How We Got Here: Historical Reflections on the Rifts between Ways of Knowing

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The 2009 Oxford Roundtable posits three cultures, science, the humanities (arts), and religion, inspired by CP Snow's Rede lecture of fifty years ago, "The Two Cultures and the Scientific Revolution." In it, Snow lamented the great gulf of incomprehension between the literary intellectuals and the scientists. Since the terrorist attacks of September 11th, the Madrid train bombings, and the attacks on the London Underground of 2005, religion, or faith, cannot be ignored in this list of "cultures." In addition to heinous acts of terror, belief continues to inspire people to commit acts of heroic self-sacrifice and altruism, of love and compassion; it allows humans to touch a mystery outside of their limited phenomenal existence. Faith matters. The Roundtable also posits rifts between these three categories. Without a historical understanding of how these rifts came to be, one cannot appreciate them, weigh their significance, or judge their value. This paper offers historical reflections on how we came to be at this juncture and evaluates to what extent the rifts are positive, to what extent reconciliation is necessary.

In Padua in 1609, when Galileo raised his telescope to the heavens, observed the moons of Jupiter, the phases of Venus, and embraced the Copernican model of the universe, little did he know the fissures he would cause in the foundations of Western civilization, or the personal costs he would pay, which included house arrest and the suppression of his work. The two who bear even greater responsibility for the rift between science and religion, between faith and reason, are Francis Bacon and René Descartes.

The rifts open

Francis Bacon (1561-1626) found the sciences, which he called natural philosophy, in a sorry state. Aquinas and the Scholastics, in their own response to skepticism, had integrated Aristotelianism with Christianity. Science was not built on a foundation of observation but the received opinion of Aristotle and the Peripatetics, accepted without question and mixed with

theology. For Bacon, the only course open to him was to separate theology from science, to temporarily set faith aside, to build a science founded on observation and induction. Only in this way could he restore us to our rightful place as rulers of God's creation, to live out the creation mandate proclaimed in Scripture. In the first of his aphorisms in *Novum Organum*, part two of his planned six-part Great Instauration, he makes a bold epistemological statement.

Man, being the servant and interpreter of Nature, can do and understand so much and so much *only* as he has observed in fact or in thought of the course of nature. *Beyond this he neither knows anything nor can do anything.*[1] (italics mine)

If we can only know what we can observe with our senses, where is Art as a way of knowing? Bacon puts aside disinterested contemplation, an important aspect of art for most of us, as not contributing to the restoration of our power over creation, as not contributing to the betterment of the human condition. And what of Faith as a way of knowing? Remember, it too has been set aside. As a devout Christian, Bacon had always intended Science and Faith to work together, but as discrete paths to Truth.

But if the matter be truly considered, natural philosophy is, after the word of God, at once the surest medicine against superstition and the most approved nourishment for faith, and therefore she is rightly given to religion as her most faithful handmaid, since the one displays the will of God, the other his power.[2]

Twice Bacon references Proverbs 25:2, "It is the glory of God to conceal a thing and the honor of a king to search it out." As a scientist, Bacon delighted in unrolling the scroll of God's handiwork. Faith was not the problem but the co-mingling of the two ways of knowing, as well as dogma and superstition.

There is a great difference between the Idols of the human mind and the Ideas of the divine. That is to say, between certain empty dogmas, and the true signatures and marks set upon the works of creation as they are found in nature.[3]

[1] Francis Bacon, *The New Organon*, ed. Fulton H. Anderson (New York: MacMillan Publishing Company, 1960), 39.
[2] Ibid. 88, 89.
[3] Ibid., 44.

But the unintended consequence of setting faith aside was growing skepticism and secularism. The rift had opened.

René Descartes (1596-1650) also found the state of knowledge in need of liberation from the tyranny of Aristotelianism and Scholasticism and growing skepticism. Like Bacon, he decided to sweep away all that had gone before and start afresh. Unlike Bacon, the great proto-Empiricist who depended on sensory data, Descartes, the great proto-Rationalist, rejected the senses as open to deception, and embraced Reason. Descartes longed for the certainty he found in mathematics. Like Bacon, he set Faith aside in order to prove the existence of God by Reason alone.

