

from Logos and Glory
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CHAPTER TWO: Kant's Anti-Trinitarian Personalism of Autonomy

In his penetrating study of Wojtyła's philosophy, Kenneth Schmitz argues that the most significant challenge to which Wojtyła's philosophical personalism responds is a certain subjective understanding of personal subjectivity and interiority that gained wide acceptance in the Modern Age.¹ A particular emphasis on subjectivity, Schmitz shows, emerged from the sixteenth century onward together with the rise of a mechanistic account of nature. The Aristotelian account of nature, widely influential in the Middle Ages but rejected by late Medieval Nominalism, has a strong sense of the interiority and depth of all natural beings. Natural beings are constituted by their own interior principles and causes that involve a relation both to their creative origin and to their end and good. Nature comes from the wisdom of God and acts for an end. The good is the cause of causes. Human beings are not alone as beings of longing, as beings ordered to the good, but in their rational nature, in which ordination to the good is most fully explicit, they experience a deep kinship with the interior teleology of other natural beings and with their own sentient and bodily nature.

The mechanistic account of nature in the wake of Bacon and Descartes denied the natural interiority (the conscious interiority of sense perception and sense desire in the case of animals and objective non-conscious interiority of natural tendencies rooted in the inner nature of plants and non living beings) of all material beings and the kinship of the human person with the sub-

¹ See Kenneth L. Schmitz, *At the Center of the Human Drama: The Philosophical Anthropology of Karol Wojtyła/Pope John Paul II* (Washington DC: Catholic University of America Press, 1993), 121-45, esp. 131-7.

rational natural cosmos. Alone in an inhospitable world deprived of inner meaning, the freedom of the conscious subject becomes “absolute” as well, that is, detached from sources of meaning outside itself.

This, then, is the genesis of the modern sense of subject as subjectivity. We might say that subjectivity is the self-defense by which consciousness fends off a world either hostile to its inhabitation or at least without companionate room for it, even while consciousness subverts the integrity of that world by its imperious demands. The modern shift gave to the human subject an absolute status precisely in its character *qua* consciousness; for human consciousness not only sets its own terms but the terms for reality itself.²

Kant is the supreme exponent of this new sense of subjectivity. Wojtyła developed his own philosophical personalism in partial agreement and disagreement with Kant.³ He writes about this development in *Person and Act*,

The author devoted himself to the analysis of the work of M. Scheler, in particular his *Formalism in Ethics and Material Ethics of Value*. The critique of Kant contained in that work, which is of fundamental significance for our researches, became for this author the occasion to reflect upon and partly accept some elements of Kantian personalism. This refers particularly to the “ethical” personalism expounded in *Groundwork for the Metaphysics of Morals* (1785)...

The author holds that the discussion between Scheler (material ethics of value) and Kant (formalism in ethics) was a “point of departure” *sui generis* for the considerations carried out in the present study regarding person and act. This discussion, in fact, although it directly concerns the conception of ethics, also examined in depth the conception of man, especially the conception of the person, which philosophy (and also theology) inherited from Boethius, and it became an invitation and, as it were, a challenge to present a new conception and a new presentation of these ideas.⁴

Note that what Wojtyła came to accept in his study of Scheler were above all some elements of Kantian personalism. Wojtyła’s students testify that their teacher’s most continuous and serious partner in philosophic dialogue, evident throughout his lectures and seminars, was indeed Kant.⁵ “Kant, *Mein Gott!*

² Schmitz, *Center of the Drama*, 135-6.

³ Some have suggested that the particular philosophical context in which Wojtyła developed his philosophical personalism was the French personalist movement around Emmanuel Mounier (with which Maritain was associated). Indeed, there is clear evidence that Wojtyła took part in the activities of a group of Polish personalists influenced by *Esprit* who founded the journal *Znak* or wrote regularly for it. See John Hellman, “John Paul II and the Personalist Movement,” *Cross Currents* 30 (1980-81): 415. See also Emmanuel Mounier, *Personalism* (Notre Dame IN: University of Notre Dame Press, 1952). An excellent account of the relation between Mounier and Maritain is offered by Joseph A. Amato, *Mounier & Maritain: A French Catholic Understanding of the Modern World* (Ypsilanti MI: Sapientia, 2002). A detailed survey of French personalism, highlighting particularly its socialist and communist sympathies, is offered by John Hellman, *Emmanuel Mounier and the New Catholic Left 1930-1950* (Toronto: University of Toronto Press, 1981). See also Rufus William Rauch, *Politics and Belief in Contemporary France: Emmanuel Mounier and Christian Democracy, 1932-1950* (The Hague: Nijhoff, 1972).

⁴ Karol Wojtyła, [*Person and Act*] *Persona e atto* [Polish and Italian], ed. Giovanni Reale and Tadeusz Styczeń (Milan: Bompiani, 1969 * [2001]), 79, footnote 8.

⁵ According to the testimony of Stanisław Grygiel.

Kant!”⁶ The dialogue with Kant is documented particularly in Wojtyła’s *Lublin Lectures*.⁷

Wojtyła’s fascination with Kantian personalism is understandable. With absorbing intellectual power, Kant understood the components of Modernity and welded them into a unified system. He presents a rigorously reflected alternative to the Christian vision of the person, in some ways the most directly and radically opposed alternative. His personalism is anti-Trinitarian to its very core.

Four strands at the origin of science: (1) Nominalism; (2) Platonism-Galileo: Platonists don’t distinguish between matter and privation ST 1.5.3 c. , hence mathematical approach is sufficient as in the *Timaeus*; (3) Aristotle’s *Mechanics*; (4) power over nature

1. Science for the Sake of Power

a. Kant’s Project of an Integral Modernity

Let us gain an initial overview of some of the components of Modernity considered by Kant and of the way he welds them into an integral whole.⁸ Three components are particularly important for him. Only the first two are specifically modern, though the third becomes so when welded in Kant’s particular way to the others.

1. *Newton’s Principia Philosophiae Naturalis* (published 1687): Kant was convinced that Newton had set natural science on the definitive path of knowledge with his deterministic laws of motion, consummating a development begun with Bacon and Descartes.
2. *Hume’s skeptical account of experience* (published 1740 and 1748): Kant concedes to Hume that experience is utterly concrete and irrational, showing us no true causality. What it gives us is only constant conjunction of sense impressions and consequent association by habit. Moral experience is in a similar way a flux of unintelligible emotions. Facts are separate from values. One cannot argue from one to the other. Hume’s account of experience, Kant frankly admits, awoke him from his pre-critical dogmatic slumbers.
3. *Christian Morality and Religion*: Kant is thoroughly committed to a duty-based morality inherited from his Lutheran roots in secularized form. A duty-based morality, he is convinced, presupposes the freedom of the will,

⁶ “Kant, My God! Kant!” Weigel, *Witness to Hope*, 128.

⁷ See Karol Wojtyła, [*Lublin Lectures*] *Lublinter Vorlesungen*, ed. Juliusz Stroynowski (Stuttgart-Degerloch: Seewald, 1954-57 [1981]), ###. Plans to produce an English translation of these lectures have recently been abandoned.

⁸ A more detailed analysis of Kant’s system including documentation from his works is offered below, pp. ###. The purpose of the bird’s eye view offered here is to allow readers to keep the whole in mind as they go on to consider the details.

the immortality of the soul and the existence of God as lawgiver and final judge.

Kant accepts all three of these components present in Modernity as givens, although his attitude towards them differs substantially: he has full academic reverence for Newtonian science and strives for full compliance with it; he concedes Hume's empiricism; and he is absolutely committed to moral duty but otherwise free to do what he sees fit with Christian faith.

There are powerful institutional and theoretical tensions between these three givens, tensions that still exist today.

1. *Tension between Newton and Hume:* It is impossible to reach the certainty and universality of Newton's physics on the basis of experience as understood by Hume. How can both Newton and Hume be right? In our own time a similar tension exists in universities (with much echo in popular culture) between the natural sciences and the humanities. While the sciences still accept a modified version of the scientific rationality developed by Bacon, Descartes and Newton, the humanities are dominated by skeptical post-modern currents akin to Hume.
2. *Tension between Hume and Christian Morality-Religion:* Human emotions and pleasures are completely irrational, according to Hume. Happiness, the sum of pleasures, cannot be defined or understood. There is no good in nature, only facts. Facts must be kept separate from values. These Humean principles prepared the rise of Utilitarian ethics. The point of human acts is to produce the greatest happiness (that is, pleasure) for the greatest possible number of people. Utilitarian ethical "norms" are conditional: if you want to produce more happiness, then do this... Biblical morality, by contrast, is filled with unconditional or categorical norms: You shall! You shall not!
3. *Tension between Christian Morality-Religion and Newton:* The Newtonian universe, as Kant understands it, is a closed system that needs no external causal input from God. Its inner working follows the deterministic laws of motion. In that universe, there is no freedom of the will, no immortality of the soul, and no definitive justice by reward and punishment in the afterlife. Only mathematical properties are truly objectively present in nature, and goodness is not one of them. No moral norms can therefore be derived from nature. In our own time, a similar tension still exists between natural science and Christian faith, even after the paradigm shift from Newton to quantum physics, which is still a form of mathematical mechanics, though the particular mathematical laws differ. Some advocates of Neo-Darwinian evolution are engaged in an anti-religious crusade and vice versa.

Kant developed a brilliantly simple strategy to weld these three givens into a system of integral Modernity that does justice, he supposes, to all three parts and minimizes the tensions between them. The strategy has two steps, one of

them concerned with knowledge, the other with faith. "I had to do away with *knowledge* to make room for *faith*."⁹

In order to understand how Kant does away with knowledge to make room for faith, let us recall the three aspects of Greek *logos* unfolded in Plato's *Republic*.¹⁰ (1) Human reason is defined by radical openness to being as a whole. "Those who welcome each being should be called lovers of wisdom (philosophers)."¹¹ "The soul is in a certain way all beings," namely, by being open to knowing all that exists.¹² (2) The theoretical or contemplative order (*theoria*) has absolute and radical primacy over the practical order (*praxis*). Once *theoria* has grasped something of the truth about the good, it binds *praxis* to that truth. (3) Human reason implies an open longing that cannot be satisfied by any finite being, not even by moral virtue. It reaches out with desire toward the infinite, toward the divine origin of all beings. The building of a truly human city must take into account, above all, the common good that is the object of this longing.

Kant's First Step, Doing Away with Knowledge, by the Denial of the First Aspect of Greek Logos: The knowledge Kant does away with is not Newtonian physics, for which he has the greatest academic respect as "true" science, but the openness to being. He inverts the order between the mind and being posited by the first aspect of Greek *logos*. Instead of the mind conforming to beings, the "beings" of the material cosmos conform to the mind. They are mere appearances, givens in consciousness. The goal of this first step is to limit the competence of theoretical reason to the ordering of sense impressions in a Newtonian material cosmos, to deny to theoretical reason any competence outside this sphere. "I had to do away with knowledge."

Kant's Second Step, Making Room for Faith, by the Denial of the Second Aspect of Greek Logos: Contradicting the second aspect of Greek *logos*, the absolute priority of *theoria* over *praxis*, Kant separates practical reason from theoretical reason. The goal of this second step is to remove Christian morality-religion from the theoretical sphere and settle it safely within practical reason alone. In the purely practical sphere, faith can find room, protected from any attacks by science. This second step also implies letting go of the third aspect of Greek *logos*, the longing for an infinite common good. How do these two steps overcome the three tensions?

1. *Overcoming the Tension between Newton and Hume by the First Step:* By making the "beings" of the material world conform to the human mind, by turning them into mere appearances produced by the human mind according to the pattern of Newton's laws, Kant reconciles *Newton and Hume*. Newtonian science can be certain and universal, because it does not depend on experience. Even though Hume is right about experience, Newton is right about the physical world, because the Newtonian order lies *a priori* in the

⁹ Kant, *Critique of Pure Reason*, B XXX.

¹⁰ See above, pp. ###.

¹¹ Plato, *Republic*, 480a.

¹² Aristotle, *De Anima*, 431b.21.

structure of the human mind before experience. The price to be paid for this reconciliation is that there is no physical world (except for the unknowable “thing in itself”). What we take to be an objectively existing world is a product of the ordering activity of the mind.

2. *Overcoming the Tension between Hume and Christian Morality-Religion by the Second Step:* By separating practical reason from theoretical reason, Kant eliminates the tension between Hume and Christian morality-religion. Practical reason as expressed in Christian morality does not need to rely on any experience of the good, on any theoretical truth about the good. It contains its own *a priori* order within itself, an order prior to any good or evil, namely, autonomous self-movement according to universal norms. Autonomy is the basis of the dignity of the person. Due to this dignity, persons must not be used as a mere means as in Utilitarianism. The freedom and dignity of the person rather than the common good envisaged in the third aspect of Greek *logos* is the true foundation of social order.
3. *Overcoming the Tension between Christian Morality-Religion and Newton by the Two Steps Combined:* Kant’s *goal in his first step* is to limit the competence of theoretical reason to the ordering of sense impressions in a Newtonian material cosmos. Science can raise no objections against religious faith. Kant’s *goal in the second step* is to settle faith in practical reason alone. Once again, there is a price to be paid. The freedom of the will, the immortality of the soul and the existence of God as the judge who rewards moral goodness, which Kant takes to be the three fundamental tenets of faith, are morally decent thoughts, nothing more. They are neither true nor false in the theoretical order. The Christian religion is purely moral. It is a matter of values, not of being. In this reinterpretation of faith, Kant lets go of the third aspect of Greek *logos*. Human beings must be satisfied with being morally good. They must refrain from stretching out toward an infinite good.

