically consistent whole. Rationality, however, demands more than a commitment to logical completeness and consistency.

Here, the noun-form of "reason" is crucial. To act rationally is not merely to reason logically *in* acting, but to have reason *for* acting. And we have reason to act when something in our world or picture of it strikes us as sufficiently lacking or wanting to merit intervention. Such a view of rationality dovetails nicely with Popper's identification of rationality and criticism, to which Gingras alludes. However, what goes missing both in Popper and in Gingras, is the essentially *normative* nature of criticism, and hence of rationality. To deem a state of affairs sufficiently wanting to merit repair is to make *a value judgment*. We are rationally moved to act when convinced that a norm to which we are committed has been intolerably breached. And because different people adhere to different normative frameworks,

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all criticism, and hence all rational endeavor, is by definition *framework-dependent*, in the strong sense of the term.

Normative diversity (not to be confused with what Gingras calls "post-modern relativism") is inherent to the human condition, as to the life of science. Sciences undergo framework transitions in which their notions of facticity and explanatory adequacy and the very concepts of naturalism are replaced. Normative diversity is especially challenging in diachronic revolutionary transitions, but can also raise problems when applied across synchronic boundaries between sciences.

A good example of both is provided by how, contrary to the Aristotelian world picture it replaced, early modern science came to view the natural world as essentially *inanimate*. While Aristotelian physics treated the motion of inanimate bodies as an under-developed form of organic change, modern science came to view organic systems as complex configurations of inanimate components. The diachronic "inanimate turn" represented an extraordinarily fruitful framework transition in the life of European science. Today, however, the very identification of naturalism with physicochemical reduction is proving to be a major stumbling block as brain science applies that paradigm to human cognition and agency. For no amount of neurophysiological complexity can explain away the fact that lacking any notion of motive impact other than blind causality, what passes for a naturalistic scientific account of the human mind, is incapable *in advance* of distinguishing deliberated normative self-motivation from the impact of blind impulse. Reducing the former to the latter is not something latter-day brain research has *discovered* to be the case, but an inevitable consequence of the vocabulary it employs. And yet physicochemical reduction is adhered to as a God-given truth regardless of how radically it undermines our very humanity by rendering normativity an illusion, intentionality, a "stance," and normative accountability, null and void (See Whitehead 1925; Sellars 1963; Taylor 1985, chs. 1, 2, and 4)!

Not unlike its latter-day application to cognitive science, neither did the great inanimate reduction of the seventeenth century represent a scientific *finding*. No one *discovered* that nature was essentially inanimate. It was more a metascientific opting that became internalized as an article of scientific faith constitutive of our very conception of the natural. It is also more than an illustrative example. The identification of naturalism with inanimate reduction also radically undermines everything I shall have to say here on normativity and rationality…

The categorical difference between scientific framework commitments such as inanimate reductionism and any well-confirmed run-of-the-mill scientific theory or technique becomes apparent when one considers what findings or scientific arguments are liable to convince someone to replace a framework commitment to which he or she is committed—which brings me to heart of the matter, and back to criticism and rationality.

Most of the time we criticize ourselves and others criticize us for not living up to the standards to which are committed, for acting against our own better judgment. Normal science, as Kuhn dubbed it, is precisely that: attempts to improve upon a science's body of knowledge in accord with the standards of its existing normative framework. But rationality requires of us, not only to act in accord with the norms to which we are committed, but to hold those very norms in normative check. But how

is that possible? The epistemic difference between the body of scientific knowledge and know-how that is keenly subjected to scientific critique, and the scientific norms and values by which such critique is leveled, is fundamental. How can a community's scientific norms and standards be effectively subjected to rational appraisal if it is by means of those very standards that it rationally appraises? The problem is quite general and is not confined to science.

To claim that the norms to which we are genuinely committed are by definition immune to normative assessment seems absurd. Yet, no one has been able to show how our norms can be impeached from within by subjecting them to their own reflective scrutiny? Thinkers like Wittgenstein, Carnap, Kuhn, Rorty and Davidson argue more or less explicitly that they cannot. Popper and some of his school, deny there is a problem by unfoundedly declaring the very idea of framework-dependency a "myth." Most thinkers of neo-Kantian leaning—e.g., Sellars, Brandom, Korsgaard, Charles Taylor and McDowell—avoid the question by never really raising it. Michael Friedman at least raises it with regard to science, but ultimately fails to solve it.

This is not surprising. The problem of how we change our minds is real and notoriously difficult. The idea of driving a wedge between "reason" and "faith" to allow the former to shake free of the latter is an illusion. Reason cannot operate without firm normative commitment, and for that very reason seems in principle immune to rational critique from within. This is as true of science as it is of religion and every other realm of human endeavor.

The rationality of non-Socratic dialogue

The way forward, I have argued in my own book, *Creatively Undecided*, is to realize that although we cannot change our minds by talking to ourselves, exposure to the normative criticism of others can occasionally render us sufficiently ambivalent toward the norms they question for us to hold them in critical review. In a word, when prudently criticizing someone else's normative commitments we know, or at least sense that it is impossible to do so from squarely within their worldview. Yet we also know that for our criticism to find its mark, we must level our argument as far as possible from premises she will recognize as her own. We, therefore, frame our arguments somewhat untruthfully. Arguing from the left, critics surreptitiously attribute certain liberal norms to their addressees in order to make their case, while those arguing from the right, tend to smuggle in just enough conservative value to make their arguments stick. We have all experienced this kind of exchange.