I have always thought that two questions—that of God and that of the soul—are chief among those that ought to be demonstrated by the aid of philosophy rather than theology. For although it suffices for believers like ourselves to believe by faith that the soul does not die with the body and that God exists, certainly no unbeliever seems capable of being persuaded of any religion or even any moral virtue, unless these two are first proven to him by natural reason.[4]

Descartes understood the danger of setting aside belief in order to start over. In his *Discourse on Method* he warns that not everyone should undertake such a project. He starts out in his *Meditations* to doubt everything; doubt becomes for him a methodological tool to get to certainty but later generations latched onto the doubt. As with Bacon, by setting aside Faith, the unintended consequence was increased skepticism. Once Faith and Reason were split, once "the genie was out of the bottle," there was no turning back. Descartes had developed a mechanistic theory of nature. Surely, by setting off the material world to the domain of science, theology could treat the soul unencumbered. In his mind, this would defend the Christian faith, not weaken it. In addition to splitting Faith and Reason, Descartes split Body and Mind (soul) and this carries consequences even into the present.

The Scientific Revolution of the 17th century led to the Age of Reason, the Enlightenment of the 18th. The rifts between ways of knowing continued but there were still tenuous connections. Theology continued to be considered a science until 1830. Many Enlightenment

[4] René Descartes, *Meditations on First Philosophy,* trans. Donald A. Cress (Indianapolis, IN: Hackett Publishing Company, 1979), 1.

moderates continued to profess faith in a Higher Power. They were anti-clerical, and anti-church, not anti-faith. Spinoza, an early Rationalist, reasoned that a God, defined as infinite substance, must exist. The one who culminated the Enlightenment, Immanuel Kant, widened the rifts between ways of knowing in his three *Critiques* and in *Religion Within the Bounds of Mere Reason Alone.*

Attempts to heal the rifts

To some, the Enlightenment illuminated our benighted world but to others, by breaking things into bits in order to analyze them, it cast a "chilly, inhuman glow."[5] The Romantics, such as William Blake, John Keats and William Wordsworth, sought to heal the rifts. Blake saw in the over emphasis on Reason "dark satanic mills" and an encrustation on the human spirit. He called for a reconciliation between the intellect and spiritual energy. Friedrich Schiller took the step that Kant approached but would not take, i.e. connecting Beauty, an aesthetic category, and Morality, a religious one. Georg Wilhelm Friedrich Hegel, along with Fichte and Schelling, found the gulfs Kant had opened between ways of knowing inapt and sought to bridge them. In *The Phenomenology of Spirit*, his greatest work, Hegel set out to demonstrate *geistlich* reality scientifically, to show reality as a process of evolving self-consciousness, moving toward Absolute Knowing, an expression of the mind of God. He attempted to bring the phenomenal and the noumenal together into one, comprehensive system. Contemporaries of Hegel, such as Schopenhauer and later, Kierkegaard, took different paths. Arthur Schopenhauer widened the gulfs. To him, phenomena, i.e. the stuff of science, were merely illusions, objectifications of the noumenal world of the Will. Søren Kierkegaard believed that morality and faith in God were not contingent on Reason or the intellect, the tools of science in the Enlightenment. He advocated for a leap into the absurd where the individual, finite human embraces the Infinite.

In the wake of the failure of the revolutions of 1848-49, when much of the Romantic Spirit in Western Europe exhausted itself, artists and authors attempted to integrate art and science. These Realists created an art of objective observation (cf Bacon). Jealous of the rigor

[5] Russell, Shorto, *Descartes' Bones: A Skeletal History of the Conflict between Faith and Reason* (New York: Doubleday, 2008), 116.

of the scientific method they sought to imitate materialistic nature. In a similar way, the Naturalists, like Emile Zola, created the experimental novel to reflect the scientific evolution of the 19th century.