The success of Kant’s synthesis is was large measure due to the systematic rigor and brilliance with which he welded the three pieces together. This brilliance has earned him the reputation of being *the* representative of critical Enlightenment reason.

The metaphor of “welding” expresses an important aspect of Kant’s way of practicing philosophy, namely, the violent imposition of unity by fire. Fire needs to soften the materials that resist unity by their hardness. The hardness is due to Greek *logos*. Kant’s fire burns away all three aspects of Greek *logos*.

The elimination of the first principle of Greek *logos* has weighty consequences for Christianity. By removing all theoretical content from faith, Kant compels Christians to be content with thinking morally decent thoughts and to refrain from asking whether these thoughts are actually true in the sense of corresponding to real being. He compels them not even to ask whether there really is a God and an eternal life. This reinterpretation of faith radically undercuts the Christian love of God as the supreme common good. Hence the need for fire.

As pointed out above, Kant's attitudes to the three givens of Modernity differ substantially: he has full academic reverence for Newtonian science; he concedes Hume's empiricism; and he is absolutely committed to moral duty but otherwise free to do what he sees fit with Christian faith. While the third given, duty, is closest to his heart, his absolute respect for Newtonian science is the true reason for the newness of his system in its rejection of Greek *logos*. It is this absolute respect and compliance that leads him to take the other steps.

Although the distinction between science and philosophy was formally introduced into academic life only in the nineteenth century, Kant's philosophy is one of the earliest examples of a rigorous philosophy that takes "science" as a body of knowledge outside of itself as a given and complies with it without critical analysis of its foundations. Crucial first principles of metaphysics, which were considered the primary objects of critical philosophical reflection by Plato and Aristotle, are thus outsourced, as it were, from philosophy to Newtonian physics, that is, to mechanics: at least in this respect, Kant's philosophy acts as the handmaid of a science accepted by academic faith from higher authority. The philosophies of Bacon and Descartes *constituted* the nature of this science at its historical origin. Kant *presupposes* it *as an accomplished fact* and does not critically analyze its historical roots.

Before we enter into the details of Kant's system, we should therefore take a look at precisely these historical roots. Since Kant's system depends crucially on his absolute respect for Newtonian science, one must ask. "Is this respect truly justified?" The question Hans Jonas raises about the Neo-Kantian foundations of Bultmann's theology needs to be addressed to Kant as well.

The question is permitted whether Bultmann, totally conceding the modern axiom of immanence, has not given more to modern science than is its due. This seems to be the case, for instance, when he writes, "Modern science at any rate does not believe that the course of nature can be breached by supernatural forces" and he means to say that it believes that this cannot occur. But on such a "can" and "cannot" science does not pronounce... Bultmann is, of course, right that *subjectively* this very faith, i.e., the science-inspired *idea* of a natural law that brooks no exception, is the dominant faith of "modern man" *including* the theologian (less, perhaps, lately the scientist himself)... Bultmann shared with Kant an exaggerated conception of the tightness and rigidity of worldly causality.¹³

What is the origin of this scientific faith, which understands itself as knowledge rather than faith? What is the origin of the axiom of immanence, of the absence of God from the material cosmos?

b. Francis Bacon (1561–1626)

The ambition of power over nature played a pivotal role in the beginnings of modern science. The first one to propose a rigorously technological refor-

¹³ Hans Jonas, "Is Faith Still Possible Today? Memories of Rudolf Bultmann and Reflections on Philosophical Aspects of his Work," *Harvard Theological Review* 75 (1982), 1-23; here 9-10, 14. See Waldstein, *Foundations of Bultmann's Work*, 139.

mation of knowledge was Francis Bacon, a devoted public servant of realistic power under Elizabeth I and her successor James I. He rose to become Lord Chancellor, but ended in disgrace and poverty after signing a confession that he took bribes from interested parties in at least twenty-eight law suits under his jurisdiction.¹⁴ We owe the story of his death to a report by his secretary, the philosopher Thomas Hobbes. He died from pneumonia contracted while experimenting with snow as a means for refrigerating chicken meat.¹⁵

Thomas Jefferson places Bacon first in “my trinity of the three greatest men the world had ever produced.”¹⁶

Bacon, Locke, and Newton...I consider them as the three greatest men that have ever lived, without any exception, and as having laid the foundation of those superstructures which have been raised in the Physical and Moral sciences.¹⁷

Benedict XVI agrees with Jefferson that Bacon is a key figure at the foundations of Modernity, although his own list of the three greatest probably contains only first century Jews, the second one presumably being a woman.

We must take a look at the foundations of the modern age. These appear with particular clarity in the thought of Francis Bacon. That a new era emerged—through the discovery of America and the new technical achievements that had made this development possible—is undeniable. But what is the basis of this new era? It is the new correlation of experiment and method that enables man to arrive at an interpretation of nature in conformity with its laws and thus finally to achieve “the triumph of art over nature” (*victoria cursus artis super naturam*).¹⁸

The novelty—according to Bacon’s vision—lies in a new correlation between science and praxis [that is, the realm of human action]. This is also given a theological application: the new correlation between science and praxis would mean that the dominion over creation—given to man by God and lost through original sin—would be reestablished.

Anyone who reads and reflects on these statements attentively will recognize that a disturbing step has been taken: up to that time, the recovery of what man had lost through the expulsion from Paradise was expected from faith in Jesus Christ: herein lay “redemption”. Now, this “redemption”, the restoration of the lost “Paradise” is no longer expected from faith, but from the newly discovered link between science and praxis. It is not that faith is simply denied; rather it is displaced onto another level—that of purely private and other-worldly affairs—and at the same time it becomes somehow irrelevant for the world.

This programmatic vision has determined the trajectory of modern times and it also shapes the present-day crisis of faith which is essentially a crisis of Christian hope. Thus hope too, in Bacon, acquires a new form. Now it is called: *faith in progress*.

For Bacon, it is clear that the recent spate of discoveries and inventions is just the beginning; through the interplay of science and praxis, totally new discoveries will follow, a totally new world will emerge, the kingdom of man. He even put forward a vi-

¹⁴ The justice of the conviction has been intensely debated. See Nieves Mathews, *Francis Bacon: The History of a Character Assassination* (New Haven: Yale University Press, 1996).

¹⁵ See John Aubrey, *Brief Lives, Chiefly of Contemporaries, Set Down in the Years 1669 and 1696*, ed. Andrew Clark (2 vols.; Oxford: Clarendon Press, 1898) 1.75.

¹⁶ Thomas Jefferson to Benjamin Rush, January 16, 1811. Paul Leicester Ford, *The Works of Thomas Jefferson* (12 vols.; New York and London, G.P. Putnam’s Sons, 1904-5), 11.168.

¹⁷ Thomas Jefferson to John Trumbull, February 15, 1789. Julian Parks Boyd, *The Papers of Thomas Jefferson* (Princeton: Princeton University Press, 1950), 14.561. For a facsimile of Jefferson’s letter, see www.loc.gov/exhibits/treasures/trm033.html

¹⁸ Bacon, *New Organon*, Aphorism 1.117; Spedding, *Works of Bacon*, Latin 1.323; English 8.149.

sion of foreseeable inventions—including the airplane and the submarine. As the ideology of progress developed further, joy at visible advances in human potential remained a continuing confirmation of *faith in progress* as such.¹⁹

(1) *Puritanism and the Greek Fathers*

In light of the recent study of Bacon's theology by Stephen Matthews,²⁰ one could argue that Benedict XVI uncritically accepts the Bacon of rationalist faith created by the anti-religious champions of the Enlightenment. The Bacon of history, whom the historical critical method uncovers under this layer of atheist hagiographical painting, Matthews argues, is a profoundly committed Christian and a sophisticated theologian.

Bacon's mother Anne was the daughter of Sir Anthony Cooke, the Calvinist tutor of Edward VI, son of Henry VIII and Jane Seymour, crowned in 1547. When Edward died in 1553, only 15 years old, and his Catholic half-sister Mary succeeded him, she imprisoned Sir Anthony in the Tower. He became one of the "Marian exiles", the more than eight hundred prominent and wealthy English Calvinists who took up residence in Geneva and other reformed cities on the continent. For Sir Anthony Cooke, as for the other Marian exiles, Calvin's Geneva was the model of a truly purified Christian commonwealth. The Marian exiles returned in triumph to England when Mary died five years later and the Protestant Elizabeth I began her long reign (44 years, 1558-1603). "The roots of the Puritan movement are to be found among the families of the Geneva exiles and this can certainly be seen in the convictions of Anne Bacon."²¹

The highly educated Anne raised her sons Anthony and Francis according to strict Puritan principles and carefully selected their tutors. Young Francis was thoroughly trained in Calvinist theology. Yet, to his mother's great disappointment, he increasingly diverged from the straight path. This divergence was in large measure due, according to Matthews, to the influence of Bishop Lancelot Andrewes who became Bacon's friend and close collaborator.²² As he wrote his books, Bacon sent drafts to Andrewes for suggestions and corrections, calling him "my inquisitor."²³

The theology of Andrewes was not based principally on Luther and Calvin, but on the Greek Fathers.²⁴

Andrewes has come to be known as one of the "fathers" of Anglo-Catholicism. His theology...is marked by a concern for the authority of tradition, an emphasis on ritual prayer (liturgy)...and a concern for maintaining the Apostolic Succession... Andrewes' reverence for the Church Fathers...led him to develop his own theological system which, though far from unique, was fundamentally Patristic, with a decidedly Eastern turn. Our image of Andrewes should be dominated by his affinity for tradition and the

¹⁹ Benedict XVI, *Spe salvi*, 16-17.

²⁰ See Stephen Matthews, *Theology and Science in the Thought of Francis Bacon* (Aldershot: Ashgate, 2008).

²¹ Matthews, *Theology and Science in Bacon*, 1.

²² See Matthews, *Theology and Science in Bacon*, 28-9.

²³ Spedding, *Works of Bacon*, 10.256.

²⁴ See Nicholas Lossky, *Lancelot Andrewes, the Preacher (1555-1626): The Origins of the Mystical Theology of the Church of England* (Oxford: Clarendon Press, 1991).

Fathers, rather than an association with any of the contemporary flavors of Protestantism.²⁵

Matthews' judgment about Andrewes is confirmed by John Henry Newman. In his Anglican period, Newman summarized the Oxford Movement as "inquiring minds...following the paths of Hooker, Andrewes and Bull, or of their masters, Irenaeus or Cyprian."²⁶ He praised "our wisest doctors and rulers, such as Bishop Andrewes,"²⁷ and held up "Anglo-Catholicism, the religion of Andrewes, Laud, Hammond, Butler, and Wilson."²⁸ He shared the understanding of "the Mass all but Transubstantiation with Andrewes"²⁹ and translated Andrewes' *Private Prayers* from the original Greek into English.³⁰

Matthews shows in his detailed analysis that Bacon increasingly distanced himself from his Puritan roots and came to adopt some of the characteristic views of Andrewes across a broad range of questions, including the apostolic succession. Andrewes stimulated him to develop his own proposal of scientific reform.

Two new theses played a particularly important role in Bacon's project of the Great Instauration or Recovery. Following the Greek Fathers, he became convinced that the fall left substantial positive elements in human nature and did not imply the total depravity of both reason and will posited by Calvin.

Bacon's vision of recovery would be seriously impeded if the fall into sin meant that the human mind and soul had become so corrupt that they were prone to failure and wickedness. This point marks what is perhaps the most significant departure from Calvinism in Bacon's theology. For Calvin and his adherents, human knowledge still existed after the fall, but it was corrupt and always untrustworthy... Attempts to improve earthy conditions through arts and actions are ultimately vain... As there is no hope of transformation here, the hope of the believer must focus on transcending this world by passing to the next... The possibility of any actual recovery from the effects of the fall in this world is proscribed by the pervasiveness of the corruption it brought about.³¹

The second pivotal thesis, according to Matthews, was the division of the history of salvation according to the principle of Recovery or Recapitulation developed by the St. Irenaeus of Lyons on the basis of Ephesians 1:10, "to recapitulate (ἀνακεφαλαιώσασθαι) all things in Christ, those in the heavens and those on earth, in him." The Vulgate translates the key phrase as "*instaurare omnia in Christo*, to renew all things in Christ." Although the concept of *instauratio*, which appears in the title of Bacon's main work, the *Instauratio Magna*, has also other biblical and Patristic echoes, it is St. Irenaeus' millenarian interpretation mediated by Andrewes, Matthews argues, that stands behind Bacon's understanding of the great age of Instauration, of the Renewal or Recovery of

²⁵ Matthews, *Theology and Science in Bacon*, 29-30.

²⁶ John Henry Newman, "Notices of Books," *The British Critic* 24 (1838) 230-38, here 232.

²⁷ John Henry Newman, *Tracts for the Times* 71: "On the Mode of Conducting the Controversy with Rome," in John Henry Newman, *The Via Media of the Anglican Church* (London: Longmans, 1891) 2.136.

²⁸ John Henry Newman, *Apologia pro vita sua* (Oxford: Oxford University Press, 1914), 168.

²⁹ Newman, *Apologia pro vita sua*, 192.

³⁰ John Henry Newman, *Tracts for the Times* 88: "The Greek Devotions of Bishop Andrewes," in *Tracts for the Times by Members of the University of Oxford* (London: Rivington, 1840).

³¹ Matthews, *Theology and Science in Bacon*, 70-71.

human power over nature lost in the fall.³² Following Andrewes, Bacon was convinced that in the state of innocence human beings had a power close to omnipotence over both animate and inanimate nature. They were plenipotentiary vice-regents of God with a comprehensive causal influence like the empyrean heaven in Aristotle's cosmology, the mediatrix of all efficient causality flowing from the prime mover.

