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The Challenge of Technology to Moral Theology

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THE CONTINUED RAPID ADVANCE OF DIGITAL, Internet-capable technologies is one of the most obvious trends of the last ten years. These technologies are everywhere—in our pocket, in our appliances, in cameras distributed throughout public spaces. We seemingly cannot escape them. There are many undeniably positive effects of such technology: easier access to information, flexible work, greater connectivity through Skype and social media, ready access to a variety of products. Yet troubling aspects have also become apparent. Social media has changed styles of interpersonal interactions, leading even some early tech enthusiasts to fear the repercussions on family life and friendship.[1] The effects of these shifts on a person's dispositions seem especially large on young people who have never known a world without an iPhone, suggesting that they play a role in altered styles of moral formation.[2]

These technologies also affect social structures. Tech companies now dominate the economy, while their products have changed almost every other sector of the market, from music to work shifts to advertising, with Shoshanna Zuboff even claiming that we are seeing the emergence of a new iteration of capitalism, surveillance capitalism.[3] Technological surveillance as a tool of regulation and control extends beyond the corporate realm into governance and civil society, with China launching a system of social credit that could influence nearly every aspect of citizens' lives. There are many other negative shifts that I could list as part of new technological developments: automation leading to possible growth in structural unemployment, availability of pornography, changes in political discourse, bias in algorithms, and so

[1] Sherry Turkle, *Alone Together: Why We Expect More from Technology and Less from Each Other* (New York: Basic Books, 2011).

[2] Jean Twenge, *iGen* (New York: Atria, 2017). For further discussion of these issues, see Nicholas Carr, *The Glass Cage: How Computers Are Changing Us* (New York: Norton, 2015); Matthew B. Crawford, *The World Beyond Your Head: On Becoming an Individual in an Age of Distraction* (New York: Farrar, Straus and Giroux, 2016); Natasha Dow Schull, *Addiction by Design: Machine Gambling in Las Vegas* (Princeton: Princeton University Press, 2014).

[3] Shoshana Zuboff, *The Age of Surveillance Capitalism* (New York: PublicAffairs, 2019).

on. Digital technologies touch on all aspects of moral theology: virtue, justice, sexuality, family, work, warfare, and politics. They are reshaping our lives, illuminating in a distinctive way features that are characteristic of all modern technological development.

Despite the clear importance of these developments, the analysis of technology in moral theology has been less than robust. The most significant response has come in Pope Francis's encyclical *Laudato Si'*. It describes the problem as not simply the devices themselves. It is rather the fact that these devices are designed around a modern technocratic paradigm, an understanding of how persons engage the world, privileging manipulation by the autonomous will over connection and engagement. The effect of these technologies is to intensify the colonization of our lived experience by such worldviews. Technologies have this effect on worldviews because they are tied to certain social ideals and ways of organizing communal action through sociotechnical systems. They encourage a bureaucratic policy response shaped around technical solutions that ultimately favor those in power.[4]

Laudato Si' thus encourages moral theologians to adopt an analytic lens that illustrates the complex interactions between social systems and individual dispositions. Unfortunately, the discipline has not yet successfully integrated these two aspects of the moral life.[5] Perhaps because of this, it has lagged far behind secular authors in describing problems in emerging technologies. In part, this is due to significant pressures that make it difficult for contemporary moral theology in the US (my focus in this essay) to adequately address the problems of technology. The first is the fear of Luddism, of seeming out-of-date when raising a critique of technology. More important issues stem from many of the primary sources used in Catholic moral theology. Some are blind to the problem, seeing technology as either purely neutral or as a positive example of cocreation. Other sources sense problems but restrict concern to particular social forms, such as liberalism, government, or business, without seeing the broader ramifications of new technology. Contemporary moral theologians are so wedded to particular schools of thought and their sources that it will be difficult for them to break open these disparate methodological commitments to confront this radically new problem. Without addressing these problems in our sources and methods, it will be difficult to bring moral thought on technology in line with the vision of *Laudato Si*'. Moral theology might have to change in significant ways.

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[4] For a description of the current iteration of this mode of action, see Evgeny Morozov, *To Save Everything, Click Here: The Folly of Technological Solutionism* (New York: PublicAffairs, 2014).

[5] For recent discussions, see Daniel Daly, "Structures of Virtue and Vice," *New Blackfriars* 92, no. 1039 (2011): 341–57; David Cloutier, "Cavanaugh and Grimes on Structural Evils of Violence and Race: Overcoming Conflicts in Contemporary Ethics," *Journal of the Society of Christian Ethics* 37, no. 2 (2017): 59–78.

Such an engagement with *Laudato Si'* is desperately needed. While many systematic theologians and philosophers have developed similar diagnoses of technology, no one has yet developed an ethical casuistry surrounding these technologies. Given their power for good, it would be inappropriate to reject these developments out of hand; one would need to withdraw from the world to do so. Yet Christians need prudential guidance on which technologies are dangerous, which should be outlawed, how to use others well, and more broadly how to respond to ethically dangerous technologies. This type of casuistry has been a strength of Catholic moral theology. The aim of this review, rather than to develop such a full casuistry, which would be impossible in this space, is largely to diagnose why technology, though important, has not been central to Catholic moral thought and to point toward directions for developing an appropriate casuistry of technology. It does this in three steps. The first section illustrates the phenomenological and sociotechnical aspects of the technocratic paradigm, using the work of Romano Guardini and Ivan Illich. Then it briefly describes cultural factors militating against the critique of technology. Finally, it examines problems in commonly used schools of contemporary moral theology. This last step points to future directions.

TWO ASPECTS OF THE TECHNOCRATIC PARADIGM

The major development in regard to technology of the last ten years, perhaps of the last hundred, was Pope Francis's denunciation of the technocratic paradigm in *Laudato Si'*.[6] His analysis was prefigured in John Paul II's writings on biotechnology and Benedict XVI's discussions of technology and the historical mutations of hope.[7] Further sophisticated discussions of the effects of social media are also found in Benedict's and Francis's Addresses for World Communications Day.[8] Yet Francis's writings and the sources he uses go deeper into these problems than previous engagements.

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[6] See *Laudato Si'*, nos. 106–114. For insightful discussions on the technocratic paradigm, see Michael Hanby, "The Gospel of Creation and the Technocratic Paradigm: Reflections on a Central Teaching of *Laudato Si'*," *Communio* 42 (2015): 724–47; Lisa Sideris, "Techno-Science, Integral Thought, and the Reality of Limits in *Laudato Si'*," *The Trumpeter* 34, no. 1 (2018): 14–35.

[7] John Paul II, *Evangelium Vitae*, nos. 14–35; Benedict XVI, *Spe Salvi*, nos. 16–23; Benedict XVI, *Caritas in Veritate*, nos. 68–77. For analysis of even earlier discussions on the problems of technological civilization found in Pius XII and Paul VI, see Paul Scherz, "*Laudato Si'* and the Use of Scientific Research in Theology and Public Policy," *The Heythrop Journal* 59, no. 6 (2018): 1049–1059.