The cultures as discrete ways of knowing

There is the presumption that the rifts precipitated by Bacon, Descartes, and others, particularly the one between Science and Faith, diminishes the importance and the significance of faith. In this view it is a zero sum game with winners and losers. My choice to frame this issue as epistemological is very purposeful; the notion of "ways of knowing" is central to my approach. Epistemology, so important in the Scientific Revolution and the Enlightenment, took a backseat to ontology in the 19th and 20th centuries. I am calling for a return to epistemology. To see these three "cultures" as discrete ways of knowing (or groups of ways of knowing), each with its own discourse, its own language, rather than competing paradigms, as some would have it, will yield more benefit. To give each of these ways of knowing due respect will keep us from epistemological bigotry. I am calling for an approach that sees each of these modes of discourse as indispensible to a full apprehension of reality. In the light of this approach, the rifts opened up by Bacon and Descartes appear advantageous to the progress of each of these disciplines. Even St. Augustine, *circa* 400, sensed the importance of maintaining these boundaries, warning Christians against making scientific pronouncements when interpreting Scripture. Karl Kraus, the great social critic of *fin-de-siècle* Vienna, warned that mixing these spheres would corrupt each. Charles Darwin and his co-discoverers have advanced our understanding of the biological processes that brought humans to their present state but they cannot explain why I am so profoundly moved and changed by a performance of Mahler's Ninth Symphony. The Bible recounts ways in which humans have responded to the deep mysteries of existence but it is not a science textbook. One can analyze the chemical composition of sea water; one can read books about the sea; one can even know the sea by direct experience by swimming in it – but by listening to Debussy's *La Mer,* one can know the sea in a unique, if not richer, way.

The view that each of these "cultures" is a discrete way of knowing finds support in Patrick McDonald's and Nivaldo J. Tro's insightful article, *In Defense of Methodological*

Naturalism.[6] They maintain that theists who are scientists should utilize naturalistic methods, unencumbered by supernatural explanations because those methods work best for the advancement of science. This approach by no means passes negative judgment on the supernatural or on the belief that the universe was created and is sustained by God. Karl Popper's response to the Vienna Circle lends support to the significance of the non-scientific ways of knowing. The Vienna Circle and the logical positivists maintained that only that which is **verifiable** is science. Things which fall outside this test, such as morals, ethics, good and evil, beauty, faith, and love, lack meaning or significance. Popper, on the other hand, averred that what is **falsifiable** is science but what fails this test, such as moral or aesthetic judgment, is not, of necessity, meaningless.

Faith

In discussing the notion of Faith as a way of knowing, one must address the idea of Certainty. The certainty so zealously sought by the 17th century, enjoyed by the 18th, and eroded in the 19th, is untenable in the 20th. The static, deterministic, clockwork universe of Newton is blown apart by the new science. From probabilistic quantum physics onward, reality presents itself, not as something solid, but as a set of possibilities, potentialities, imagined and indeterminate. The positivists in the 19th and 20th centuries relied solely on empirical and sensory data, but as a way of knowing reality *in toto,* this approach falls short; many quantum physicists believe that observers create phenomenal reality. Consider the notion of "color." It seems real enough but actually it does not exist as an entity "in itself." In the new physics "…we can speak of interactions between observers and objective reality. Everything else—what reality is 'in itself'—is unknown."[7] The fact that current modeling can only account for 15% of the matter and 6% of the energy in the universe gives many physicists a sense of humility. There is still room for mystery. So then, what is the role of Faith? Conventional wisdom says that the opposite of faith is doubt, but actually, it is certainty. Doubt is essential to faith. If all is certain there is no need of faith. Belief is required for that part of reality that we intuit but that lies outside of sensory observation.

[6] *Christian Scholar's Review* (Winter, 2009), 201-229.
[7] Keith Ward, *Pascal's Fire: Scientific Faith and Religious Understanding* (Oxford: Oneworld, 2006), 83.

Fyodor Dostoevsky, a devout Christian and a scientist, often examined the tension of living out ones faith within a scientific age. In *The Brothers Karamazov* he presents faith not only as a way of knowing but as a way of seeing.