(2) *Nominalism*

Bacon sees himself as rebuilding the whole edifice of knowledge on a new foundation, the proper foundation.

There was but one course left, therefore, to try the whole thing anew upon a better plan, and to commence a total reconstruction of sciences, arts, and all human knowledge, raised upon the proper foundations.³³

What, precisely, is the character of the new knowledge? What are its foundations? According to the most widespread narrative, modern natural science arose from actual empirical knowledge of nature, which freed human beings from the imposition of religious belief by ecclesiastical power. On the contrary, the new science as conceived by Bacon is built on a theological premise further specified by the ambition for power.

An important premise of Bacon's theology can be found in the Nominalist theology of William of Ockham,³⁴ which radicalized the voluntarism of Duns Scotus. In his *Regensburg Lecture*, Benedict XVI describes this development from Scotus to Ockham as a break with the synthesis between Greek *logos* and Christian faith.

In the late Middle Ages we find trends in theology which would sunder this synthesis between the Greek spirit and the Christian spirit. In contrast with the so-called intellectualism of Augustine and Thomas, there arose with Duns Scotus a voluntarism which, in its later developments [in the Nominalism of William of Ockham], led to the claim that we can only know God's *voluntas ordinata*. Beyond this is the realm of God's freedom, in virtue of which he could have done the opposite of everything he has actually done. This gives rise...to the image of a capricious God, who is not even bound to truth and goodness. God's transcendence and otherness are so exalted that our reason, our sense of the true and good, are no longer an authentic mirror of God, whose deepest possibilities remain eternally unattainable and hidden behind his actual decisions.

As opposed to this, the faith of the Church has always insisted that between God and us, between his eternal Creator Spirit and our created reason there exists a real analogy, in which—as the Fourth Lateran Council in 1215 stated—unlikeness remains infinitely greater than likeness, yet not to the point of abolishing analogy and its language. God does not become more divine when we push him away from us in a sheer, impenetrable voluntarism; rather, the truly divine God is the God who has revealed himself as *logos*...³⁵

³² See Matthews, *Theology and Science in Bacon*, 31, 79 and 99-102.

³³ Bacon, *Great Instauration*, Preface; *Works of Bacon*, Latin 1.195; English 8.18.

³⁴ On Nominalism as a key ingredient in the Reformation, see Louis Bouyer, *The Spirit and Forms of Protestantism* (London: Harvill Press, 1956).

³⁵ Benedict XVI, *Regensburg Lecture*, December 12, 2006.

By emphasizing God's arbitrary power, Nominalism obscures the interior goodness of created beings. It sees their order as an order God happens to have imposed on them from the outside, one among many orders he could have imposed. It regards natural beings as artifacts, not as natural beings, not as having an interior principle of order toward the good. They reflect the free divine power, not the divine being, goodness and wisdom. "This [voluntaristic] line of thought even contributed in the end to the rise of mechanism: the ideal universe from this point of view is a mechanical one."³⁶

Popper defines the main difference between Nominalism and the "essentialism" of Greek *logos* as follows.

Methodological essentialism [exemplified by Plato and Aristotle], i.e. the theory that it is the aim of science to reveal essences and to describe them by means of definitions, can be better understood when contrasted with its opposite, *methodological nominalism*. Instead of aiming at finding out what a thing really is, and at defining its true nature, methodological nominalism aims at describing how a thing behaves in various circumstances, and especially, whether there are any regularities in its behaviour. In other words, methodological nominalism sees the aim of science in the description of the things and events of our experience, and in an "explanation" of these events, i.e. their description with the help of universal laws...

The methodological Nominalist will never think that a question like "What is energy?" or "What is movement?" or "What is an atom?" is an important question for physics; but he will attach importance to a question like: "How can the energy of the sun be made useful?" ... And to those philosophers who tell him that before having answered the "what is" question he cannot hope to give exact answers to any of the "how" questions, he will reply, if at all, by pointing out that he much prefers that modest degree of exactness which he can achieve by his methods to the pretentious muddle which they have achieved by theirs.³⁷

What is fascinating about this text is that Popper did not write it as a statement about Bacon. He wrote it to express his own conviction about the proper method of natural science in the twentieth century. That it applies with historical precision to Bacon in the sixteenth and seventeenth centuries and pinpoints Bacon's Nominalist roots (though without mentioning Puritanism) is not a coincidence. Popper adds, "Methodological nominalism is nowadays fairly generally accepted in the natural sciences."³⁸

Popper's tone of disdain for Greek *logos* is intense. To the philosophers who urge them to ask the classical Socratic question, What is it? the scientists reply, "if at all," that they prefer exact results to Greek "pretentious muddle." Even in this disdain, Popper is a portrait of Bacon.

(3) *Power Over Nature*

Bacon expresses the fundamental principle of his philosophy in the passage chosen by Kant as the motto of the *Critique of Pure Reason*.

³⁶ Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge MA: Harvard University Press, 1989), 82.

³⁷ Popper, *The Open Society and its Enemies*, 1.32.

³⁸ Popper, *The Open Society and its Enemies*, 1.32.

Of myself I say nothing; but in behalf of the business which is in hand I entreat men to believe that it is not an *opinion* to be held, but a *work* to be done; and to be well assured that I am laboring to lay the foundation, not of any *sect* or *doctrine*, but of *human utility and power*.³⁹

“Human knowledge and power coincide in the same. *Scientia et potentia humana in idem coincidunt*... Nature is conquered by obeying (*parendo vincitur*).”⁴⁰ The second sentence shows that Bacon does not hold what is commonly attributed to him, namely, “Knowledge is power.”⁴¹ Knowledge and power are opposites, as obeying and conquering are, but they coincide on the level of intention, because the purpose of obeying nature by knowing is to conquer her and subject her to our purposes. “And so these twin intentions, namely, those of human *Knowledge and Power*, truly coincide in the same (*vere in idem coincidunt*).”⁴² On this point, Bacon’s secretary Hobbes agrees with his employer. “Knowledge is for the sake of power. *Scientia propter potentiam*.”⁴³

Some passages in Bacon appear to support knowledge for its own sake.

As the uses of light are infinite, in enabling us to walk, to ply our arts, to read, to recognize one another; and nevertheless the very beholding of the light is itself a more excellent and a fairer thing than all the uses of it; so assuredly the very contemplation of things, as they are, without superstition or imposture, error or confusion, is in itself more worthy than all the fruit of inventions.⁴⁴

Spedding comments, “This is one of the passages which show how far Bacon was from what is now called a utilitarian.”⁴⁵ On the contrary, the immediately preceding sentences show that what Bacon praises is the universal utilitarian power of knowledge in contrast to the particular goods of utility. In the text quoted by Benedict XVI (“the triumph of art over nature”), he points out that the mythical fastest runner of ancient Greece, the princess Atalanta, was tricked into defeat by a competitor who dropped a golden ball each time she caught up with him. She stooped to pick up the balls and lost the race.

³⁹ Bacon, *Great Instauration*, Preface, final paragraph. Emphasis added; Spedding, *Works of Bacon*, Latin 1.210; English 8.36. Spedding’s translations have been occasionally altered to bring the English closer to Bacon’s Latin.

⁴⁰ Bacon, *New Organon*, Aphorism 1.3; *Works of Bacon*, Latin 1.241; English 67-8.

⁴¹ John Henry uses this quote as the title of his accessible survey of Bacon’s work, a sustained apologia for the scientific revolution: Knowledge is Power: How Magic, The quote is a mistranslation of Bacon’s statement “*scientia potentia est*.” In its original context, the meaning of this statement is the opposite of the usual interpretation. Bacon reports the opinion of some theologians according to whom God does not have power over everything, but still knows everything. His knowledge extends beyond his power. “They hold that in its extent the knowledge of God goes beyond his power or rather (since knowledge itself is a power, *nam et ipsa scientia potestas est*) that the power by which he knows goes beyond the power by which he moves and acts.” Bacon, *Sacred Meditations: Heresies*; Spedding, *Works of Bacon*, Latin 14.79; English 14.95. Given the context, the indefinite article should be used in the English translation. “Knowledge is a power.” The power Bacon has in mind is not power in the sense of that which “moves and acts.” Spedding’s translation without the indefinite article, “Knowledge is power,” probably stands behind the common misinterpretation of this text.

⁴² Bacon, *Plan of the Work*; Spedding, *Works of Bacon*, Latin 1.227; English 8.53.

⁴³ Thomas Hobbes, *Elementa Philosophiae*, 1.1, *De Philosophia*, par. 6, *Opera Philosophica* (ed. William Molesworth; London: John Bohn, 1839) 6.

⁴⁴ Bacon, *New Organon*, Aphorism 1.129; Spedding, *Works of Bacon*, Latin 1.337; English 8.163.

⁴⁵ Spedding, *Works of Bacon*, 1.337, footnote 1.

If there be any one more apt and better prepared for mechanical pursuits...let him by all means use his industry to gather...works, which may serve as interest until the principal be forthcoming. But for myself, aiming as I do at greater things, I condemn all unseasonable and premature tarrying over such things as these; being (as I often say) like Atalanta's balls. For I do not run off like a child after golden apples, but stake all on the triumph of art over nature in the race.⁴⁶

In fact, Bacon considers seeking knowledge for its own sake immoral. It is the equivalent of enjoying the beauty of a prostitute for pleasure instead of honorably using one's wife in order to beget children and secure the comfort of life. "Knowledge should not be as a prostitute for pleasure...but as a wife for honorable generation, fruit and comfort."⁴⁷

The extent of the power sought by Bacon is vast: "power over nature, *potestas super naturam*,"⁴⁸ "the power and empire of the human race itself over the universe of things, *humani generis ipsius potentia et imperium in rerum universitatem*."⁴⁹

In pursuing this end, Bacon sees himself as overturning the supposed knowledge inherited from Antiquity and the Middle Ages.

The state of knowledge is not prosperous nor greatly advancing; and...a way must be opened for the human understanding *entirely different from any hitherto known*, and other helps provided, in order that the mind may exercise the authority over the nature of things (*ius in rerum naturam*) which properly belongs to it.⁵⁰

The "wisdom" attained by the Greeks and unfolded by the Scholastics is the mere boyhood of knowledge. It consists of the mere chatter of *logos* rather than the manly power to generate life in *praxis*.

For its value and utility it must be plainly avowed that that wisdom which we have derived principally from the Greeks is but like the boyhood of knowledge, and has the characteristic property of boys: it is ready for chattering, but worthless for generating (*ad garrendum prompta, ad generandum invalida*) due to its immaturity, for it is fruitful of controversies but barren of works.⁵¹

Human knowledge passes beyond mere chatter (*logos*), it becomes mature and manly, able to beget children, only when it is directed to its true end, namely, the triumph of art over nature. Bacon concludes his *New Organon*, which replaces the old *Organon* (Aristotle's treatises on logic) with the following passage. In the Latin original, the word "subdued (*subigitur*)" (cf. "subdue the earth" Gen 1:28, Vulgate *subicite*) is the last word.

At length (like an honest and faithful guardian) I may hand over to men their fortunes, now their understanding is *emancipated and come as it were of age*; whence there cannot but follow an improvement in man's estate and an enlargement of *his power over nature*. For man by the fall fell at the same time from his state of innocence and from his *dominion over creation*. Both of these losses however can even in this life be in some part repaired, the former by religion and faith, the latter by arts and sciences. For creation was not by the curse made altogether and forever a rebel, but in virtue of that charter 'In the sweat

⁴⁶ Bacon, *New Organon*, Aphorism 1.117; Spedding, *Works of Bacon*, Latin 1.323; English 8.149.

⁴⁷ Bacon, *Advancement of Knowledge*, 1; Spedding, *Works of Bacon*, 2.143.

⁴⁸ Bacon, *New Organon*, Aphorism 2.52, end; Spedding, *Works of Bacon*, Latin 1.538; English 8.350.

⁴⁹ Bacon, *New Organon*, Aphorism 1.129; Latin 1.222.

⁵⁰ Bacon, *Great Instauration*, Preface; Spedding, *Works of Bacon*, Latin 1.199; English 8.25.

⁵¹ Bacon, *Great Instauration*, Preface; Spedding, *Works of Bacon*, Latin 1.200; English 8.26.

of your face shall you eat bread,' it is now by various labors (not certainly by disputations or idle magical ceremonies) at length and in some measure *subdued (subigitur) to the supplying of man with bread, that is, to the uses of human life.*⁵²

A passage in Plutarch's life of Marcellus helps to throw into relief the newness of Bacon's central thesis. Plutarch describes the powerful machines by which Archimedes was able to hold off the Roman army for a long time during the siege of Syracuse, picking up entire ships with his levers and throwing them against the rocks. He praises Archimedes's mechanical power, but even more his refusal to leave behind any documentation that would make such power generally available for industrial purposes.

In reality, all the rest of the Syracusans were but a body for the designs of Archimedes, and his the one soul moving and managing everything; for all other weapons lay idle, and his alone were then employed by the city both in offense and defense...And yet Archimedes possessed such a lofty spirit, so profound a soul, and such a wealth of scientific theory, that although his inventions had won for him a name and fame for superhuman wisdom, he would not consent to leave behind him any treatise on this subject, but regarding the work of an engineer and every art that ministers to the needs of life as ignoble and vulgar, he devoted his earnest efforts only to those studies the beauty and excellence of which are unmixed with necessity.⁵³

From the vantage-point of a modern sensibility shaped by Bacon's humanitarianism, one is likely to criticize Archimedes as an elitist opposed to technological progress for the benefit of the human race. From a Christian vantage-point that adopts this same sensibility, one might condemn him as deeply Pagan, as opposed to the divine command to "subdue the earth" (Gen 1:28) and as heedless of the demands of charity to do good to our neighbor.