When confronted by prudent criticisms of our norms, we are hence presented with a part-portrayal of our normative framework, that though largely true, differs noticeably from our own self-image. Such deontic portrayals need not be deemed true to resonate and disturb. It is enough that we consider our critic sincere to realize that others see us differently from how we see ourselves. Since the two pictures—our own normative self-portrayal and that conveyed by our critic—will diverge precisely with regard to the norms she questions, their incongruity, not unlike a disturbing playback device, may well have the effect of making us ambivalent toward those

norms. And norms to which we become ambivalent lose their binding force and are subjected to the critical scrutiny of our surviving commitments. This, in a word, is how exposure to the echo-chamber of trusted normative criticism from without can at times induce levels of inner-discordance and self-alienation sufficient for truly changing our mind.

Subsequently, scientific framework transitions necessarily comprise two distinct stages. The first occurs in the kind of "locales" of professional engagement Peter Galison calls "scientific trading zones," where practitioners within a field of inquiry constantly need to defend the taken-for-granted basics of their field to interested non-specialists and to field questions and criticisms of the kind they never encounter back home. Here is where dialogue across framework divides is crucial for significant scientific rethinking.

In the second stage, of less interest in the present context, such individuals occasionally (if inadvertently) succeed in disseminating their indecision within their communities in creative attempts to resolve it by means of ambitious, yet uneasily split, hybrid re-conceptualizations of their field. These deeply disturbing works combine elements of the reigning framework with imaginative groping toward new possibilities, thus presenting unstable, yet highly creative departures from heartfelt commitments capable of motivating others to seek cleaner breaks with the old. Classic examples are Tycho Brahe's part geocentric, part heliocentric planetary theory, the combination of Aristotelian and anti-Aristotelian elements in Galileo's theory of projectile motion, and Poincare's Kantian, yet non-Kantian geometrical conventionalism. Less known, but equally vivid examples are some of the early Victorians I have worked on: George Peacock on algebra, John Herschel and WR Hamilton on mathematical physics, and the unholy joining of Kantian and empiricist elements in William Whewell's philosophy of science, whose works all unwittingly preserved, and hence propagated the keen ambivalence that begot them, prompting others to take a firmer stand.

One might want to dismiss the very idea of framework-dependency, as Popper attempts to do in *The Myth of the Framework*. Alternatively, one might want to make a special case for science, claiming, as do Kuhn and Michael Friedman, in different ways, that science exhibits greater continuity across revolutionary divides, than non-scientific framework transitions. However, as I have demonstrated elsewhere in relation to Friedman's claims, scientific norms are no different than other norms, and normative commitment is not more easily dislodged or established in science than in other areas of human undertaking.

All this is to say that the only way in which faith (normative commitment) can be subjected (by the faithful) to reason, in science or elsewhere, is through exposure to keen critical dialogical exchange with the "unfaithful," i.e., with interlocutors who are committed differently. Such dialogical engagement is the very lifeline of properly reasoned endeavor.

This form of critical exchange differs significantly from Gingras's Socratic account of "genuine" dialogue detailed in ch.6, that he characterizes as "an exchange of arguments in order to establish a thesis, a theory or even a statement of fact which seeks to garner consensus among the discussants," for which "the protagonists must have a common ground and speak about the same things" (161-162). Dialogue

limited to parties who share "common ground" is guaranteed to remain confined to the space of reasoning constituted and governed by a shared framework. Critical exchanges limited exclusively to troubleshooting for deviations from the shared norm can only strengthen and deepen its hold. The kind of critical exchange required for calling that "common ground" and the taken-for-granted nature of the things talked about into question, is the kind of exchange that by definition can destabilize commitment, but can never convince. Does this discount it as "a dialogue with the deaf" (162)? I think not. Such dialogue can have the kind of impact no Socratic form of exchange can in principle achieve.

Ideally, rational agents should be aware of their tendency to normative fixation, the normative limits of normative self-criticism, and the destabilizing potential of external normative critique, and should therefore actively seek to be exposed to radically different points of view. Certain exceptionally self-critical individuals conduct themselves in such a way, but science, as an institution, does not. Scientists are not trained to seek or value external criticism. (I know of only one large-scale human undertaking that is self-consciously informed by such awareness—the Babylonian Talmud—that, ironically from Gingras's perspective, sets forth from the heartland of monotheistic religion. But that's a topic for another day.)

However, exposure to a radically different perspective or form of life need not be consciously pursued to set in motion a rational framework transition (as opposed to unreasoned conversions or gestalt switches, Kuhn's two infamous images). A framework transition is rational when it is prompted by reasoned challenges from without, even if unsought, and is the subsequent upshot of a reasoned re-evaluation of the norms thereby destabilized.