[8] These can be found at www.vatican.va/content/francesco/en/messages/communications.index.html. For the shifting Magisterial understandings of communications technology, see James Caccamo, "The Message on the Media: Seventy Years of Catholic Social Teaching on Social Communication," *Josephinum Journal of Theology* 15, no. 2 (2008): 390–426.

The concept of the technocratic paradigm is multifaceted and in dialogue with a rich theology of creation. Here, I only emphasize two aspects, the phenomenology of technology and the role of sociotechnical systems. These ideas appear in a source from which Francis draws for this critique of technology, Romano Guardini, who explored these topics in his *Letters from Lake Como,* describing the shifts that modern technology and forms of social organization worked on character and experience in northern Italy, an account he formalized in *The End of the Modern World*.[9] Two major lines of investigation in Guardini's thought reappear in *Laudato Si'*. First, technology must be understood not as individual devices but fundamentally as an altered way of experiencing the world. *The End of the Modern World* originated as an attempt to trace "the meaning of Pascal's vision of man and the world," and noted three changes in the experience of the person, culture, and nature in postmodernity.[10] In regard to the person, the romantic individual begins to disappear into the collectivity. In place of liberal culture, there is technological manipulation. In place of the sublime, "The technological mind sees nature as an insensate order, as a cold body of facts, as a mere 'given,' as an object of utility, as raw material to be hammered into useful shape…."[11] This focus on the broader experience of the world is what I term the phenomenological approach to technology.

Francis presents our current problem as such a way of seeing the world, an epistemological form derived from reductionist science that leads to dangerous practical effects: "It can be said that many problems of today's world stem from the tendency, at times unconscious, to make the method and aims of science and technology an epistemological paradigm which shapes the lives of individuals and the workings of society" (*Laudato Si'*, no. 107). It leads to an attempt to control everything around us through a denial of the value of the other, be it a natural system, an animal, or, ultimately, another person. "It is as if the subject were to find itself in the presence of something formless, completely open to manipulation…. Now…, we are the ones to lay

[9] Romano Guardini, *Letters from Lake Como: Explorations in Technology and the Human Race* (Grand Rapids, MI: Eerdmans, 1994); Romano Guardini, *The End of the Modern World* (Wilmington, DE.: ISI Books, 2001). For a discussion of Francis's use of Guardini, see Nadia Delicata, "Homo Technologicus and the Recovery of a Universal Ethic: Maximus the Confessor and Romano Guardini," *Scientia et Fides* 6, no. 2 (2018): dx.doi.org/10.12775/SetF.2018.020.

[10] Guardini, *The End of the Modern World,* xxiv.

[11] Guardini, *The End of the Modern World,* 55. This phenomenological critique echoes many other sources, most notably Martin Heidegger, "The Question Concerning Technology," in *The Question Concerning Technology, and Other Essays* (New York: Harper Torchbooks, 1977), 3–35; Edmund Husserl, *The Crisis of European Sciences and Transcendental Phenomenology* (Evanston, IL.: Northwestern University Press, 1970); Hannah Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1998); C. S. Lewis, *The Abolition of Man* (New York: Simon & Schuster, 1978).

our hands on things, attempting to extract everything possible from them while frequently ignoring or forgetting the reality in front of us" (*Laudato Si'*, no. 106). This paradigm is a denial of the goodness and inherent meaningfulness of creation. Because its roots lie deep in the self, encompassing one's engagement with the world, the problem of contemporary technology requires a radical conversion. We must learn to see the world through the lens of creation rather than control. Such conversions require personal growth through spirituality but also the right social conditions for dialogue and respect. [12]

Guardini was not without hope in the face of these technological developments, seeing the potential for new social forms of solidarity and responsibility.[13] Yet given his experience of Nazi Germany, he was alert to the latent dangers of social control that perverted individual conscience and responsibility. "It is taken increasingly for granted that man ought to be treated as an object."[14] Even more terrifyingly, there may seemingly be no one responsible for an action at all. "Or there may be no appealable will at all, no person answerable for power, only an anonymous organization, each department of which transfers its authority to the next, thus leaving each—seemingly—exempt from responsibility."[15] Here, Guardini addresses the Kafkaesque nightmare that is modern bureaucratic procedure, which leads to the possible victimization of the weak by the powerful.[16] This is the second important aspect to maintain in a theological analysis of technology. Technologies must not be understood singly, or even only as a worldview, but as embedded in complex sociotechnical systems that embody this way of seeing the world. As Francis notes, "The technological paradigm has become so dominant that it would be difficult to do without its resources and even more difficult to utilize them without being dominated by their internal logic" (*Laudato Si'*, no. 108). From its very beginning, Baconian science has been tied to a particular ideal of a technocratic politics.[17] It is tied to modes of procedure embedded in institutional forms, rather than individual devices. Digital devices form a key part of all-encompassing sociotechnical systems that shape personal dispositions and frameworks of understanding the world.

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[12] For a discussion of the form and process of such a conversion, see Paul Scherz, "Living Indefinitely and Living Fully: *Laudato Si'* and the Value of the Present in Christian, Stoic, and Transhumanist Temporalities," *Theological Studies* 79, no. 2 (2018): 356–375.

[13] E.g. Guardini, *The End of the Modern World*, 203.

[14] Guardini, *The End of the Modern World*, 61.

[15] Guardini, *The End of the Modern World*, 124.

[16] For a discussion of the problems of institutionalized bureaucracy from a Thomistic perspective, see Charles Pinches and David Matzko McCarthy, "Natural Law and Our Contemporary Institutions," *Political Theology* 16, no. 5 (2015): 442–463.

[17] Joseph E. Davis, "Toward the Elimination of Subjectivity: From Francis Bacon to AI," *Social Research* 86, no. 4 (2019): 845–69.

This systemic aspect of contemporary technology is more clearly explored in the work of another Catholic scholar, Ivan Illich.[18] Illich dwelt on the outskirts of Catholic thought, skeptical, indeed opposed, to the developmentalist turn of post-Vatican II missionary efforts. His research center, though ostensibly meant to train missionaries, actively sought to dissuade them.[19] He feared that attempts to impose unhealthy Western forms of thought and social organization on other societies would destroy their traditional lifeworlds. In a series of books, such as *Deschooling Society* and *Medical Nemesis*, he unmasked the detrimental effects of the seemingly benevolent institutions promoted by Catholic theologians and activists.