(4) *Laws of Nature*

Yet, the theology of late medieval Nominalism is not sufficient to explain the specific form of natural science conceived by Bacon and followed by Popper. In particular, it does not explain the concentration on "laws of nature" as descriptions of regularity in behavior.

This emphasis on "laws of nature" is due to the choice of power over nature as the end of knowledge. Inasmuch as they are laws of actual behavior, laws of nature are most useful; and since they are most useful they are most true. "What in operation is most useful, that in knowledge is most true. *Quod in Operando utilissimum, id in Sciendo verissimum.*"⁵⁴ This axiom has a certain legitimacy when "most true" is contrasted with "false." It is incorrect, however, when "most true" is simply taken in itself, because some truths are not useful. In the case of useless truths, Bacon's axiom functions as a non-cognitive filter that eliminates some kinds of truths, not because they are not true, but because they are not useful. The reason for the elimination is not that knowledge

⁵² Bacon, *New Organon*, Aphorism 2.52, end; emphases added; *Bacon Works*, Latin, 1.538-9; English 8.350.

⁵³ Plutarch, *Life of Marcellus*, 307.2-4; Loeb, *Lives*, 5.479-80.

⁵⁴ Bacon, *New Organon*, Aphorism 2.4, end; Spedding, *Works of Bacon*, Latin 1.346; English 8.171.

has increased and shown these supposed truths to be false, but that the interest in holding on to these truths has faded.

Of the four causes investigated by the Aristotelian philosophy of nature before Bacon's day, the two considered most important, namely final and formal cause, should be dismissed from natural science. "The final cause rather corrupts than advances the sciences except such as have to do with human action."⁵⁵ "Final causes are from the nature of man rather than the universe (*ex natura hominis potius quam universi*)."⁵⁶ Giving attention to the final cause is irrelevant to the concerns of power since power is concerned with subduing a thing as material under a superimposed purpose. "Inquiry into final causes is barren, and like a virgin consecrated to God gives birth to nothing."⁵⁷

Bacon does not deny final causes entirely. He assigns a place to their study in what he calls Metaphysics.⁵⁸ As studied by Metaphysics, final causes are the ends intended and realized by divine providence. They are not ends, however, that enter into the constitution of natures. St. Thomas understands natural law as a participation of the human mind in God's wisdom, in the ordering of creatures to the good. Natural law is not, therefore, the naked imposition of will and power by God. It is promulgated as a law through the created light of reason interior to the human person and through the inner goodness and order of nature grasped in that light. In conformity with his Nominalist theology, Bacon denies the possibility of natural law. He draws a fascinating connection between Nominalism and form of politics in which the ruler uses subordinates as tools of power. The *glory* of divine wisdom (*logos*) shines forth more clearly in this mode of divine government by external power.

For as in civil matters political prudence is much higher and more admirable if someone can put the works of others to use (*abuti*) for his own ends and desires and still never acquaint them with his purpose (so as they shall do what he wills and yet not know that they are doing it), than if he shared his counsels with those who administer his will; so does the wisdom of God shine forth more admirably when nature intends one thing and Providence draws forth another, than if the characters of Providence were impressed on the natural figures and movements.⁵⁹

What is significant in this statement is the mirroring between three levels: a Nominalist theological concept of divine government; a Machiavellian notion of human politics; and the new mechanist science of nature. In each order, the decisive principle is the imposition of power from the outside that subjects beings as matter to an outside end.

Bacon excludes the formal cause, understood as the specific nature of a thing, for similar reasons. "The work and aim of human power is to generate and superimpose a new nature or natures on a given body."⁶⁰ What is of inter-

⁵⁵ Bacon, *New Organon*, Aphorism 2.2; Spedding, *Works of Bacon*, Latin 1.342; English 8.168.

⁵⁶ Bacon, *New Organon*, Aphorism 1.48; Spedding, *Works of Bacon*, Latin 1.256; English 8.81.

⁵⁷ Bacon, *Advancement of Knowledge*, 3.5; Spedding, *Works of Bacon*, Latin 2.298; English 8.512.

⁵⁸ See Bacon, *Advancement of Knowledge*, 3.4; Spedding, *Works of Bacon*, Latin 2.264-97; English 481-511.

⁵⁹ Bacon, *Advancement of Knowledge*, 3.4; Spedding, *Works of Bacon*, Latin 2.296; English 8.511.

⁶⁰ Bacon, *New Organon*, Aphorism 2.1; Spedding, *Works of Bacon*, Latin 1.341; English 8.167.

est in the given body is its material capacity for receiving the form superimposed on it. From the axiom “What in operation is most useful, that in knowledge is most true” it follows readily that knowledge about matter *as matter* is most true. Form enters the argument in the manner of “laws of nature” as auxiliary to understanding how forms may be imposed on matter.

Matter rather than forms should be the object of our attention, its configurations and changes of configuration, and simple action, and laws of action or motion, for forms are figments of the human mind, unless you call those laws of action forms.⁶¹

For though in nature nothing really exists beside individual bodies, performing pure individual acts according to a fixed law, yet in philosophy this very law, and the investigation, discovery, and explanation of it, is the foundation as well of knowledge as of operation. And it is this law, with its clauses, that I mean when I speak of Forms; a name which I the rather adopt because it has grown into use and become familiar.⁶²

The laws of action Bacon is interested in are laws that govern the behavior of the elementary qualities of matter. It is through these laws that one can gain power over bodies. The focus on such laws is imposed by the choice of power as the end. In this manner, the Nominalist theological foundation is specified by power to give birth to Baconian science, a science of nature as mechanism. Taylor pinpoints this interplay between Nominalist theology and an instrumental reason bent on power as the origin of the new understanding of being characteristic of Baconian science.

In nominalism, the super-agent who is God relates to things as freely to be disposed of according to his autonomous purposes...

The purposes of things are extrinsic to them. The stance is fundamentally one of instrumental reason...

The shift will not be long in coming to a new understanding of being, according to which, all intrinsic purpose having been expelled, final causation drops out, and efficient causation alone remains. There comes about what had been called “the mechanization of the world picture.” And this in turn opens the way for a view of science in which a good test of the truth of a hypothesis is what it enables you to effect. This is the Baconian view....⁶³

(5) *Mechanics*

The *Mechanics* attributed to Aristotle, but probably written by one of Aristotle’s students, played an important role in galvanizing the various factors at the origin of the scientific revolution. Lawrence Rose and Stillman Drake have presented detailed evidence that this text, which was not known in the Middle Ages, entered public discourse in the revival of classical studies in the early Renaissance. It engaged the attention of scholars of different backgrounds and interests: classicists, mathematicians, inventors of machines, philosophers of nature, etc. When one attempts to trace the chain back from Galileo and his mature mathematical philosophy of nature, the discussion of the Aristotelian *Mechanics* by these scholars turns out to be precisely that chain. Galileo lec-

⁶¹ Bacon, *New Organon*, Aphorism 1.51; Spedding, *Works of Bacon*, Latin 1.258-9; English 8.83.

⁶² Bacon, *New Organon*, Aphorism 2.2; Spedding, *Works of Bacon*, Latin 1.342; English 8.168

⁶³ Charles Taylor, *A Secular Age* (Cambridge MA: Belknap Press of Harvard University Press, 2007), 97-8.

tured on the *Mechanics* and wrote a (now lost) commentary on it before he formulated his new mathematical science, in which he explicitly mentions his indebtedness to the *Mechanics*.⁶⁴

Mathematics, Galileo argues, is the language in which God wrote the great book of philosophy, the universe.

Philosophy is written in this great book—I mean the universe—which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures, without which it is humanly impossible to understand a single word of it; without these, one is wandering about in a dark labyrinth.⁶⁵

Also for Bacon, the Aristotelian *Mechanics* provided the stimulus to pursue the science of nature in a mathematical direction. It is a common view that Bacon fails to grasp the essential role of mathematics for science.⁶⁶ On the contrary, he fully recognizes it. He appeals to Aristotle in support of this recognition. “Aristotle [said it] best. Physics and Mathematics give rise to Practical Science and Mechanics.”⁶⁷ Whenever possible, Bacon argues accordingly, the laws of nature should be expressed mathematically in accord with precise measurements made in experiments. “Inquiries into nature have the best result when the physical is brought to its term in the mathematical (*quando physicum terminatur in mathematico*).”⁶⁸

We give this precept: everything in nature relating both to bodies and powers must be set forth (as far as may be) numbered, weighed, measured, determined. For it is works we are in pursuit of, not speculations. Physics and Mathematics, in due combination, give rise to practical science. *Physica autem et mathematica bene commistae generant practicum*.⁶⁹

The text Bacon alludes to in order to document the connection between physics, mathematics and the “practical science” of mechanics is the prologue of the *Mechanics*.

Our wonder is excited by...what comes to be by *technē* (technology) contrary to nature (*physis*) for the benefit of human beings. Nature often does the contrary of what is useful for us; for it always follows the same course without deviation, whereas what is useful changes in many ways. When, therefore, we have to do something contrary to nature, the difficulty of it causes us perplexity and we need *technē*. The *technē* which helps us in such perplexities we call Mechanics (μηχανή). The words of the poet Antiphon are quite true: “By *technē* we are powerful (κρατούμεν) even where nature would defeat us.” Instances of this are those cases in which the less has power (κρατεῖ) over the greater, and where what has small weight moves great weights—in fact, practically all the problems which we call mechanical problems. They are not quite identical nor yet

⁶⁴ See Lawrence Rose and Stillman Drake, “The Pseudo-Aristotelian Questions of Mechanics in Renaissance Culture,” *Studies in the Renaissance* 18 (1971): 66.

⁶⁵ Galileo Galilei, “The Assayer,” in *The Controversy on the Comets of 1618: Galileo Galilei, Horatio Grassi, Mario Guiducci, Johann Kepler*, Translated by Stillman Drake and C. D. O’Malley (Philadelphia: University of Pennsylvania Press: 1960) 163-336, here 184-5.

⁶⁶ For a presentation and critique of this view, see Peter Urbach, “Francis Bacon as a Precursor to Popper,” *British Journal for the Philosophy of Science*, 33 (1982): 113-132, here 125.

⁶⁷ Bacon, *Advancement of Knowledge*, 3.6; Spedding, *Works of Bacon*, Latin 2.304; English 8.517.

⁶⁸ Bacon, *New Organon*, Aphorism 2.8; Spedding, *Works of Bacon*, Latin 1.352; English 8.177.

⁶⁹ Bacon, *Preparation for Natural and Experimental History*, Aphorism 7; Spedding, *Works of Bacon*, Latin 2.54; English 8.365.

entirely unconnected with physical problems. They have something in common both with mathematical and with physical theorems; for while Mathematics shows “the how (τὸ ὡς)”, Physics shows “the concerning what (τὸ περὶ δ).”⁷⁰

This text clearly expresses the interrelation between physics and mathematics in the science of mechanics as the path to achieve power over nature. Bacon’s appeal to it demonstrates his clear awareness that the science he attempts to establish is not, in his own view, entirely new. He follows the Aristotelian *Mechanics* in understanding the *techné* of mechanics as a science that must combine physical and mathematical principles. Although he was not himself an accomplished mathematician, Bacon knew the work of Galileo. Mathematical laws are primarily a postulate for him, based on the science of mechanics. He did not himself succeed in formulating the fundamental laws of mechanics. Descartes prepared the metaphysical ground more thoroughly and came considerably closer, but it took Newton to find the true laws—true at least until the advent of relativity and quantum mechanics.

If the school of Aristotle had such a clear grasp of the practical science of mechanics, why did it produce only a short treatise on this subject? Why did Aristotle himself not invest time and energy in mechanical research? Why did he invest massive time and resources on empirical research about animals as evidenced by his biological writings, the most extensive part of his surviving work? Of the three kinds of theoretical philosophy, “mathematical, physical, and theological,”⁷¹ Aristotle says he prefers the third, which investigates the living divine movers of the stars, particularly the first among them who stands uniquely outside the whole universe as its separated common good.

Yet little can be known about these divine movers, because we know these movers through their effects on the stars, but the stars are so far away that our perception of them is very deficient. In animals the divine is reflected more dimly, but nearer to us and with greater certainty.

Of beings that exist by nature, some are ungenerated and for ever imperishable, while others are subject to generation and perishing. The former are of great value (τιμίᾳ) and divine (θείᾳ), but less accessible to knowledge. The evidence that might throw light on them, and on the problems which we long to solve respecting them, is furnished but scantily by sensation; whereas respecting perishable plants and animals we have abundant information, living as we do in their midst, and ample data may be collected concerning all their various kinds, if only we are willing to take sufficient pains. Both departments, however, have their special charm (χάρις). The scanty conceptions to which we can attain of the former give us, from their great value (τιμιότητα), more pleasure than all our knowledge of the world in which we live; just as a half glimpse of persons that we love is more delightful than an accurate view of other things, whatever their number and dimensions. On the other hand, in certitude and in completeness our knowledge of the latter has the advantage. Moreover, their greater nearness and affinity to us balances somewhat the philosophy concerned with divine [beings] (τὴν περὶ τὰ θεῖα φιλοσοφίαν).

Having already treated of the former, as far as our conjectures could reach, we proceed to treat of animals, without omitting, to the best of our ability, any member of the

⁷⁰ Aristotle, *Mechanics*, prologue, 847a10-28.