Gingras deems the dialogue between science and religion to have been largely futile, even though the story he tells proves that the Catholic Church underwent radical framework changes in the course of its rocky relationship with modern science. Like a true advocate of Socratic argument, oblivious, and unreflective as Popper was to the profound hold of normative commitment, his text conveys disappointment that the process was so slow; that science's proofs and knockdown arguments failed to have the swift desired effect; that the religious establishment failed to yield to the sheer rationality of empirical refutation, without ever asking himself what it would take for science to give up empiricism—a position deemed no less than scandalous at the turn of the seventeenth century! I cannot say what might prompt scientists to abandon their empirical methodology, but I can say something about its birth as (one of) science's (two contrasting) "official" philosophy(ies) that owed profoundly to religion. The thought that in the uneasy process of their early modern interaction, science might have learnt something important from the church, seems not to have crossed Gingras's mind.

Modern science's great debt to Christianity

Peter Harrison's, *The Bible, Protestantism and the Rise of Natural Science*, makes the novel claim that Luther's insistence on literal interpretation played a major role in the emergence of early modern science, by virtue of the new meaning it lent to the

old and religiously appealing "two-books" metaphor. The early reformers extended the two books metaphor beyond the idea of common authorship and away from the idea of one book holding the key to the other, and came to regard it as a suggestive *analogy* between the way the two books were conceived; an analogy that served to mediate the normative realms of religion and science regardless of their swiftly emerging conflict.

According to Harrison, reading scripture became the model, rather than the key, for studying nature. His most important claim is that the early reformers' attitude to the Bible not only motivated the turn *toward* nature, but inspired an importantly new *conception* of nature. By insisting that the Bible's message resided in the literal meaning of the text, the reformers were forced to empty the divine text of all symbolical, metaphorical and allegorical meaning. And by analogy, so was nature. By virtue of the two books metaphor, Protestantism was thus responsible for rendering nature, for the first time, purely *factual*. Harrison deftly shows how, through the mediation of the two books analogy, interest in nature shifted away from what natural phenomena might symbolize, even religiously, to their causes and relationships, but he fails to draw the inevitable epistemological consequences of his novel thesis.

In Luther's invitation to "the priesthood of all believers" to discover the literal Word of God for themselves lie the roots of a new notion of inquisitive prudence that envisaged a diligent, largely emptied and passively receptive mind freed of prejudice and dedicated to piously reading *out* scripture's one true message (while firmly resisting the temptation to speculatively read one *in*). And the same applied to the book of nature, where an analogous notion of epistemic prudence was endorsed that valued clever, diligent minds seeking passively to receive nature's plain "literal" message, while abstaining from speculation. This approach to scientific knowledge firmly grounded in religion, found exemplary expression in Francis Bacon's philosophy. The sobering methodological empiricist point of departure (the four idols) and eliminative inductive methodology of Bacon's *Novum Organon* were adopted later by Boyle and his colleagues ofthe Royal Society's "official" philosophy. Thomas Sprat waxed poetic in unmistakable Protestant terms about there being two Reformations, each prizing the original copies of God's two books while bypassing the corrupting influence of scholars and priests.

Alongside the rise and decisive influence of Bacon's empiricist philosophy of science, early modern Europe witnessed the equally influential development of a systematic scientific *rationalism* that, wary of all sense data, lay special emphasis on mathematization—a position that found exemplary expression in the works of René Descartes. Descartes's rationalist philosophy of science owed its origin and inspiration, not to Protestant attitudes to the interpretation of scripture (as Harrison implies), but, as Stephen Toulmin and Stephen Menn suggest, to the Catholic reaction Protestantism provoked.

Counter-Reformation Catholicism would have nothing of Lutheran literalism. For Catholics, the biblical text was considered replete with deep theological significance that required expert interpretation and decoding. The idea that the word of God could reside in the literal meaning of the text, and be read off it directly by anyone was as unthinkable as grounding scientific knowledge in sensual, unreasoned experience. Catholic interpretation of scripture required the mediation of a firmly

established metaphysical system of rational theology that demanded laborious training and unflinching prior commitment. In its Catholic version, the two books analogy implied that just as interpreting scripture requires prior assent to an elaborate system of necessarily true rational theology, so the study of nature demands the prior elaboration of and assent to an analogous system of absolutely certain scientific truth—which for Descartes were the truths of mathematics.

The diametrically opposed theologies of Reformation and Counter-Reformation Christianity thus gave rise to two equally opposed metascientific frameworks by virtue of the religiously appealing two books analogy. Bacon's Reformation, Protestant philosophy insisted on grounding scientific truth in the immediacy of factual experience from which one then reasons *up* inductively to theory. Descartes's Counter-Reformation, Catholic philosophy insisted, by contrast, that it be grounded in the apriori certitude of mathematical truth given by pure reason, from which one then reasons *down* deductively to the facts.

If there is any truth in my extension of Harrison's thesis, then while locked in ferocious combat with both Christian denominations, early modern science owed those very denominations its inspiration as well as its two contrasting methodologies and scientific rationales—which, I believe, firmly attests to the transformative impact early modern Christianity had on science, despite the disagreement to which Gingras points.

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