He distinguishes between manipulative and convivial institutions.[20] Manipulative institutions act to decrease individual agency, encouraging the person to submit themselves to expert administrative control. Traditional modes of dealing with problems are eliminated in favor of rational management. For example, traditional remedies and modes of explaining suffering make way for expensive, technological medicine that tries to treat all forms of suffering as illness.[21] While promising to improve life, these manipulative structures bring numerous detrimental effects in their wake, such as iatrogenic illnesses, increased costs, and new forms of inequality. Most importantly, these systems decrease the possibility of the individual acting on her own or in concert with others, reducing agency, as Guardini noted, while introducing consumerist modes of behavior.[22] Illich proposed instead

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[18] Other sophisticated Catholic analysts of technology relate it to social systems and phenomenology, like Marshall McLuhan or Walter Ong, who mainly focused on the media, describing how different technologies shaped modes of mediation. See Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: McGraw-Hill, 1964). Yet McLuhan was not explicitly normative nor theological, though a reader can discern some moral theological implications. Because of this, his work can give the impression of a technological boosterism through ideas like a global village (though the actual analysis is more complex and filled with caveats). See Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (Toronto: University of Toronto Press, 1962). McLuhan also parlayed his theoretical insights into a career as a public intellectual. Through his talks, he influenced members of the counterculture, like Stewart Brand, who would go on to be formative voices of the California ideology of the Silicon Valley tech elite. Given his tie to this group, his ability to serve as a critical resource may be limited. For this history, see Fred Turner, *From Counterculture to Cyberculture* (Chicago: University of Chicago Press, 2006). Ong's theological and normative commitments are clearer, but there are problems with his constructive vision that are beyond the scope of this essay.

[19] For Illich's biography, see Todd Hartch, *The Prophet of Cuernavaca* (New York: Oxford University Press, 2015).

[20] Ivan Illich, *Deschooling Society* (New York: Harper & Row, 1971), 53ff.

[21] Ivan Illich, *Limits to Medicine: Medical Nemesis, the Expropriation of Health* (London: Marion Boyars, 2016).

[22] These authors show how practices, scientific discourse, and institutions reshape subjectivity, an insight explored in Michel Foucault, *Discipline and Punish: The Birth*

the idea of convivial institutions and technologies, which would empower the individual, aim at sustainability, and promote intersubjective engagement rather than submission to expertise.[23] His vision of convivial technologies and reshaped social institutions shows that such critiques are not simple rejections of technology. While there are many problems with his solutions, his analytic provides a powerful diagnostic tool and suggests new forms of normative engagement.

These thinkers are just the tip of a rich Catholic tradition of thinking on technology. Though such sources, with their dual focus on phenomenology and social structure, have been influential in other countries, they have not had much influence in America.[24] There is a broad anxiety among Catholics that affects theological engagements not just with technology, but also with science and other fields, an anxiety about not seeming up-to-date, a fear of anachronism. There are more specific reasons for the current malaise as well, stemming from the relationship to technology found in the sources that moral theology draws upon. In general, most of the major influences on contemporary work tend to either take little note of technology or to be naïvely technophilic. These long-standing issues in source texts lead directly to problems in today's contemporary schools of moral theology.

Fears of Luddism and the Shadow of Galileo

Recently, I was part of an interdisciplinary group of theologians, social scientists, and health system executives that gathered to discuss a new medical technology. As the group developed well-founded theological and practical reasons for criticizing the technology, one member of the group became agitated with the direction the conversation was taking. He argued that, if we criticized the technology, people will think that Christians are Luddites and that we reject scientific developments. Such arguments appear at almost every meeting that I attend on these topics. This is not only a concern of Christians. Many secular academics' papers in which the body of the essay would suggest a condemnation of the forms of power inherent in some new technology end with remarkably soft conclusions on the examined development.

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of the Prison (New York: Pantheon Books, 1977), and Michel Foucault, *The History of Sexuality*, Vol 1 (New York: Pantheon Books, 1978).

[23] Ivan Illich, *Tools for Conviviality* (London: Marion Boyars, 2001).

[24] For example, in France, Jean-Pierre Dupuy has developed the thought of Ivan Illich, launched critiques of cybernetic models of mind, and analyzed tools of technological decision-making from a broadly Catholic perspective. See Jean-Pierre Dupuy, *Pour un catastrophisme eclaire: Quand l'impossible est certain* (Paris: Seuil, 2002); Jean-Pierre Dupuy, *The Mechanization of the Mind: On the Origins of Cognitive Science* (Princeton: Princeton University Press, 2000). He interacts with a much richer French tradition of technology critique, stemming from sources like Martin Heidegger, "Letter on Humanism," in *Basic Writings* (New York: Harper & Row, 1977), 189–242; Jacques Ellul, *The Technological Society*, trans. John Wilkinson (New York: Vintage Books, 1964); Georges Bernanos, *La France contre les robots.* (Paris: Laffont, 1947).

When questioned about these divergences between argument and conclusion, the academic replies with something like: "I don't want to be seen as only critical," "It's going to happen anyway so I might as well accept it," or "I don't want people to think I'm a Luddite."

This fear stems in part from a misunderstanding of Luddism.[25] The question should be: given the historical situation of early nineteenth century Britain, who responded better to the social circumstances than the Luddites? The factory owners who would soon be employing child labor in miserable working conditions? The government administrators who suppressed the protests using secret police and military action, eventually showing their consideration for the plight of workers in the Peterloo massacre? When looked at in context, the Luddites are not an unattractive option. Rather than a naïve rejection of all technology, it was a movement dedicated to the rights of craftsmen, communal village life, and opposition to the increasing concentration of economic power. These workers understood the impact of new sociotechnical systems on human life and the interconnection of sociotechnical systems and the treatment of the poor. Such impacts need to be explored in order to prevent technologies from serving as tools to centralize power and oppress the marginalized, ideas deeply in line with Catholic social thought. Opposition to some particular implementation of technology does not equate to opposition to all technology, a misconception that even Francis felt the need to defend himself against.[26]

A second fear is that of technological inevitability, that whatever the new tool is, it will be adopted no matter what academics say. Opposition would seemingly just ensure that the academic critic will lose any chance of influencing its development and implementation. Better, it would seem, to take a positive approach and be able to participate in regulatory conversations funded by wealthy technology companies. That will at least gain one course buy-outs, nice dinners at well-funded conferences, as well as the chance to be an important voice at the table. While sounding good, this is an illusion. It would repeat bioethics' failure to be effectively critical.[27] Coopted by much

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[25] All theologians writing on technology should read the discussion of Luddism in E.P. Thompson, *The Making of the English Working Class* (New York: Vintage, 1966).

[26] "Nobody is suggesting a return to the Stone Age, but we do need to slow down and look at reality in a different way, to appropriate the positive and sustainable progress which has been made, but also to recover the values and the great goals swept away by our unrestrained delusions of grandeur" (*Laudato Si',* no. 114).