I don't think that miracles ever confound a realist. Nor is it miracles that bring a realist to religion. If he is an unbeliever, a true realist will always find the strength and ability not to believe in a miracle, and if he is confronted with a miracle as an irrefutable fact, he will rather disbelieve his own senses than accept that fact. Or he may concede the fact and explain it away as a natural phenomenon until then unknown. In a realist, it is not miracles that generate faith, but faith that generates miracles. Once a realist becomes a believer, however, his very realism will make him accept the existence of miracles. The apostle Thomas said he would not believe until he saw, and when he saw, he said: "My Lord and my God!" Was it a miracle that made him believe? Most likely not. He believed only because he wanted to believe, and possible he already believed in the secret recesses of his being while he was saying, "Except I shall see, I will not believe."[8]

Humanities (arts)

The arts, which include literature, poetry, theatre, visual arts and music, comprise unique ways of knowing. They work through indirection; that is where they get their power, bypassing our defenses, moving us to *anagnorisis.* The sphere of facts and propositions divide; the arts bring together. The arts can blur our sense of temporality, suggesting an existence outside of time. Music, the most ineffable of all the arts, can open us to the Transcendent. Felix Mendelssohn, a romantic composer (grandson of the Enlightenment rationalist, Moses Mendelssohn, and a student of Hegel), articulated the uniqueness of music as a way of knowing in a letter concerning his *Songs without Words.* The composer maintains that music is a mode of expression unlike any other.

People usually complain that music is so ambiguous, and what they are supposed to think when they hear it is so unclear, while words are understood by everyone. But for me it is exactly the

[8] Fyodor Dostoevsky, *The Brothers Karamazov,* Andrew H. MacAndrew, trans. (New York: Bantam Books, 1970), 29.

opposite – and not just with entire discourses, but also with individual words; these, too, seem to be so ambiguous, so indefinite, in comparison with good music, which fills one's soul with a thousand better things than words. What the music I love expresses to me are thoughts not too *indefinite* for words, but rather too *definite*.

Thus, I find in all attempts to put these thoughts into words something correct, but always something insufficient, something not universal. . . . If you ask me what I was thinking of, I will say: just the song as it stands there.[9]

Inappropriate application of ways of knowing

The position which honors the discrete quality of each way of knowing is confirmed by those times in history where one type of discourse was inappropriately applied to others, resulting in unintended negative consequences. Consider, for example, the Newtonian Synthesis. Isaac Newton, a devout Christian and the greatest figure in the Scientific Revolution, posited a machine-like universe that obeyed universal laws, which operated by the will of a rational God. Because humans were made in God's image, they could understand the rational purposes of creation. By the Enlightenment, in spite of Newton's best intentions, people believed that every human enterprise should be ordered in this mechanistic way, including how humans should be governed, how they relate to each other and to a detached clock-maker God. It left humans alienated, on the edge of the universe.[10] Consider, also, Social Darwinism. When theories of Natural Selection were applied to spheres outside of biology they were used to justify unrestrained capitalism and territorial expansion. Eugenics, war, and even genocide became biological necessities.

Whereas these three "cultures" offer unique ways of knowing, they still interlocute; they still articulate. They still can shed light on one another.

[9] Letter to Marc-André Souchay, trans. John Michael Cooper, *Source Readings in Music History*, rev. ed, ed. Oliver Strunk, gen. ed. Leo Treitler (New York: Norton, 1998), 6:14, 1201.
[10] In *Copenhagen*, Michael Frayn's wonderful play about a meeting between physicists Niels Bohr and Werner Heisenberg, Frayn has Bohr proclaim that whereas Newton took Man out of the center of the universe, quantum physics has restored him to his rightful place.

Faith and science

Some who believe that the split between Faith and Science is a zero sum game in which there are winners and losers maintain that Science must come out on top. Keith Ward, in his wonderfully even-handed book, *Pascal's Fire*, reframes the issue as a rift between the old science and the new science, a new science more open to the language of the transcendent.

. . . quantum theory is at least comfortable and makes possible a reconstructed Berkleyan view that all things ultimately exist in the mind of God. On that view, God is not just the designer of the universe; God is the very foundation and ultimate reality.[11]

Both Faith and Science share the quest for ultimate explanations.

One of the values of the universe is that it is supremely intelligible and mathematically beautiful. One of the purposes of human life is that, by the use of our intellects, we can come to understand and enjoy that intelligibility and beauty. Because of this, belief in God actually encourages the pursuit of scientific truth and ought to be a strongly motivating force to pursue such truth.[12]

This resonates with Bacon's fondness for Proverbs 25:2. "It is the glory of God to conceal a thing and the honor of a king to search it out."