⁷¹ Aristotle, *Metaphysics*, 1026a19.

kingdom, however ignoble. For although some have no graces to charm (κεχαρισμένοις) the sense, the nature that fashioned them (ἡ δημιουργήσασα φύσις) gives unmechanicable pleasures (ἀμηχάνους ἡδονάς) in their study to all who can come to know causes and are by nature lovers of wisdom (philosophers)...

We therefore must not recoil with childish aversion from the examination of the humbler animals. In all that is natural there is something wonderful (τι θαυμαστόν), and as Heraclitus, when the strangers who came to visit him found him warming himself at the furnace in the kitchen and hesitated to go in, is reported to have bidden them not to be afraid to enter, as even in that kitchen gods were present, so we should venture on the study of every kind of animal without distaste; for in all there is something natural and beautiful (καλοῦ). Absence of haphazard and conduciveness to an end are to be found in nature's works in the highest degree, and the end for which they come together and come to be holds the place of the beautiful (τὴν τοῦ καλοῦ χώραν εἰληφεν).⁷²

Precisely this delight in knowledge for its own sake is what Bacon condemns as dishonorable, as enjoying a prostitute rather than honorably using one's wife for childbearing and the comforts of life. "Knowledge should not be as a prostitute for pleasure...but as a wife for honorable generation, fruit and comfort."⁷³ Since he is convinced with Heraclitus that gods are present even in the kitchen, Aristotle, on finding himself in the kitchen, is more interested in looking than in cooking. Providing food may be necessary at certain times, but seeing the divine is, simply speaking, better. It is striking that Aristotle uses the adjective found also in Plato and Plotinus, "unmechanicable."⁷⁴ He finds unmechanicable joys (ἀμηχάνους ἡδονάς) in pursuing the presence of the divine in living beings.

The *Mechanics* produced in the Peripatetic school suggests that Aristotle was aware of the power and usefulness of mechanical technology. At the same time, it is clear that he was not particularly interested in it. He loved something else more because it is, in itself, better. In this love, he followed the first aspect of *logos* discussed above, the openness of reason to all of being. Bacon, by contrast, closes reason. This closure is the inevitable consequence of the ambition for power. Once again, the customary narrative of the origin of modern science and its secularizing impact is that people began to open their eyes and to see actual facts, thereby freeing themselves from the power-driven imposition of religious faith as exemplified by the superstition that the good operates as final cause in nature. And once again, the actual origin of science as documented in Bacon is quite the opposite. Kant understands the Baconian program quite clearly and without such illusions.

Natural science took much longer [than mathematics] to hit upon the high road of science. For only about a century and a half have passed since the ingenious Bacon, Baron Verulam, made the proposal that partly prompted this road's discovery, and partly—insofar as some were already on the trail of this discovery—in-energated it further...

When approaching nature, reason hold in one hand its principles, in terms of which alone concordant appearances *can count as laws*, and in the other the experiment that it has devised in terms of those principles. Thus reason must indeed approach nature in

⁷² Aristotle, *Parts of Animals*, 644b.22. Emphasis added.

⁷³ Bacon, *Advancement of Knowledge*, 1; Spedding, *Works of Bacon*, 2.143.

⁷⁴ See above, pp. ###.

order to be instructed by it; yet it must not do so in the capacity of a pupil who lets the teacher tell him whatever the teacher wants, but in the capacity of an appointed judge who *compels the witnesses to answer the questions that he puts to them*.⁷⁵

The judge has a clearly defined and limited task. He must determine the guilt or innocence of the accused. He does not sit down with the witnesses to chat with them in friendship in order to come to know them for their own sake. He dismisses what they say if it does not serve his task. In the same manner, Kant correctly perceives, Bacon is not interested in knowing nature as it is in itself. He is interested in finding the laws of nature. Kant does not raise the question why natural science is so interested in these laws and so little interested in other sorts of truth. What Taylor calls “instrumental reason” is clearly evident in this understanding of science. Baconian reason is not defined by openness to all of being, but it serves as a specific instrument for the specific purpose of power.

(6) *The Place for Wisdom and Virtue in Bacon*

According to Bacon, this instrumental or practical knowledge is the best knowledge. Aristotle argues, by contrast, that practical knowledge would be the best kind of knowledge only if human beings were the best kind of being, highest in value.

It would be strange to think that politics or practical knowledge (τὴν πολιτικὴν ἢ τὴν φρόνησιν, prudence) is the most advantageous (σπουδαιότατην), since man is not the best (τὸ ἄριστον) in the cosmos... But if the argument be that man is the best (βέλτιστον) of the animals, this makes no difference; for there are other [beings] much more divine in nature (θειότερα τὴν φύσιν) than man, most conspicuously the [heavenly spheres] of which the cosmos is framed. From what has been said it is plain, then, that wisdom is understanding and knowledge of [the beings] that are by nature highest in value (τῶν τιμιωτάτων τῇ φύσει).⁷⁶

Aristotle’s argument bears on prudence (φρόνησις), a moral virtue. It is not an argument about *techne*. *Techne* is inferior to prudence, because *techne* only offers specific means and does not imply wisdom about the ends to be pursued by these means.

Is there a place for moral virtue in Bacon, particularly for prudence? Science and its technological power, he argues, should stand in the service of charity.

I would address one general admonition to all; that they consider what are the true ends of knowledge, and that they seek it not either for pleasure of the mind, or for contention, or for superiority to others, or for profit, or fame, or power, or any of these inferior things, but for the benefit and use of life; and that they perfect and govern it in charity. For it was from lust of power that the angels fell, from lust of knowledge that man fell; but of charity there can be no excess, neither did angel or man ever come in danger by it.⁷⁷

⁷⁵ Kant, *Critique of Pure Reason*, B XII–XIII. Emphasis added.

⁷⁶ Aristotle, *Nicomachean Ethics*, 1141a.20–1141b.3.

⁷⁷ Bacon, *Great Instauration*, Preface; Spedding, *Works of Bacon*, Latin 1.209–10; English 8.36.

If there can be no excess of charity, there can certainly be a defect of it. Bacon is aware of the possible problem of an abuse of technical power, but dismisses it.

If the debasement of arts and sciences to purposes of wickedness, luxury and the like, be made a ground of objection, let no one be moved thereby. For the same may be said of all earthly goods: of wit, courage, strength, beauty, wealth, light and the rest. Only let the human race recover that right over nature which belongs to it by divine bequest, and let power be given it: the exercise thereof will be governed by right reason and sound religion (*recta ratio et sana religio*).⁷⁸

It is chilling to read this statement about the automatically self-governing goodness of human power “by sound reason and true religion” next to a statement about human ambition found only a few sentences earlier.

It will not be amiss to distinguish the three kinds and, as it were, grades of ambition in mankind.

The first is of those who desire to extend their own power in their native country, a vulgar and degenerate kind.

The second is of those who labor to extend the power of their country and its dominion among men. This certainly has more dignity, though not less covetousness.

But if a man endeavor to establish and extend the power and empire of the human race itself over the universe of things (*humani generis ipsius potentia et imperium in rerum universitatem*), his ambition (if ambition it can be called) is without doubt both a more wholesome and a more noble thing than the other two. Now the empire of man over things (*hominis imperium in res*) depends wholly on the arts and sciences. For we cannot command nature except by obeying her.⁷⁹

Bacon’s confident leap in the third grade of ambition is extraordinary. The human heart is wayward, deprived of charity, in the first two grades. In the third grade of ambition for power, in “the empire of man over things,” which simply consists in a greater universality of power, of the whole human race over the whole universe, the human heart is suddenly wholesome and full of nobility.

There is certainly much grandeur in Bacon’s language about “the empire of man over things.” To assess the glory of this grandeur, one should take a close look at list of ends he proposes for this empire. He calls the list *magnalia naturae*, the great works of nature, an allusion to *magnalia domini*, the great works of the Lord in the liberation of his people from Egypt (cf. Vulgate of Exod 14:13; Deut 10:21, etc.).

The prolongation of life. The restitution of youth in some degree. The retardation of age. The curing of diseases counted incurable. The mitigation of pain... The increasing of strength and activity. The increasing of ability to suffer torture or pain. The altering of complexions, and fatness and leanness. The altering of statures. The altering of features. The increasing and exalting of the intellectual parts... Making of new species. Transplanting of one species into another. Instruments of destruction, as of war and poison. Exhilaration of the spirits, and putting them in good disposition... Making rich composts for the earth. Impressions of the air, and raising of tempests... Drawing of new foods out of substances not now in use. Making new threads for apparel; and new

⁷⁸ Bacon, *New Organon*, Aphorism 129. Emphasis added; Spedding, *Works of Bacon*,

⁷⁹ Bacon, *New Organon*, 118.

stuffs, such as paper, glass, &c. Natural divinations. Deceptions of the senses. Greater pleasures of the senses. Artificial minerals and cements.⁸⁰

This rare glimpse into Baconian ends is striking. New cures for diseases, new instruments for war and new supplies for food are significant items, to be sure, but cosmetics and entertainment occupy a large portion of the list, as they do in the Baconian harvest we have inherited four hundred years later. On the whole, “the empire of man over things” and the demonstration of its glory in the *magnalia naturae* turns out to be pedestrian.

The pedestrianism of the Baconian program, however, is the least of its problems. In addition to creating environmental, moral and political problems, its success has brought about a self-referential subjection of human power under itself. This subjection has an inescapable paradoxical logic of helplessness, as Hans Jonas shows.

Bacon’s formula says that knowledge is power. Now the Baconian program by itself, that is, under its own management, has at the height of its triumph revealed its insufficiency in the lack of control over itself, thus the impotence of its power to save not only man from himself but also nature from man. Both need protection now because of the very magnitude of the power man has reached in the pursuit of technical progress, where the growing power has engendered the concurrently growing necessity for its use—hence the strange impotence to stop its ever-continued and foreseeably self-destructive progress.

Bacon did not anticipate this profound paradox of the power derived from knowledge: that it leads indeed to some sort of domination over nature (that is, her intensified utilization), but at the same time to the most complete subjugation under itself. The power has become self-acting, while its promise has turned into threat, its prospect of salvation into apocalypse.⁸¹

c. The Pill (1968)

(1) *Allegiance to the Baconian Program*

The “Majority Report” of John XXIII’s birth control commission (intentionally leaked to the press in 1967), which proposed the moral legitimacy of contraception, emphatically and unequivocally embraces the Baconian program.

The story of God and of man, therefore, should be seen as a shared work. And it should be seen that man’s tremendous progress in control of matter by technical means and the universal and total “intercommunication” that has been achieved, correspond entirely [*omnino*] to the divine decrees...⁸²

⁸⁰ Bacon, *Magnalia Naturae*. Spedding, *Works of Bacon*, 5.415-6. This list corresponds closely to the more detailed list of “Preparations and Instruments” and their purposes given by one of the Fathers of “Salomon’s House,” the research institute of the island of Bensalem, in Bacon’s *New Atlantis*. See Spedding, *Works of Bacon*, 3.156-64.

⁸¹Hans Jonas, *The Imperative of Responsibility: In Search of an Ethics for the Technological Age* (Chicago: University of Chicago Press, 1984), 141.

⁸² Commission on Birth Control, “Majority Report,” in *The Catholic Case for Contraception*, ed. Daniel Callahan (New York: Macmillan, 1969), 150. Original Latin Text: « Schema Documenti de Responsabili Paternitate, » in Jean-Marie Paupert, ed., *Contrôle des naissances et théologie: Le dossier de Rome: Traduction, présentation et notes de Jean-Marie Paupert* (Paris: Seuil, 1967) 179-89, here 179.

It would be difficult to formulate a more unqualified allegiance to the Baconian program. Technical mastery over nature corresponds “*omnino,*” *perfectly* or *entirely*, to the will of God. Compare this submissive allegiance to the Baconian program with John Paul II’s prophetic warning in *Evangelium vitae*.

Nature itself, from being “mater” (mother), is now reduced to being “matter”, and is subjected to every kind of manipulation. This is the direction in which a certain technical and scientific way of thinking, prevalent in present-day culture, appears to be leading when it rejects the very idea that there is a truth of creation which must be acknowledged, or a plan of God for life which must be respected.⁸³

This text shows that John Paul II sees the issues of *Humanae vitae* in the context of the Baconian program. He penetrates to the core of “a certain technical and scientific thinking” and identifies the blindness of such thinking to the very notion of a divine plan. He shows that the subjection of matter to every kind of manipulation is not only an ethical problem; it determines the deep structures of seeing and understanding nature.

Among the various reasons given by the *Majority Report* for affirming the legitimacy of contraception, the foremost is power over nature.

The reasons in favor of this affirmation are of several kinds: social changes in matrimony and the family, especially in the role of the woman; lowering of the infant mortality rate; new bodies of knowledge in biology, psychology, sexuality and demography; a changed estimation of the value and meaning of human sexuality and of conjugal relations; *but most of all [maxime]*, a better grasp of the duty of man to humanize what is given in nature and to bring it to greater perfection for the life of man.⁸⁴

The superlative “*but most of all [maxime]*” deserves special attention. Among all the reasons for the moral legitimacy of contraception, the *foremost* reason, the reason that is *most of all* a reason, is not the liberation of women, not the population explosion, not a personalist understanding of sexual intercourse, but the “duty” of humanizing what is “given” in nature. Humanizing is achieved, as the first text quoted above puts it, through “tremendous progress in the control of matter by technical means.”

(2) *The Pill as a New Question*

The concept of “humanizing” comes into clearer focus when one considers the exact state of the question on contraception between *Gaudium et spes* and *Humanae vitae*. The Council is quite clear in its rejection of certain forms of contraception.