[27] For critiques of bioethics, see John H. Evans, *Playing God?: Human Genetic Engineering and the Rationalization of Public Bioethical Debate* (Chicago: University Of Chicago Press, 2002); Carl Elliott, *White Coat, Black Hat: Adventures on the Dark Side of Medicine* (Boston: Beacon Press, 2011), chap. 6; Paul Rabinow and Gaymon Bennett, *Designing Human Practices: An Experiment with Synthetic Biology* (Chicago: University of Chicago Press, 2012). This is not only a problem with bioethics, as similar critiques of science and technology studies exist. See Steve Fuller, "Why

more powerful institutions, scholarly work can become merely the intellectual justification of actions motivated by power and profit.

A deeper reason for this reserve is the shadow of the Galileo trial that hangs over all Catholic work on science and technology. Galileo's condemnation has long served as a tool for critics of religion. It does not matter how many times secular scholars deconstruct the faulty popular narrative of his trial as a simple battle between faith and reason,[28] some theologians still feel the need to prove that they are friendly to science. No matter how much historical work demonstrates the synergies between Christianity and science,[29] Catholic theologians still feel the need to temper criticism. As we will see in the next section, these motives are joined with more positive engagements with technology drawn from theological sources. But they still hamstring any efforts to develop an objective, critical analytic toward contemporary developments. In the particularly American setting, these fears of Luddism and being perceived as anti-science combine with more general American Catholic fears of not belonging either to society or the university. Unless these anxieties can be overcome, moral theology will have difficulty developing a rigorous analysis of technology.

THE RECENT HISTORY OF MORAL THEOLOGY

The lack of engagement with technology, however, can also be traced to more specific roots in the history of moral theology. When recent theologians have discussed technology, it has largely been in relation to biotechnology. Gerald McKenny has described medicine as part of a Baconian project to relieve the suffering of the human condition of finitude through technology; Oliver O'Donovan has criticized the attempt to make children through artificial reproductive technologies rather than beget them; Brent Waters has challenged the Manichean and Pelagian aspects of the transhumanist movement.[30] These

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Science Studies Has Never Been Critical of Science: Some Recent Lessons on How to Be a Helpful Nuisance and a Harmless Radical," *Philosophy of the Social Sciences* 30, no. 1 (2000): 5–32.

[28] E.g., Stephen Jay Gould, *Rocks of Ages: Science and Religion in the Fullness of Life* (New York: Ballantine Books, 2002); Jeff Hardin, Ronald Numbers, and Ronald Binzley, eds., *The Warfare between Science and Religion: The Idea That Wouldn't Die* (Baltimore: Johns Hopkins University Press, 2018).

[29] Eg., John Hedley Brooke, *Science and Religion: Some Historical Perspectives* (New York: Cambridge University Press, 1991); Peter Harrison, *The Fall of Man and the Foundations of Science* (New York: Cambridge University Press, 2007); Peter Harrison, *The Territories of Science and Religion* (Chicago: University of Chicago Press, 2017).

[30] Gerald McKenny, *To Relieve the Human Condition: Bioethics, Technology, and the Body* (Albany, NY: State University of New York Press, 1997); Oliver O'Donovan, *Begotten or Made?: Human Procreation and Medical Technique* (New York: Oxford University Press, 1984); Brent Waters, *This Mortal Flesh: Incarnation and Bioethics* (Grand Rapids, MI: Brazos, 2009). Brian Brock has provided a critical lens on broader

writers view biotechnologies as evidence of deeper theological issues in the self-understanding of Western society. It is important to note that all of these writers are Protestants. They thus benefit from both a tradition of writers critical of technology, such as Paul Ramsey in medicine and George Grant,[31] as well as a broadly Augustinian framework sensitive to the *libido dominandi* lying behind human institutions. However, such an approach has not provided a casuistry of technology, which is generally a focus of Catholic ethics.

Catholic approaches, even in bioethics, have largely neglected the broader issues of technology.[32] This is in part due to historical reasons. For thirty years after Vatican II, moral theology was bogged down in the proportionalist controversy.[33] The bone of contention in this debate, contraception, did lead to attention being paid to technologies in the sphere of procreation, and, in some cases, these bioethical discussions drew on Protestant discussions and larger phenomenological critiques of technology. However, these analyses were typically limited and subsidiary to the argument from sexual ethics.[34] Such discussions of technology were always a sideshow to the central dispute over intrinsically evil actions. Discussion became narrowly focused on action theory and law rather than a broader analysis of technology.

Virtue ethics, which swept everything before it in the aftermath of *Veritatis Splendor*, had the potential to engage questions of technology. Both Alasdair MacIntyre and Stanley Hauerwas were keenly aware of the difficulties of developing virtues under managerial bureaucracies.[35] For many Catholic moralists, though, these aspects of

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aspects of technological development in *Christian Ethics in a Technological Age* (Grand Rapids, MI: Eerdmans, 2010).

[31] Paul Ramsey, *Fabricated Man: The Ethics of Genetic Control* (New Haven: Yale University Press, 1970); George Grant, *The George Grant Reader*, ed. William Christian and Sheila Grant (Toronto: University of Toronto Press, 1998).

[32] There have been many exceptions, such as the American *Communio* school. The work of these scholars draws technology into a broader sphere of philosophical analyses. They are in general not moral theologians, however, so they largely avoid examining specific institutional and technological details, the moral salience of these details, and the casuistry necessary for articulating a way forward. One finds similar strengths and weaknesses in Radical Orthodoxy in relation to issues of technology.

[33] For a largely unbiased history of the controversy, see Paulinus Ikechukwu Odozor, *Moral Theology in an Age of Renewal: A Study of the Catholic Tradition Since Vatican II* (Notre Dame: University of Notre Dame Press, 2003).

[34] An example of this limited application is the excellent chapter drawing on Christopher Caldwell's critique of technological civilization in Russell Hittinger, *The First Grace: Rediscovering the Natural Law in a Post-Christian World* (Wilmington, Del.: Intercollegiate Studies Institute, 2007), 243–64. As the chapter draws to a close, though, this critique becomes tied to liberalism and ultimately applied only to contraception. The broader social implications are not developed.

[35] The clearest discussion of this central concern is in Alasdair MacIntyre, *After Virtue: A Study in Moral Theory*, 2nd ed. (Notre Dame: University of Notre Dame Press, 1984).

MacIntyre's and Hauerwas's work seemed sectarian, especially as the dispute with Jeffrey Stout over the liberal, pragmatic tradition developed.[36] Catholic virtue ethics tended toward detailed discussions of either Thomistic theory or how Aquinas's virtues apply today. Servais Pinckaers, focused on philosophical and theological issues,[37] ruled the day, rather than MacIntyre, who addressed more sociological concerns. Discussions of Hauerwas and MacIntyre's work turned from sociotechnical systems to political organization. Following them, many theologians critique liberalism, although it is now anti-liberal states and those lying outside the Western liberal tradition that most intensely deploy technology. Other scholars encouraged small-scale communities, without realizing that utopian technological schemes have frequently embraced small-scale communal test-sites, such as Bacon's *New Atlantis*, B.F. Skinner's *Walden Two*, the Sixties communes lodged in geodesic domes, or today's planned smart city demonstration sites. Even a small Christian community could have a profoundly misbegotten relation to technology. Through these developments, moral theology lost the fundamental concern over managerial bureaucracy and sociotechnical systems that was at the heart of MacIntyre's thought and in *Laudato Si'*.