Science, as a way of knowing, is indispensible but not comprehensive. Not all experience is observable, repeatable, or measurable. The position in the old science that one should believe things only on the basis of observation and experiment is itself not based on observation and experiment. The position is self-refuting. Faith can describe experience that science cannot.

The Anthropic Principle does not prove the existence of divine intelligence and design but it certainly allows for it. The new science continues to reveal the extreme fine-tuning in the universe. For this universe to exist there must be a subtle balance of expansion and gravity, a balance of gravity and electromagnetism, a balance of nuclear force and electromagnetic force. The existence of life on this planet demands an unimaginable set of highly improbable conditions

[11] Ward, *Pascal's Fire,* 89.
[12] Ibid., 22.

and coincidences, suggesting the possibility of the existence of God. The notion of a creator, a divine intelligence, or ultimate mind, does not diminish the importance of scientific inquiry.

The old, Newtonian universe was a deterministic machine. The new science presents a dynamic, emergent, self-actualizing universe, moving toward greater complexity and purpose. This has led some scientists to consider the existence of divine agency.

Faith and the Arts

Ludwig Wittgenstein, one of the most powerful, yet enigmatic, philosophers of the 20th century, in his *Tractatus,* accomplished a Kantian-like task of defining the limits of knowledge and language. To him, the phenomenal world defined the boundaries around what we can say. Morals, ethics and religious feelings lie outside of the sayable but these are the things that matter most. For these we reach to poetry, story, fable, and the arts. Poetry and the arts are not propositional, not dependent on facts. To Wittgenstein, the purpose was to inspire compassion and the vehicle was art. Hegel and his friend, the poet Hölderlin, believed that only poetry could heal the rift between Faith and Reason. Richard Wagner believed that only the *Gesamtkunstwerk*, the fusion of the arts, could get humanity to pierce the veil of phenomenal reality in order to touch the transcendent. Hofmannsthal had a similar approach, as did Tolstoy in his *Fables*. The Old Testament prophet, Nathan, provides the model.

The prophet Nathan came to David and said, "There were two men in a city, one rich the other poor. The rich man had many flocks and herds but the poor man had but one little ewe lamb who was like a daughter to him, it ate at his table and lay in his bosom. A traveler came to the rich man who was not willing to take from his own flocks and herds so he took the poor man's lamb, slaughtered it and fed it to his guest." David's anger was greatly kindled against the man and he said to Nathan, "As the Lord lives this man shall surely die because he did this thing and because he had no pity!" And Nathan said to David, "Thou art the man."[13]

Now, Nathan could simply have said to David, "You've sinned; you've committed adultery with Bathsheba and you had her husband killed," causing David to rationalize or to justify himself,

[13] II Samuel 12.

but instead, Nathan mediated spiritual truth through the artifice of a story, through indirection, through the poetic device of metaphor, forcing David to face himself. This is what Wittgenstein meant when he maintained that what we must keep silent about, what lies outside of the sphere of propositions and facts, what is most important, requires the poetic.

Science and the Arts

Science and the arts also articulate. The mathematical beauty and elegance of the cosmos is reflected in works of art. In the search for truth both scientists and artists respond to the creative impulse.

Scientific understanding can perhaps show that there is beauty and elegance in the natural order, that there is a propensity in cosmic emergence towards life and consciousness, and that those elements of nature that seem harsh or indifferent towards human life are in fact necessary to the highly integrated structure of physical laws that make human life possible. The scientific enterprise is not so indifferent to value as it may sometimes seem to be. The gulf that still exists between the sciences and the humanities can be bridged by a deeper understanding of the poetry of science, and of the truth-disclosing character of music, literature and art.[14]

Conclusion

Though the disciplines in these three cultures articulate in elegant ways they must be considered distinct ways of knowing. Francis Bacon maintained that science should be used for the betterment of the human condition and, indeed, science has contributed immeasurably to our well-being and to our understanding of the cosmos. It must be allowed to pursue discovery unencumbered – let science be science. Whereas science is an indispensible way of knowing it is not all-encompassing. For those aspects of human experience which lie outside the reach of science, the spheres of value and feeling, let us honor the arts and faith for their distinct epistemic paths. This approach will best serve the public interest.

[14] Ward, *Pascal's Fire*, 148, 149.

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