When there is question of harmonizing conjugal love with the responsible transmission of life, the moral aspects of any procedure does not depend solely on sincere intentions or on an evaluation of motives, but must be determined by objective standards. These, based on the nature of the human person and his acts, preserve the full sense of mutual self-giving and human procreation in the context of true love...Relying on these principles, sons of the Church may not undertake methods of birth control which are

⁸³ John Paul II, *Evangelium Vitae*, 22.

⁸⁴ Commission on Birth Control, “Majority Report,” 161. Latin, 183, emphasis added.

found blameworthy by the teaching authority of the Church in its unfolding of the divine law.⁸⁵

At the end of this text, the Council adds a footnote.

Cf. Pius XI, Encyclical Letter *Casti Connubii* (Dec. 31, 1930): *AAS* 22 (1930); *DS* 3716-3718; Pius XII, *Allocution to the Congress of Italian Midwives* (Oct. 29, 1951): *AAS* 43 (1951), 835-854; Paul VI, *Allocution to the Cardinals* (June 23 1964): *AAS* 56 (1964), 581-589. Certain questions which need further and more careful investigation have been handed over, at the command of the Supreme Pontiff, to a commission for the study of population, family and births, in order that after it fulfills its function, the Supreme Pontiff may pass judgment. With the doctrine of the Magisterium in this state, this holy synod does not intend to propose immediately concrete solutions.

The references at the beginning of this footnote reaffirm the rejection of the then current forms of contraception, such as sterilization and the condom. These forms of contraception are not open questions in the text of *Gaudium et spes*, though they were opened again in direct opposition to the Council after *Humanae vitae*. The “certain questions” left open in *Gaudium et spes* concern the new form of the regulation of fertility made possible by the pill.

There is an important difference between the condom and the pill. In a very obvious way, the condom interferes with the nature of sexual union by not allowing its completion, the presence of semen in the woman, to take place. The pill seemed quite different. Here the couple left the conjugal act intact. With the help of scientists, they were gaining mastery of the internal operation of the woman’s body. During pregnancy, nursing and for part of every monthly cycle, nature already had mechanisms in place to prevent further conceptions and thereby to protect the life of the already developing fetus, to safeguard the woman’s health and to ensure the spacing of children for the good of the family. Scientists had found a way of humanizing nature by assisting nature in the regulation of fertility.

The Church had said that no contraceptive means that frustrate the integrity of the conjugal act (such as the condom) could be used. But now science had invented a medicine to regulate fertility, a medicine one took like an antibiotic, that helped nature provide for temporary infertility. Would the Church now say that one must not take the medicine, because it was an unnatural and inhuman?

(3) *The Entrance Visa to Modernity*

The pill was thus a new phenomenon tied to science. Those aligned with the Majority Report, it seems, saw the pill as a question of *aggiornamento*, of bringing the Church up to date by embracing a new loyalty to the Baconian program. The Church’s openness to Modernity, her willingness to participate constructively in the modern program of scientific and technological progress, depended in significant measure on this loyalty.

In this light one can perhaps understand the bitterness of many Catholics against *Humanae vitae*, especially the bitterness of theologians and other intel-

⁸⁵ Vatican II, *Gaudium et spes*, 51:3.

lectuals. The main problem with *Humanae vitae* was not that it failed to face changes in the relation between men and women, the population explosion and a personalist understanding of sexual intercourse. The main problem was that it rejected loyalty to the Baconian program at a key point, the humanizing of fertility by the pill. Paul VI committed an act of treason against the newly established alliance between Catholicism and Modernity.

In *Humanae vitae*, published one year after the majority report, in the historically pivotal year 1968, Paul VI is clearly aware of the importance of the issue of human power over nature. Following the majority report, he mentions this issue last in a list of reasons for reconsidering contraception and qualifies it with an adverb close to the superlative, namely, “*praesertim*, above all.”

Finally, one should take note *above all* (*praesertim*) that man has made such stupendous progress in the domination and rational organization of the forces of nature that he tends to extend this domination to his own total life: that is, to the body, to the powers of his soul, to social life and even to the laws which regulate the transmission of life.⁸⁶

John Paul II highlights the issue of power over nature in a similar way as the issue at the very heart or essence of the Catholic understanding of contraception.

What is the essence of the teaching of the Church about the transmission of life in the conjugal community, the essence of the teaching recalled for us by the Council’s pastoral constitution *Gaudium et Spes* and the encyclical *Humanae Vitae* by Pope Paul VI?

The problem lies in maintaining *the adequate relationship* between that which is defined as “*domination...of the forces of nature*” (HV 2) and “*self-mastery*” (HV 21), which is indispensable for the human person. Contemporary man shows the tendency of transferring the methods proper to the first sphere to those of the second. “Finally and above all, man has made stupendous progress in the domination and rational organization of the forces of nature,” we read in the encyclical, “such that he tends to extend this domination to his own total being: to the body, to psychological life, to social life and even to the laws which regulate the transmission of life” (HV 2).

This extension of the sphere of the means of “the domination...of the forces of nature” threatens the human person for whom the method of “self-mastery” is and remains specific. It—that is, self-mastery—corresponds in fact to the fundamental constitution of the person: it is a perfectly “natural” method. The transposition of “artificial means,” by contrast, *breaks* the constitutive dimension of the person, deprives man of the subjectivity proper to him, and turns him into *an object of manipulation* (TOB 123:1).

The fundamental problem the encyclical presents is the viewpoint of the *authentic development of the human person*; such development should be measured, as a matter of principle, by the measure of ethics and not only of “technology” (TOB 133:3).

The essence of the Church’s doctrine on contraception, according to TOB, is closely connected with seeing the proper limits of human power over nature. What is at issue in the question of the pill is thus not simply the moral goodness or evil of a particular act, but the very nature and root of the Cartesian scientific culture of Modernity. One can hardly overestimate the importance of this deeper issue. Catholic assent to the pill was above all an expression of the intense desire of many Catholics to emerge from medieval obscurantism

⁸⁶ Paul VI, *Humanae vitae*, 2.

(conjured up again and again by the name “Galileo”) by embracing the Baconian program. Assent to be pill would bring the governmental stamp of approval on the Church’s long desired entrance visa and green card for the Land of Modernity.

d. René Descartes (1596–1650)

Descartes studied Bacon early in his career, as documented in several letters, the first one dating from 1630,⁸⁷ before he began his first major work in natural philosophy, *Le Monde* (written 1630-1633) almost a decade before his *Meditations on First Philosophy* (1641).

(1) *The Primacy of Praxis and Techne over Logos*

Already in his *Discourse on Method* (1637), Descartes explicitly lays down the fundamental premise of his philosophy in agreement with Bacon.

It is possible to reach knowledge that will be very useful to life and instead of the speculative philosophy which is now taught in the schools [that is, Scholastic philosophy] we can find a practical one, by which, knowing the force and the actions of fire, water, air, stars, the heavens, and all the other bodies that surround us as distinctly as we know the various skills of our artisans we can employ them in the same way for all the uses for which they are fit, and so make ourselves masters and possessors of nature.⁸⁸

Descartes is fully explicit. The speculative, that is, theoretical philosophy of the Scholastics must be replaced by a practical, that is, technological philosophy. Doing and making must determine what is, and what is not, a relevant pursuit of philosophy and its eventual offshoot, natural science. It is a fundamental misconception, though a widely accepted one, to suppose that Descartes carefully examined Aristotelian natural philosophy, checked it by reason and experiment, and found it lacking in truth as a theoretical account. On the contrary, he set it aside to propose an altogether different program, consciously built on the primacy of power over *logos*.

This decision, parallel to Bacon’s, was to become the corner-stone of Modernity. Faust attempts to translate “In the beginning was the *Logos*” into his “beloved German.” He chooses, “*Im Anfang war die Tat*. In the beginning was the *deed*, the *act*.” Goethe knows, of course, that when one retranslates Faust’s German into Greek, the result is, “In the beginning was *praxis*,” not *Logos*. In the beginning was the imposition of the will to power. Marx makes the same point in his famous dictum, “The philosophers have only *interpreted* the world in various ways; the point is to *change* it.”⁸⁹

⁸⁷ The documentary evidence for Descartes’ relation to Bacon is gathered in the final volume of the standard edition of Descartes’ works, Adam and Tannery, 12.479, footnote a.

⁸⁸ *Discourse on Method*, 6; Adam and Tannery, 6.61-2.

⁸⁹ Karl Marx, “Theses on Feuerbach,” in *The Essential Writings* (F. Bender ed.; New York: Harper and Row, 1972), 155. “The question whether objective truth can be attributed to human thinking is not a question of theory but is a practical question. Man must prove the truth, i.e., the this-sidedness of his thinking in practice. The dispute over the reality or non-reality of thinking that is isolated from practice is a purely scholastic question.” Marx, “Theses on Feuerbach,” 153.

One can observe the character of the new philosophy in Descartes' *Meditations*, published four years later. The ambition of "making ourselves masters and possessors of nature" is the invisibly guiding hand of the *Meditations*' argument. After opening with radical doubt about every certainty of ordinary experience and continuing with a breathtaking flight from the unassailable fortress of self-consciousness (*cogito, ergo sum*) up into the highest reaches of metaphysics (the ontological argument for the existence of God) the argument has its true point of arrival here below—in mechanical technology. Meditation Six concludes that the only real or objective properties of natural beings (besides existence) are mathematically intelligible properties (extension, shape, number, movement, etc.). All other sensible and intelligible attributes are mere appearances rooted in human subjectivity. Leon Kass shows the underlying logic of this argument.

Seek knowledge, and knowledge will give you power. But...it would be more accurate to say that the new science sought *first* power over nature, and *derivatively*, found a way to reconceive nature that yielded the empowering kind of knowledge: Seek power, and you will devise a way of knowing that gives it to you. The result can be simply put: knowledge permitting prediction and (some) control over biological *events* has been purchased at the cost of deep ignorance, not to say misunderstanding, of *living beings*, ourselves included.⁹⁰

There is a certain resemblance between Descartes' "*cogito ergo sum*" and St. Augustine's argument against radical doubt, "*si enim fallor, sum*. If I err, I am."⁹¹ The resemblance, however, goes hand in hand with a deep opposition. St. Augustine's concern in "*si fallor, sum*" is to argue from within the position of the skeptics that at least certainty about one's own existence is inescapable. He himself does not embrace the doubt of the skeptics, but argues *ad hominem* from within it. Descartes' concern, by contrast, is to embrace universal doubt as his own starting-point, not because there are cognitive reasons for it, but because doubt is effective in the imposition of the will to acquire a new kind of knowledge, a knowledge that will yield power over nature. He uses doubt methodically to strip away from nature all that does not serve the ambition for power. His return to truth after universal doubt by way of consciousness and the subject's clear and distinct ideas about nature, that is, its mathematical ideas, concludes with the reduction of all properties of nature to mathematically calculable properties, that is, the properties on which the science and art of mechanics can build. This non-philosophical use of doubt and the end which it serves is completely absent from St. Augustine. Descartes' turn toward the subject, despite a certain likeness, is radically anti-Augustinian. What separates the two most of all is St. Augustine's commitment to *logos* and Descartes' commitment to the primacy of power over *logos*.

The single most important exclusion from "objective" being that Descartes insists upon is the exclusion of the good and of its causality as end. "The en-

⁹⁰ Leon Kass, "The Permanent Limitations of Biology," in *The Ambiguous Legacy of the Enlightenment*, ed. William A. Rusher (Lanham MD: University Press of America: 1995), 125.

⁹¹ Augustine, *De Civitate Dei*, 11.26.

ture class of causes which people customarily derive from a thing's 'end,' I judge to be utterly useless in Physics."⁹² Goodness is not an objective property of things. It is not measurable. It is irrelevant in any account of the body as body.

(2) *The Imposition of the Will to Power*

A way of thinking formed in this Cartesian manner will have fundamental difficulties with TOB's account of sexuality and marriage in terms of "ends" and "meanings." Even worse, it will experience the normative proposal of ends and meanings as a violent imposition of will by religious leaders who have power over the freedom of believers, who are simply supposed to obey without reason, except that of serving the power interests of organized religion.

In fact, the imposition of will lies on the other side. In the pursuit of power, Descartes and those who follow after him take their point of departure, not in a theoretical judgment based on evidence, but in the choice of the will to power, which acts as a non-cognitive selective principle to exclude many modes of being grasped in ordinary experience. Descartes does not draw attention to the moral character of this first and most fundamental choice. It is this self-concealment that gave and still gives to the "objective" Cartesian view of nature its strength as a quasi self-evident theoretical starting-point. To its proponents, the "objective" view is self-evidently the only true one; opposing views are unfounded subjective opinion, romanticism, religious prejudice motivated by power interests, etc. The fact remains, however, that at its origin "the objective view" is an imposition of will, and not a discovery of reason. Once again, Kass puts his finger on the key point.

The so-called objective view of nature is not nature's own, but one imposed on nature, imposed by none other than the interested subject... The interested subject's demand for clear and distinct and certain "knowledge" leads him to re-present the given world before his mind, in an act of deliberate projection, through concepts (invented for that purpose) that allow him to operate on it with utmost (usually quantitative) precision. What cannot be grasped through such conceptual re-presentation drops from view. Only those aspects of the world that can be "objectified" become objects of scientific study. The given, visible world of our experience is banished into the shadows; the shadowy world of concepts gains the limelight, and reconfigures everything in sight.⁹³

It is impossible to overlook the profound similarity between Descartes and the Sophists countered by Socrates in the *Gorgias* and the *Republic*. Like the Sophists, Descartes renounces reason by a choice on the most fundamental level. He chooses to regard and use it, not as openness to being, but as an instrument of power. Of course, he does not propose to use it, as the Sophists did, as an instrument for personal power, for becoming the tyrant of the city, but of the power of science, by which "we can make ourselves masters and possessors of nature." The love that animates his philosophy is not overtly

⁹² Descartes, *Meditations*, 4; in Descartes, *Discourse on Method and Meditations*, 83, Adam and Tannery, 55.