Part of the failure of the Catholic moral theology of technology is tied to tendencies in the specific sources that lie at the origins of our current schools of thought, as the rest of this essay outlines. From Thomas Aquinas, there comes the ideas that technology is neutral. From Pierre Teilhard de Chardin, contemporary Catholics have developed a tendency to see technology as co-creation. Both ignore the phenomenological and sociotechnical aspects of these problems. Both market-oriented conservatives and Marxist-influenced progressives embrace technology as part of the path to a flourishing society. Although these last two schools are aware of some aspects of the sociotechnical problem, they tend to apply it only to one sector of society (the government or business respectively). After analyzing these schools, I suggest how each of them can correct problems in its current approach so as to better correspond to the path charted in *Laudato Si'*. Yet I end by positing the need for a more eclectic approach to technology, an approach that can integrate more perspectives than any of our current schools, an approach seen in many younger theologians. Many caveats are in order. Most importantly, this is a typology, so it does not cover all important schools or perfectly place every individual.[38]

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[36] Jeffrey Stout, *Ethics after Babel: The Languages of Morals and Their Discontents* (Boston: Beacon Press, 1988).

[37] Servais Pinckaers, *The Sources of Christian Ethics*, trans. Mary Thomas Noble, 3rd ed. (Washington, DC: The Catholic University of America Press, 1995).

[38] For example, New Natural Law theory is conspicuously absent. The reasons are that it is more influential in philosophy and political theory than in moral theology at the moment, and it does not really engage questions of technology. There are also

Moreover, this is not a systematic review of all work on this topic, focusing as it does on a few influential figures and representative examples. Hopefully, this exercise still identifies useful pathways for development.

TECHNOLOGICAL NEUTRALITY AND THOMISM

While the Thomistic revival of the early twentieth century provides much dynamism and rigor to contemporary thought, it uses explanatory frameworks around technology tethered to premodern technologies.[39] The central Thomistic and Aristotelian distinction regarding technology is between *poiesis* and *praxis,* making and doing.[40] Making results in changes to something out in the world, a product. Doing, the moral action of a whole person, results in changes within the person herself—the changed or strengthened character traits emerging from the action. These two modes of human action flow from two different virtues, art (*techne*) and prudence. Art is an intellectual virtue, the knowledge of how to make some effect or artifact in the world around one. As an intellectual virtue, it is morally neutral insofar as it does not engage the passions and will. Whereas prudence is inseparable from the moral virtues because the passions provide the first principles of prudence, art's first principles are the principles of the specific craft (ST I-II q. 58, a. 5). Like general knowledge, art only becomes morally freighted by the use one makes of it. The knowledge of the art of medicine can be used either to heal or to kill. Therefore, art must be guided by moral virtues external to itself, especially justice, if it is to be used in a virtuous manner (ST I-II q. 57, a. 3). It is only prudence, requiring the confluence of passions and will and issuing in a command, that leads to morally evaluable actions. The most straightforward application of this framework to contemporary technologies is to see them as neutral instruments that only become moral issues when misused by agents, an idea known as technological neutrality or an instrumentalist understanding of technology.

This understanding of technological neutrality has been heavily criticized by scholars for nearly a century.[41] First, engaging certain kinds of technology shapes one's worldview, and technologies themselves only develop from a certain worldview. As Francis says, "We

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Catholic students of Hauerwas that I have neglected, such as William Cavanaugh, who uses aspects of the technological critique, although he largely focuses on politics.

[39] For distinctions between current and prior paradigms of technology, see Heidegger, "The Question Concerning Technology"; Ellul, *The Technological Society*; Albert Borgmann, *Technology and the Character of Contemporary Life: A Philosophical Inquiry* (Chicago: University of Chicago Press, 1987).

[40] These distinctions can be found at Aristotle, *Nicomachean Ethics* 6.5; Thomas Aquinas, *Summa Theologiae* I-II q. 57.a. 4.

[41] E.g. Heidegger, "The Question Concerning Technology"; Ellul, *The Technological Society*.

have to accept that technological products are not neutral, for they create a framework which ends up conditioning lifestyles and shaping social possibilities along the lines dictated by the interests of certain powerful groups" (*Laudato Si'*, no. 107). Second, social scientists and philosophers have become more aware of how practices shape character.[42] Technologies engender certain sets of practices and thus certain character traits. Third, our technologies rely on much more densely interconnected sociotechnical systems than those of Aristotle and Aquinas, which leads to greater influence on action and interactions.[43] Once you enter into the world of Facebook or Twitter, it constrains action. One cannot neutrally use a car—one is already in a society shaped by the highway system and the vision of life embodied in that system. Technologies are a package deal.[44] It is no critique of Aquinas to describe these problems. Writing before the explosion of technological developments yoked to mathematical science and industrial production, he had no ability to predict or engage these new artifacts. Though appropriate to his time, Aquinas's categories are inadequate for current technologies, leading to misdescriptions of ethical issues by obscuring their phenomenological and sociotechnical aspects.

These problems do not mean that early twentieth century Thomism was bereft of critical resources in relation to technology. Thomists criticized many aspects of modern thought touching on technology, especially as they relate to the abandonment of Aristotelian philosophical categories. These could approach the phenomenological critique of technology, as in Jacques Maritain's *Degrees of Knowledge*.[45] There, Maritain describes how modern natural science operates on a different intellectual plane than natural philosophy. Natural science eschews the rich grasp of the essences existing in the natural world, seeking instead a description of merely mathematically analyzable aspects of objects like extension and weight. While capturing some aspects of the world, it ignores the most important parts of things in themselves. What it does allow, however, is prediction and manipulation—the essence of technology.

The example of Maritain suggests a path for Thomists to better engage technology. Already, early in the last century, many scholars saw

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[42] MacIntyre, *After Virtue*; Pierre Bourdieu, *The Logic of Practice*, trans. Richard Nice (Stanford: Stanford University Press, 1992).

[43] As Ellul argued, following Marx and Engels, the transition from older to contemporary technology "involves a change of quality as a consequence of a change in quantity" of machines and their penetration into life. See *The Technological Society*, 62.

[44] Illich, *Deschooling Society*, 95.

[45] Jacques Maritain, *The Degrees of Knowledge* (Notre Dame: University of Notre Dame Press, 1995). For similar concerns, see Husserl, *The Crisis of European Sciences and Transcendental Phenomenology*.

that the objective interpretation of ethics and action provided by Aquinas needed to be supplemented by the powerful descriptions of subjective experience emerging from phenomenology. The most successful synthesis was John Paul II's, which ultimately led to his theology of the body. His theological and philosophical analyses expanded upon or complemented resources found in Aquinas.[46] Thomists thus have the capacity to combine Maritain's, and similar, discussions of the problems of purely abstracted mathematical conceptions of nature with a phenomenology of subjective experience in relationship to current technologies. Such a combination would offer decisive progress in the field—developing the Thomistic tradition to confront newly emerging aspects of modernity while providing moral theologians the systemic solidity and integration that Thomism offers. This still leaves the problem of engaging sociotechnical systems, a problem bedeviling Thomistic engagements with other aspects of social science.

TEILHARD AND TECHNOLOGY

While Thomists see technology as morally neutral, technophiles like Pierre Teilhard de Chardin see it as a fundamental good, a development to be encouraged even in the face of strong objections. Teilhard revolutionized the relationship between Catholicism and science, providing important stimuli to theological understandings of creation, the cosmic Christ, and ecology, among other topics.[47] His narrative is fundamentally one of progress, of optimism about increasing human control over the world. Creation is an evolutionary process of order emerging from disorder, of greater unity among diversity. Inert matter gives way to living creatures, which lead to intellectual/spiritual creatures. As the highest form of development, humans should rework and spiritualize matter, bringing all into the noosphere of mind until the universe reaches the Omega Point of pleromic unity in the cosmic Christ.

Part of this eager embrace of science and technology stems from the fear that Christianity will be off-putting if not up-to-date, the

[46] Thomas Petri, *Aquinas and the Theology of the Body: The Thomistic Foundations of John Paul II's Anthropology* (Washington, DC: Catholic University of America Press, 2018). For a discussion of John Paul II's engagement with Thomistic virtue, see Pawel Tomczyk, "The Presence of Virtue Ethics in the Thought of Karol Wojtyła/John Paul II," (PhD diss., The Catholic University of America, 2017). There are many other philosophers and theologians who have attempted to bring together Thomistic and other scholastic systems with the developments of phenomenology, such as Edith Stein, *Finite and Eternal Being: An Attempt at an Ascent to the Meaning of Being* (Washington, DC: ICS, 2002).

[47] For overviews of his thought, see Pierre Teilhard de Chardin, *The Phenomenon of Man* (New York: Harper & Row, 1959); Pierre Teilhard de Chardin, *The Divine Milieu* (New York: Harper & Row, 1960); Pierre Teilhard de Chardin, *Christianity and Evolution* (New York: Harcourt, 1974). What follows should not be read as a total critique of Teilhard's theology, just his engagement with technology.

shadow of Galileo discussed above. Repeatedly in Teilhard's writings, one finds laments like this: "[O]ur Christology is still expressed in exactly the same terms as those which, three centuries ago, could satisfy men whose outlook on the cosmos it is now physically impossible for us to accept…. What we now have to do … is to modify the position occupied by the central core of Christianity."[48] Ironically, few scientists embrace this spokesman for the rapprochement of science and theology. He has been heavily criticized for his lack of skepticism on scientific issues such as Lamarckianism or the Piltdown Man hoax.[49] This naïveté becomes even more dangerous when applied to new technologies.

Many scholars have tried to develop a sophisticated analysis of responsible technology use from Teilhard's thought.[50] Yet the practical implications for a theologian's framework can best be seen in how he applies it to difficult cases. In this way, Teilhard's discussions of nuclear weapons and eugenics show his problems. To Teilhard, nuclear weapons provide mankind with more power over the elements, so they ultimately lead to the Omega Point. While recognizing dangers, he rejects any call to limit nuclear weapons research or suppress the results. "As though it were not every man's duty to pursue the creative forces of knowledge and action to their utmost end! As though, … there exists any force on earth capable of restraining human thought from following any course upon which it has embarked!"[51] There is a duty to see the results of any new technology worked out to the end. Such a stance makes a clear-eyed analysis of technological developments almost impossible. All becomes wagered on the spirit with which the technology is deployed,[52] a nod to the neutrality of technology, without a recognition of how technology and the sociotechnical systems in which it is embedded can change that vision.

This kind of naïve technophilia is also on display in his continued embrace of eugenics into the 1950s. Eugenics was the attempt starting from the 1890s to use genetic knowledge to breed a better humanity.[53] In part, eugenicists sought to accomplish this goal through the sterilization of those deemed unfit, as practiced in the US until the 1970s, or their outright murder, as in Nazi Germany. Teilhard himself embraces

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[48] Teilhard de Chardin, *Christianity and Evolution*, 77.
[49] Stephen Jay Gould, *Hen's Teeth and Horse's Toes* (New York: Norton, 1980), chaps. 16, 17.
[50] E.g. Maria Šulekova and Kevin Fitzgerald, "Can the Thought of Teilhard de Chardin Carry Us Past Current Contentious Discussions of Gene Editing Technologies?," *Cambridge Quarterly of Healthcare Ethics* 28 (2019): 62–75.
[51] Pierre Teilhard de Chardin, "Some Reflections on the Spiritual Repercussions of the Atom Bomb," in *The Future of Man* (New York: Harper & Row, 1964), 140.
[52] Teilhard de Chardin, "Some Reflections on the Spiritual Repercussions," 148.
[53] For this history, see Daniel Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (Cambridge, MA: Harvard University Press, 1995).

eugenics in a number of writings.[54] Supporters have noted that it is difficult to interpret what he means by eugenics; he might support only the positive eugenics of encouraging large families and better healthcare for children, approaches supported by many Catholic thinkers.[55] However, it is clear that he should have known the problems with the term eugenics by the time of his writings in the late 1940s, given the evidence of coercive sterilization campaigns and Nazi euthanasia. His lack of clarification of the term means that he was either greatly out of touch with society or blind to the problems of eugenics, neither of which options is especially promising in a source for the ethics of technology.

Some may object that there are few explicit Teilhardians today and fewer still are moral theologians. This is true, though they do appear in the fields of science and religion, bioethics, and transhumanism, largely encouraging a fuller embrace of technological developments, though modified by Christian insights.[56] Aspects of his thought reappear in discussions of digital technologies, such as seeing the World Wide Web as an instantiation of the noosphere.[57] Yet his more important legacy is his influence on many of the theologians, like Henri de Lubac or Karl Rahner, who themselves influenced Vatican II and continue to shape theology.[58] These theologians of course brought their own frameworks to bear, but they still manifest some of Teilhard's emphases.

Though there is not space to give a full analysis of the subtle impact of Teilhard's thought on later moral theology, one example might illustrate the point. Karl Rahner largely gives his approval to a whole

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[54] For a description, see John Slattery, "Dangerous Tendencies of Cosmic Theology: The Untold Legacy of Teilhard de Chardin," *Philosophy and Theology* 29, no. 1 (2017): 69–82.