⁹³ Kass, "The Permanent Limitations of Biology," 131-2.

militaristic as the love that builds the Military City in Plato's *Republic*. Still, it is the love proper to *thymos*, not the love proper to *logos*. Since Descartes' *thymoeidetic* love does not in the first place aim at military or political power, its totalitarian and violent nature is not immediately evident. It appears to be a beneficent love that has driven progress. The post-modern turn has only recently begun to take hold on the popular imagination. Let us return to Al Gore's insightful but not sufficiently radical text.

The Cartesian approach to the human story allows us to believe that we are separate from the earth, entitled to view it as nothing more than an inanimate collection of resources that we can exploit however we like; and this fundamental misperception has led us to our current crisis...

We have assumed that our lives need have no real connection to the natural world, that our minds are separate from our bodies, and that as disembodied intellects we can manipulate the world in any way we choose. Precisely because we feel no connection to the physical world, we trivialize the consequences of our actions. And because this linkage seems abstract, we are slow to understand what it means to destroy those parts of the environment that are crucial to our survival. We are, in effect, bulldozing the Gardens of Eden.⁹⁴

Gore does not seem to realize that in Descartes, the bulldozing begins at the most fundamental level. It is, in the first place, a bulldozing of reason in favor of power and a consequent mathematicizing of science. Descartes' philosophy is usually described as "rationalistic" in the sense that reason reigns supreme in it. The contrary is the case. He undermines rationality on the most fundamental level by an imposition of will in the very constitution of natural science. Cartesian science is an expression of the will to power, not of the openness of reason to all of being.

(3) *The Struggle between Logos and Praxis*

There are many in the scientific community, of course, who are deeply committed to reason, animated by a love of truth for its own sake, and ready to follow the search for truth wherever it might take them. In some cases, expressions in favor of such a commitment also reflect the concern to occupy the intellectual and moral high ground. Still, Benedict XVI seems right to point to the actual fact of such an authentically rational orientation in his *Regensburg Lecture*, echoing the introductory discourse by the Rector of Regensburg University. "The scientific ethos...is...the will to be obedient to the truth, and, as such, it embodies an attitude which belongs to the essential decisions of the Christian spirit."⁹⁵ Even in Descartes, one can see the fascination with truth, particularly with mathematical truth. It is impossible to turn human *logos* over night into an instrument of *praxis* and *techne* and abolish its natural desire for truth. It took many generations for the most radical form of Cartesian philosophy to emerge in Karl Marx and those who follow in his footsteps.

⁹⁴ Gore, *Earth in the Balance*, 218 and 144.

⁹⁵ Benedict XVI, *Regensburg Lecture*, December 12, 2006.

Although the commitment to truth of many scientists should not be doubted, modern natural science as a whole has never conducted a thorough critical review of the imposition of the will to power it has inherited from Descartes and the distorting influence of this imposition on our way of understanding nature. Even in the paradigm shift from Newtonian physics to relativity and quantum mechanics, science left key elements of the Cartesian imposition of will in place, above all the supremacy of mathematical mechanics in the study of nature.

Mathematics itself was deeply transformed by the Cartesian imposition of the will to power. Greek mathematics is characterized by contemplative *theoria*, while the reformation of mathematics brought about by Descartes has brought manipulation to the fore.

[In contrast to Apollonius' *Conics*] Descartes' *Geometry* is not a book of theorems and their demonstration. By homogenizing what is studied [that is, by absorbing geometry into the arithmetical procedures of algebra], and by making the central activity the manipulative working of the mind, rather than its visualizing of form and its insight into what informs the act of vision, Descartes transformed mathematics into a tool with which physics can master nature...

Among the questions that readers will consider, as they study Apollonius in a world transformed by Descartes, are the following: What is the relation between the demonstration of theorems and the solving of problems? What separates the notions of "how-much" and "how-many"? Why try to overcome that separation by the notion of quantity as represented by a number line? What is the difference between a mathematics of proportions which arises to provide images for viewing being, and a mathematics of equations which arises to provide tools for mastering nature? How does mathematics get transformed into what can be taken as a system of signs referring to signs—as a symbolism which is meaningless until applied, when it becomes a source of immense power? What is mathematics and why study it? What is learning and what promotes it?⁹⁶

As Flaumenhaft suggests, Descartes' transformation of mathematics eventually led to its most widely accepted contemporary understanding as a human construct built on axioms adopted by choice. It is neither true nor false. Even so, the scientific ethos highlighted by Benedict XVI is indomitable. It draws mathematicians into their discipline with a freedom of thought that does not allow itself to be subjugated entirely by the demands of technology and the flow of research money.

The philosophy of Descartes led to similar transformations in other disciplines. It inflicted a wound on philosophy itself, which becomes apparent in the logical unfolding of his point of departure by Kant.

Balthasar argues that theology received the same mortal wound from Descartes. Unlike Aristotle's *Metaphysics*, Descartes' *Meditations on First Philosophy* are not directed toward the first cause as the supreme object of contemplation.

⁹⁶ Apollonius of Perga, *Conics, Books I-III*, with an Introduction by Harvey Flaumenhaft (revised edition; Santa Fe: Green Lion Press, 2000) xxiii-xxiv.

God enters the argument as a necessary step on the way to the true goal, namely, reconfiguring the natural world by technological ambition.⁹⁷

[One can observe]...the emergence of an hegemony of instrumental reason which seeks above all manipulative power over nature and which can do without the personal pole of gratitude and goodness since it reduces nature to mere facticity, thus understanding itself and employing itself as a mere instrument of power...Descartes “speaks of God only in connection with the necessity of an absolute grounding of human knowledge, that is, in the interests of securing the possibility of mastery over nature.”⁹⁸

Balthasar’s reading is confirmed by the marginalization and death that quickly overtook the Cartesian God. In the minds of many early modern scientists, God continued to live on in an attenuated form as the master mechanic who could leave his world running by its laws after setting up its mechanism. Newton, of course, had a more robust faith in divine intervention, based on his reading of the Book of Revelation, but in the long run the mechanical picture of the world proved stronger.⁹⁹

In Kant, God becomes a mere practical postulate without any theoretical value: one can neither say “God exists” nor “God does not exist.” The notion of God is a decent and moral thought without metaphysical content. The momentum of divine irrelevance slowly tipped the scales toward atheism, proclaimed by Nietzsche as “the death of God.” In contemporary academic theology, many dominant streams follow Kant’s solution by reducing God to an existential-practical challenge (Bultmann) or a symbol of liberation, social justice and peace. Science is concerned with facts, religion with values and commitments. This is the Kantian peace between science and religion, a disastrous peace for both sides.

It fits with Descartes’ program of ordering knowledge in radical fashion to power over nature that he holds up free will as the greatest human good.

Now freewill is in itself the noblest thing we can have because it makes us in a certain manner equal to God and exempts us from being his subjects; and so its rightful use is the greatest of all the goods we possess, and further there is nothing that is more our own or that matters more to us. From all this it follows that nothing but freewill can produce our greatest contentments.¹⁰⁰

This apotheosis of the freedom of choice as the greatest human good already anticipates the core of Kant’s philosophy of freedom and autonomy.¹⁰¹ What Descartes proposes in this text is the hard core of a technological liberalism, technological before it is metaphysical, political and moral. There seems

⁹⁷ See esp. *Meditations*, 6, in René Descartes, *Discourse on Method and Meditations*, 3rd ed. (Indianapolis: Hackett, 1993), Adam and Tannery 78-80.

⁹⁸ Hans Urs von Balthasar, *Theodramatik*, 5 vols. (Einsiedeln: Johannes, 1973-1983), III.142-3. Balthasar quotes Ulrich Hommes, *Transzendenz und Personalität* (Frankfurt: Klostermann, 1972) 63. For a similar reading of Descartes, see also Robert Spaemann, *Das Natürliche und das Vernünftige: Essays zur Anthropologie* (München: Piper, 1987), 101.

⁹⁹ For Newton’s commentary on the Book of Revelation online, see www.newtonproject.sussex.ac.uk

¹⁰⁰ Descartes, Letter to Christina of Sweden, Adam and Tannery 5,85; cf. *Meditations*, IV.8. Translation following Taylor, *Sources of the Self*, 147. One can perhaps temper the astonishing statement that freedom “exempts us from being his [that is, God’s] subjects” by adding the word “seems.” Descartes writes, in fact, « *semble nous exempter de luy estre suiets . . .* ». Emphasis added.

¹⁰¹ See pp. ###.###.

to be a mutual harmonic reinforcement between this exaltation of free choice and the Baconian-Cartesian program. What distinguishes the master of nature above all is that he can decide freely what to do with nature. He is not bound by any pre-existing purposes in nature, but sets his own purposes.

The project of the emancipation of the person from all that hinders freedom is implied as a counterpart of Cartesian technological liberalism. Ratzinger points out how Baconian and Cartesian voluntarism leads inevitably to the dissolution of human nature, particularly in understanding the bodily nature of human beings as male and female.

Today, the idea of emancipation is understood as a radical antithesis of tradition. We must see right through traditional value systems and expose them. In technical rationality we become our own creators and the creators of a world built on the basis of our own inventions. We construct ourselves and reality anew in the unconditional transparency of our rationality. This commitment finds philosophical expression in the idea that there is no pre-given human nature, so that we are free and in fact compelled by our freedom to invent ourselves, to determine what a human being will be in the future. The strongest form of this detachment from the earth, from the given that carries us, is the complete power over life and death and in the abolition of the difference between man and woman.¹⁰²

Of course, free choice is an act of great dignity and Wojtyła highlights it, particularly in his main philosophical work, *Person and Act*. Yet, free choice is subordinate to love. On this point Wojtyła directly opposes Descartes' technological liberalism.

Love consists of a commitment which limits one's freedom—it is a giving of the self, and to give oneself means just that: to limit one's freedom on behalf of another. Limitation of one's freedom might seem to be something negative and unpleasant, but love makes it a positive, joyful and creative thing. *Freedom exists for the sake of love...* Man longs for love more than for freedom—freedom is the means and love the end.¹⁰³

e. Person and Nature

The decisive breakthrough, without which Descartes' call for a mathematical science would not have been so universally triumphant, was achieved by Newton about half a century after the publication of Descartes' main works. A well-known ranking of the 100 most influential human beings of history has the following six at the top of the list: Mohammed, Newton, Jesus, Buddha, Confucius, and St. Paul.¹⁰⁴ It is a group of religious leaders. Newton is the only exception, and he yields first place only to Mohammed. He is historically more important than Jesus, at least according to Hart, the list's author.

Hart is not alone. It is difficult to imagine the excitement which Newton's *Mathematical Principles of Natural Philosophy* stirred up immediately after they

¹⁰² Josef Ratzinger, *Theologische Prinzipienlehre: Bausteine zur Fundamentaltheologie* (München: Erich Wewel Verlag, 1982) 96-97.

¹⁰³ Wojtyła, *Love and Responsibility*, 135-6.

¹⁰⁴ See Michael H. Hart, *The 100: A Ranking of the Most Influential Persons in History* (2nd ed.; New York: Citadel Press, 1992).

were published. Halley's *Ode to Newton* gives some taste of the intoxicated mood.

...But now, behold,
 Admitted to the banquets of the gods,
 We contemplate the polities of heaven;
 And spelling out the secrets of the earth,
 Discern the changeless order of the world
And all the eons of its history.
 Then ye who now on heavenly nectar fare,
 Come celebrate with me in song the name
 Of Newton, to the Muses dear; for he
 Unlocked the hidden treasures of Truth:
 So richly through his mind had Phoebus cast
 The radiance of his own divinity.
 Nearer the gods no mortal may approach.¹⁰⁵

One begins to appreciate the vast hope Halley placed in Newton when one asks how Newton allows one to grasp "all the eons of the world's *history*." Halley seems to suppose that we will someday grasp the position of all atoms, and thus be able to calculate on the basis of Newton's theorems the position of all atoms in the past and future. Mathematical physics will then replace the study of history. It supplies the most divine sapiential vision attainable by human beings. It will exhaustively explain what happened in the lives of the other five men at the top of Hart's list. Halley, it seems, would move Newton to the top of the list.

What Halley does not draw out is the overall effect of his hope on human life as a whole. Once mathematical physics truly works out its divine sapiential vision in all detail and explains all events by the necessary laws of bodily motion, it eliminates every other point of view and every reality that, until then, still appeared irreducible to matter and motion. Human choices and emotions will be exhaustively explained by this movement of particles. The "banquets of the gods" and Apollo with the "radiance of his own divinity" will turn out to be mere epiphenomena or emerging qualities. The universe turns out, in the end, to be rather thin and tinny, without life, goodness and beauty, without a genuine home for persons.