[55] Joshua Canzona, "Teilhard's Legacy Can't Be Reduced to Racism: A Response to John Slattery," *Rewire.News*, August 22, 2018, rewire.news/religion-dispatches/2018/08/22/teilhards-legacy-cant-be-reduced-to-racism-a-response-to-john-slattery/; John Haught, "Trashing Teilhard," *Commonweal*, February 8, 2019, www.commonwealmagazine.org/trashing-teilhard. For Slattery's response, see John Slattery, "Teilhard & Eugenics," *Commonweal*, March 22, 2019, www.commonwealmagazine.org/teilhard-eugenics. For a broader perspective on Catholic approaches to eugenics, see Sharon Leon, *An Image of God* (Chicago: University of Chicago Press, 2013).

[56] Philip J. Hefner, *Technology and Human Becoming* (Minneapolis: Fortress Press, 2003); Ilia Delio, "Transhumanism or Ultrahumanism? Teilhard de Chardin on Technology, Religion and Evolution," *Theology and Science* 10, no. 2 (2012): 153–166.

[57] Jennifer Cobb Kreisberg, "A Globe, Clothing Itself with a Brain," *Wired*, June 1, 1995, www.wired.com/1995/06/teilhard/.

[58] For an early review of Teilhard's influence, see Donald Gray, "The Phenomenon of Teilhard," *Theological Studies* 36, no. 1 (1975): 19–51.

host of technological developments.[59] Humans are defined as beings who experiment on and shape themselves. New technologies, like genetic engineering, behavioral manipulation, and psychological manipulation, are thus merely more potent forms of older techniques like spiritual practices. Rahner does have some concerns, such as reversibility, and he draws upon what he calls the "universal moral faith-instinct" to reject certain artificial reproductive technologies.[60] Yet even when he would reject a specific technology, it is not based in systematic argumentation. He does not provide, any more than Teilhard does, theoretical resources for a moral analysis or a casuistry of technology, a problem he inherits from Teilhard.

FREE MARKET CATHOLICISM[61]

Other schools of thought can be just as technophilic as Teilhard, even when they recognize dangers in sociotechnical systems. This danger becomes especially apparent when considering economic questions. The contemporary economy is dependent on technological development, and it is this innovation that is understood as the driver of growing human flourishing by some scholars of free market Catholicism. Shaped by the thought of Michael Novak among others, they emphasize those aspects of Catholic social thought that encourage entrepreneurial activity, oppose excessive state action, and support a vibrant civil society.[62] Entrepreneurial creativity is an important manifestation of the freedom and intelligence contained within the Catholic understanding of the image of God: "In the economic sphere, creation is to be fulfilled through human imitation of the Creator."[63] Through this creativity, market and technological innovations lead to an enrichment of the common good. Technology allows us to participate in God's creation as a form of co-creation by unlocking the gifts that lie

[59] Karl Rahner, "Experiment with Man," in *Theological Investigations,* Volume IX: *Writings of 1965–67 I*, trans. G. Harrison (New York: Herder and Herder, 1972), 205–225.

[60] Karl Rahner, "The Problem of Genetic Manipulation," in *Theological Investigations,* Volume IX: *Writings of 1965–67 I*, trans. G. Harrison (New York: Herder and Herder, 1972), 240. Thus, he is not quite the "techno-theologian" that Paul Ramsey paints him in Ramsey, *Fabricated Man*, 138–42.

[61] These scholars are commonly called neoconservatives, but I understand that term as referring to a slightly different group tied to the now defunct *Weekly Standard* and influenced by Leo Strauss. Some might question this group's ties to academic moral theology, but, given their presence in business schools at Catholic colleges and in policy discussions, they might be the most influential school of Catholic thought.

[62] For overview, see Michael Novak, *The Spirit of Democratic Capitalism* (New York: Touchstone, 1982); Michael Novak, *The Catholic Ethic and the Spirit of Capitalism* (New York: Free Press, 1993).

[63] Novak, *The Spirit of Democratic Capitalism*, 356.

latent and unutilized in nature: "The Creator locked great riches in nature, riches to be discovered only gradually through human effort."[64] Democratic capitalism and the associated corporate form serve as the social arrangements that most successfully unleash this creative potential, enabling individuals to follow their interests in a way that serves others. This school thus opposes anything that would block the smooth functioning of this system and the rapid development of technology.

Faith in the power of innovation to serve the common good makes this school sympathetic to most forms of technological development.[65] While recognizing that new technologies can cause displacement and challenges, they view them as also offering new entrepreneurial opportunities. As Jay Richards argues, "Intelligent machines will transform industry and the job market in the next few decades…. [T]his will be an opportunity rather than a crisis for those who prepare."[66] In the face of unemployment due to automation, workers should use their skills to create new products, like Youtube exercise videos, that will lead to new forms of wealth and labor.[67] Technological revolutions can be embraced as the creative destruction so beloved by Silicon Valley entrepreneurs.

These scholars reject economic individualism but see care for others as best served by civil society institutions, such as charities, rather than by government programs. One of the chief dangers they see to democratic capitalism is the temptation of socialism or over-regulation from government bureaucracies. In Novak's telling, suspicions of capitalism and misunderstandings of contemporary society have led Catholic theologians to call for excessive regulation and to develop socialist liberation theologies.[68] This is a mistake in his view because it involves an overly rationalist vision of human action, a hubristic attempt to control the complexity of society in order to manage the actions of others, despite problems of unintended consequences.[69] Instead, regulation must be minimized to unleash market forces and ensure personal freedom. Thus, this school of thought is aware of the problems of sociotechnical systems, but this awareness only seems to extend to government bureaucracies, since they are not suspicious of

[64] Michael Novak, *Toward a Theology of the Corporation* (Washington, DC: American Enterprise Institute, 1981), 37.
[65] Many of these scholars reacted with outrage to Francis's critique of the technocratic paradigm. For example, Ann Marie Jakubowski, "Walker: 'Praised Be Technology,'" *Acton Institute Powerblog*, July 8, 2015, blog.acton.org/archives/80034-walker-praised-be-technology.html.
[66] Jay Richards, *The Human Advantage* (New York: Crown Forum, 2018), 191.
[67] Richards, *The Human Advantage*, 1–4.
[68] Novak, *The Spirit of Democratic Capitalism*, 239–314.
[69] Novak, *The Spirit of Democratic Capitalism*, 89.

similar dynamics at play in private sociotechnical institutions like corporations such as Google or Facebook.

Their emphasis on freedom serves as the response to any concern over the formative powers of technologies. For example, an article responding to Jacques Ellul's critique of the power of technique stresses "the importance of human free will…. So also with technology we have the choice to examine our reasons for the kinds of technology we develop."[70] A moral society is ensured by individual virtue and responsibility. If someone responds to a technology badly or develops an improper technology, then it is an individual failure. As in the Thomistic understanding, technologies are morally neutral. Only certain kinds of technology that otherwise violate moral norms, like some genetic technologies, should be avoided.[71] Otherwise, all depends on individual use.