(1) *Options Pursued in Early Modernity*

The development of a mechanistic science of nature and the exaltation of freedom of choice as an ultimate value thus had profound effects on the understanding of the place of the human person in the cosmos. Descartes took the path of a rigorous dualism: on the one side stands the mechanical cosmos of extended things (*res extensae*), whose only attributes are extension and movement, constituting an objective world of pure externality without interiority (animals are mere machines; sensory consciousness is a mere appearance); on the other stands the human soul, the "thinking thing" (*res cogitans*), whose

¹⁰⁵ Halley, *Ode to Newton*; emphasis added. The one who approaches nearest to the divine is the mathematical philosopher, who unlocks the secrets of nature.

only attribute is rational consciousness, that is, knowledge and free will, a world of pure interiority.¹⁰⁶

Others followed more narrowly reductionist paths. For bishop George Berkeley, a vigorous defender of the spiritual values of the Christian tradition, there is no independently existing material world, but every “material” thing is a mere perception of the soul (*esse est percipi*). All is personal consciousness.¹⁰⁷ According to Julien de La Mettrie, by contrast, there is no thinking thing at all, but man is simply “machine man,” a material mechanism.¹⁰⁸ In each case, the tension between the person and the material world of nature is the crucial issue, even in proposals that apparently abolish the person altogether in favor of mere mechanism. Even in de La Mettrie’s “machine man,” the fact remains that someone is thinking about the machine and freely harnessing it to his own ends, however that “someone” is to be understood.

John Paul II points out a close relation between the predominant scientific picture of the world and a particular form of ethics, namely utilitarianism.

The development of contemporary civilization is linked to a scientific and technological progress which is often achieved in a one-sided way and thus appears purely positivistic. Positivism, as we know results in agnosticism in theory and utilitarianism in practice and in ethics. In our own day history is in a way repeating itself. Utilitarianism is a civilization of production and of use, a civilization of things and not of persons, a civilization in which persons are used in the same way as things are used.¹⁰⁹

Utilitarianism, first in practice and then also as a theory, is a natural consequence of the Baconian-Cartesian program. Persons are seen as parts of the great machine of nature and they are treated like all other parts of the machine, namely, as things.

(2) *The Rise of a New Subjectivity*

The alienation between person and body runs as the central current through the various choices pursued by the seminal thinkers of Modernity. The rise of the dominant modern understanding of personal subjectivity is connected with this alienation. Once the material world is turned into a mechanism, it takes its revenge. A mechanistic nature, a nature which is indifferent

¹⁰⁶ A more Christian reading of Descartes that relativizes the ambition for power and the primacy of free choice, is proposed by Gary Steiner, *Descartes as a Moral Thinker: Christianity, Technology, Nihilism* (Amherst, NY: Humanity Books, 2004), esp. chap. 4. At the very least, even if Descartes’ own position is more complex, the effect of his writings in the growth of the Modern program corresponds to the less Christian reading proposed above.

¹⁰⁷ See George Berkeley, *A Treatise concerning the Principles of Human Knowledge*, ed. Colin Murray Turbayne (Indianapolis: Bobbs-Merrill, 1970).

¹⁰⁸ See Julien Offray de La Mettrie, *Machine Man and Other Writings*, ed. Ann Thomson (Cambridge; New York: Cambridge University Press, 1996). The French original *L’homme machine* appeared in 1748, the first English translation in 1749; the second edition (1750) has an extended sub-title: “Man a Machine: Wherein the several systems of philosophers, in respect to the soul of man, are examin’d, the different states of the soul are shewn to be co-relative to those of the body, the diversity between men and other animals, is proved to arise from the different quantity and quality of brains, the law of nature is explained, as relative to the whole animal creation, the immateriality of an inward principle is by experiments and observations exploded, and a full detail is given of the several springs which move the human machine.”

¹⁰⁹ John Paul II, *Letter to Families*, 13.

to good and evil, is a nature in which the person and its desire for meaning cannot find a home. Erwin Schrödinger, Nobel laureate for his work on quantum mechanics, poignantly expresses this estrangement of the person from the “objective” universe of science, still a Cartesian universe after the demise of Newtonian physics.

I actually do cut out my mind when I construct the real world around me. And I am not aware of this cutting out. And then I am very astonished that the scientific picture of the world around me is very deficient. It gives a lot of factual information, puts all our experience in a magnificently consistent order, but it is ghastly silent about all and sundry that is really near to our heart, that really matters to us. It cannot tell us a word about red and blue, bitter and sweet, physical pain and physical delight; it knows nothing of beautiful and ugly, good or bad, God and eternity. Science sometimes pretends to answer questions in these domains, but the answers are often so silly that we are not inclined to take them seriously. So in brief, we do not belong to this material world that science constructs for us. We are not in it, we are outside.¹¹⁰

In defense against an indifferent nature that lacks all interior meaning, the personal subject must affirm itself in contradistinction to nature to find the basis of meaning in itself, in its own subjectivity. While Descartes is the beginning, Kant is the supreme example of this post-scientific turn toward a “subjective” form of personalism. Let us return to Schmitz’s key thesis about the background that needs to be seen to understand Wojtyła’s concern.

This, then, is the genesis of the modern sense of subject as subjectivity. We might say that subjectivity is the self-defense by which consciousness fends off a world either hostile to its inhabitation or at least without companionate room for it, even while consciousness subverts the integrity of that world by its imperious demands. The modern shift gave to the human subject an absolute status precisely in its character *qua* consciousness; for human consciousness not only sets its own terms but the terms for reality itself.¹¹¹

(3) *Wojtyła’s Concern for Person and Nature*

According to Schmitz, the primary challenge to which Wojtyła responds in his philosophical personalism is precisely this form of subjectivity in which consciousness sets the terms for being. John Paul II offers a trenchant critique of Descartes in precisely these terms.

The author of *Meditationes de Prima Philosophia* with its ontological proofs, *distanced us from the philosophy of existence*, and also from the traditional approaches of Saint Thomas which lead to God who is “subsisting being itself,” *Ipsum esse subsistens*. By making subjective consciousness absolute, Descartes moves instead toward *pure consciousness of the Absolute*, which is *pure thought*. Such an Absolute is not *subsisting being itself*, but rather *subsisting thought*. Only that which corresponds to human thought makes sense. The objective truth of this thought is not as important as the fact that something exists in human consciousness.¹¹²

Yet Wojtyła does not limit himself to criticism. He positively appropriates some of the methods and conclusions of the philosophy of consciousness,

¹¹⁰ Erwin Schrödinger, *Nature and the Greeks* (Cambridge: Cambridge University Press, 1954) 93-4.

¹¹¹ Schmitz, *Center of the Drama*, 135-6.

¹¹² John Paul II, *Crossing the Threshold of Hope*, 51. The translation of “*ipsum esse subsistens*” has been changed from “autonomous existence” to “subsisting being itself.”

particularly as developed by Scheler, to illumine the human person in his or her subjectivity within an encompassing Thomistic philosophical and theological framework. Two important items of chronology already mentioned above should be recalled here: St. John of the Cross was born half a century before Descartes; and Wojtyła was deeply formed by St. John of the Cross's attention to the lived experience of personal subjectivity before he studied the philosophers of consciousness. The specific form of the characteristically modern "turn to the subject" proper to Wojtyła's personalism has roots that are older and deeper than Descartes' philosophy of consciousness. It contains neither the mechanist natural philosophy nor the subjectivist thrust of Cartesian and Kantian philosophy. Like St. John of the Cross, Wojtyła is deeply rooted in St. Thomas.

From Wojtyła's early works all through the pontificate of John Paul II one can see a strong interest in the question of person and nature as raised by natural science and the corresponding distinctively modern sense of subjectivity. In place of an opposition between person and nature, Wojtyła attempts to see their profound harmony.

The keen aesthetic sensibility of St. John of the Cross seems to have played an important role in precisely this area: the inseparably spiritual and bodily beauty of love between man and woman. When he had completed his dissertation on St. John of the Cross, Wojtyła was assigned for a few months to a rural parish, after which he was transferred to a parish in Krakow that had many university students. The assignment naturally involved accompanying young couples through the experience of love, engagement and marriage. With some of these couples, Wojtyła built lasting friendships.

As a young priest I learned to love human love...If one loves human love, there naturally arises the need to commit oneself completely to the service of 'fair love,' because love is fair, it is beautiful.¹¹³

From this time on, marriage and the family lay at the heart of Wojtyła's theological and pastoral work. Sexuality is the point in which our personal subjectivity and our animal nature intersect with particular intensity. Kant, whose account of sexuality and marriage Wojtyła seems to have studied carefully, relentlessly pits reason against the natural world. Wojtyła, by contrast, attends to the harmony between the natural and personal aspects of love.

In this light, one can understand why the issue of contraception became a focus of Wojtyła's interest, not only as a moral issue, but at root as an issue of theological anthropology. In the question of contraception, all the fundamental questions of our age, about the body, about the person, about meaning, nature and technology, come together in a tightly knit knot.¹¹⁴

¹¹³ John Paul II, *Crossing the Threshold of Hope*, 123.

¹¹⁴ This focus on some of the key issues of Modernity is evident in an article about contraception published by Wojtyła in the year he was elected Pope. Karol Wojtyła, "[The Anthropological Vision of *Humanae Vitae*] La visione antropologica della *Humanae Vitae*," *Lateranum* 44 (1978). German translation: Karol Wojtyła, "[The Anthropological Vision of the Encyclical *Humanae Vitae*] Die anthropologische Vision der Enzyklika *Humanae Vitae*," in *Von der Königswürde des Menschen*, ed. Juliusz Stroynowski (Stuttgart-Degerloch: Seewald, 1978 [1979]).

The interest in the relation between nature and person can also be seen in Wojtyła's contact with scientists. In 1953 he assembled a group of physicists to discuss the relation between Aristotle's understanding of nature and the contemporary scientific approach to nature.

[Jerzy] Janik recruited the scientists who began to meet regularly with Wojtyła. Their first project was to read St. Thomas Aquinas and discuss his concept of nature against the backdrop of what they were doing in their labs and classrooms every day.¹¹⁵

Wojtyła explains why the question of nature is so important in the theology of marriage. The main reason why it is difficult for people in the Modern Age, particularly for intellectuals, to understand the Catholic vision of sexuality, he argues, is—biology. The Cartesian mechanistic image of nature produced by natural science in general and biology in particular, obscures our vision for the order of living nature in all its richness, particularly our vision of the true meaning of sexuality.

The expressions 'the order of nature' and 'the biological order' must not be confused or regarded as identical, the 'biological order' does indeed mean the same as the order of nature but only in so far as this is accessible to the methods of empirical and descriptive natural science. . . . This habit of confusing the order of existence with the biological order, or rather of allowing the second to obscure the first, is part of that universal empiricism which seems to weigh so heavily on the mind of modern man, and particularly on modern intellectuals, and makes it particularly difficult for them to understand the principles on which Catholic sexual morality is based. According to those principles. . . the sexual urge owes its objective importance to its connection with the divine work of creation of which we have been speaking, and this importance vanishes almost completely if our way of thinking is inspired only by the biological order of nature. Seen in this perspective the sexual urge is only the sum of functions undoubtedly directed, from the biological point of view, towards a biological end, that of reproduction. Now, if man is the master of nature, should he not mould those functions—if necessary artificially, with the help of the appropriate techniques—in whatever way he considers expedient and agreeable? *The 'biological order', as a product of the human intellect* which abstracts its elements from a larger reality, *has man for its immediate author*. The claim to autonomy in one's ethical views is a short jump from this. It is otherwise with the order of nature, which means the totality of the cosmic relationships that arise among really existing entities.¹¹⁶

In this penetrating passage, Wojtyła identifies a way of thinking and seeing that is deeply hammered into the minds of children in school and reinforced daily in all adults by the cultural establishment—the way of thinking and seeing defined by a mechanistic form of natural science, comfortably settled in the unreflective position of being self-evidently true. The power of this mentality derives in part from hiding its nature as way of thinking and seeing imposed by will; it derives from presenting itself as simply as “the objective order of nature.” This is why Wojtyła's observation is so important: “The ‘biological order’, as a product of the human intellect. . . , has man for its immediate author.”

¹¹⁵ Weigel, *Witness to Hope*, 100.

¹¹⁶ Wojtyła, *Love and Responsibility*, 56-7, emphasis added.

Since we constructed this Baconian-Cartesian “biological order” on the basis of our ambition for “the empire of man over things,” it is not in the least surprising that we think we can assume the role of masters of the machine without any questions, except perhaps environmental ones. To this way of thinking, contraception and its mirror image, in vitro fertilization, seem the most natural procedures in the world. Blithe technological optimism is still widespread among theologians who submissively follow the Cartesian line.

Man is a maker and a selector and a designer, and the more rationally contrived and deliberate anything is, the more human it is. Any attempt to set up an antinomy between natural and biologic reproduction on the one hand, and artificial or designed reproduction on the other, is absurd. The real difference is between accidental or random reproduction and rationally willed or chosen reproduction.... If it [the latter] is ‘unnatural’ it can be so only in the sense that all medicine is. It seems to me that laboratory reproduction is radically human compared to conception by ordinary heterosexual intercourse. It is willed, chosen, purposed and controlled, and surely these are among the traits that distinguish *Homo sapiens* from others in the animal genus, from the primates down. Coital reproduction is, therefore, less human than laboratory reproduction—more fun, to be sure, but with our separation of baby making from love making, both become more human because they are matters of choice, and not chance.¹¹⁷

The need for a deeper harmony between the personal order and the order of nature is evident in the very heart of Wojtyła’s sexual ethics. “In the order of love a man can remain true to the person only in so far as he is true to nature. If he does violence to ‘nature’ he also ‘violates’ the person...”¹¹⁸ Thirty-three years later, John Paul II writes, “The natural law thus understood does not allow for any division between freedom and nature. Indeed, these two realities are harmoniously bound together, and each is intimately linked to the other.”¹¹⁹

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¹¹⁷ Robert T. Francoeur, “We Can—We Must: Reflections on the Technological Imperative,” *Theological Studies* 33 (1972): 428-39, here 438.

¹¹⁸ Wojtyła, *Love and Responsibility*, 229-30.

¹¹⁹ John Paul II, *Veritatis Splendor*, 50.