Yet the problems of contemporary technologies strain this approach. A first problem concerns the simple conceptual adequacy and consistency of their system. As I and others have noted, the competitive pressures of the market may decrease valuable innovation in many fields, thus undermining the idea that the free market leads to maximal scientific creativity.[72] The network effects of new technologies and the huge advantages that accrue to those first in the field lead to new monopolies that undermine competition. Furthermore, as Zuboff notes, Schumpeter's idea of creative destruction envisioned that a new equilibrium would form that involved a new social contract between labor and capital embodied in new social institutions that would justly distribute the gains from technology and enable a stable social order.[73] That new order has not yet formed, and the increasing pace of technological change makes it hard to create such an order.

With regard to concerns over government power, it is not clear that we can separate corporate bureaucratic structures from government ones. The oppositional framing of government versus business is unhelpful in general and especially in the case of technology. Since World War II, even private technology development has depended heavily on government research and funding.[74] Google and other technology companies have been entangled with government agencies since their origins, with technology companies receiving investment

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[70] Christian Kettler, "The Technological Bluff," *Religion and Liberty* 2, no. 3 (1992), www.acton.org/pub/religion-liberty/volume-2-number-3/technological-bluff.
[71] Michael Novak, *The Fire of Invention* (Lanham, MD: Rowman & Littlefield, 1997), 72–78.
[72] Paul Scherz, *Science and Christian Ethics* (Cambridge, UK: Cambridge University Press, 2019).
[73] Zuboff, *The Age of Surveillance Capitalism*, 50–52.
[74] Philip Mirowski, *Science-Mart: Privatizing American Science* (Cambridge, MA: Harvard University Press, 2011).

from security agencies in the aftermath of the 9/11 attacks.[75] This state-industrial complex, mirroring earlier military-industrial complexes, seeks to rationally alter individual action in ways opposed to Oakeshottian conservatism of the sort these thinkers embrace. As seen in discussions on the blog of the Acton Institute, a key institution of this school of thought, even these scholars are recognizing the need to take into account the fundamental mutations caused by the rise of surveillance capitalism. It differs from the forms of corporate capitalism dominant in the 1970s and 1980s when their theories were developed.[76]

Moreover, in regard to solutions found in human liberty, the sociotechnical structures that capture us not only in public but also in private life limit agency and responsibility as Guardini and Illich describe, undermining human freedom. Individual character is not independent from technological practices, as studies of iGen suggest. The vibrant civil society that their theory demands is being reshaped by the tools of communication. Free market conservatives ultimately answer this problem by harking back to the use of individual freedom, but there is an unsettling problem here. Technology itself shapes how freedom is used. Overall, these aspects of contemporary technology undermine central pillars of their theoretical edifice.

To develop a better response to technology, this school must examine how technological developments are affecting core elements of their theory. They ought to follow the example of conservative theorists like Matthew Crawford in analyzing how certain technologies are favoring the concentrations of power in private and public hands that Lord Acton feared.[77] Moreover, they must look to the ways that different practices are reshaping individual virtue and civil society. Only in these ways can they confront the challenges that new technologies may create for their theory.

SOCIAL JUSTICE AND SOCIOTECHNICAL ORGANIZATION

The predominant school of contemporary moral theology draws on a mixture of liberation theology and post-Vatican II progressive Catholicism.[78] Liberation theology, after Thomism, has perhaps the greatest influence on contemporary moral theology. While, at first glance, it might seem to have rather little to say in regard to an ethics

[75] Zuboff, *The Age of Surveillance Capitalism*, 112–121.
[76] Michael Matheson Miller, "Google and Surveillance Capitalism," *Acton Institute Powerblog*, February 26, 2019, blog.acton.org/archives/106736-google-and-surveillance-capitalism.html.
[77] Matthew B. Crawford, "Algorithmic Governance and Political Legitimacy," *American Affairs*, Summer 2019, americanaffairsjournal.org/2019/05/algorithmic-governance-and-political-legitimacy/.
[78] I draw much of my description of these paradigms from Matthew Shadle, *Interrupting Capitalism* (Oxford: Oxford University Press, 2018).

of technology because it deals with fundamentally different issues of politics and economics, its use of Marxist social analysis gives it an inherent perspective on technology.[79] While any well-developed social analysis must take Marxist insights seriously, Marxism's relationship to technology can be technophilic because the historical dialectic is driven in part by the development of technologies of production (including technologies of labor organization). In one version of Marx's vision, the revolution is heralded by the maximum development of productive forces, causing widespread unemployment, but allowing, after the revolution, a life of leisure for everyone. Communism will aim "to increase the total productive forces as rapidly as possible."[80] The practical application of this program in today's world would be the Accelerationist or Fully Automated Luxury Communism programs, which seek to push technology development forward in the hope of eventually nationalizing it and giving everyone unlimited free time along with sufficient resources.[81] The neoliberal left's embrace of universal basic income tied to technological solutionism is a progressive capitalist version of this same program.

Liberation theology is of course not Marxist analysis, despite what critics may claim. However, in much of the original work of liberation theology, human fulfilment is tied, in a Marxist manner, to labor as the transformation of nature. "Man is created in the image and likeness of God and is destined to dominate the earth. Man fulfills himself only by transforming nature and thus entering into relationships with other men."[82] Instead of a reliance on technological or economic development alone, though, a truly flourishing society will require a radical shift in social and political structures. Indeed, its fundamental insight

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[79] It also responds to the crisis of global underdevelopment, which is, in part, the lack of parity in technological development in different areas of the world. Liberation theologians like Gustavo Gutierrez recognized that it would be a mistake to try to recreate Western development in the Global South. Still, the problematic of underdevelopment also tends to shape an optimistic engagement with technology and technocracy.

[80] Karl Marx and Frederick Engels, "Manifesto of the Communist Party," in *Economic and Philosophic Manuscripts of 1844*, ed. Marin Milligan (Amherst, NY: Prometheus Books, 1988), 230.

[81] Alex Williams and Nick Srnicek, "#Accelerate: Manifesto for an Accelerationist Politics," in *#Accelerate: The Accelerationist Reader*, ed. Robin Mackay and Armen Avenessian (Falmouth, UK: Urbanomic Media, 2014), 347–362; Aaron Bastani, *Fully Automated Luxury Communism: A Manifesto* (London: Verso, 2020). There is a less developed and more humanistic critique of the impact of technology on labor in Marx's writings, especially his early manuscripts, discussed in Eugene McCarraher, "Automated Vistas (I)," *Raritan* 39, no. 1 (2019): 18–42; Eugene McCarraher, "Automated Vistas (II)," *Raritan* 39, no. 2 (2019): 102–126.

[82] Gustavo Gutierrez, *A Theology of Liberation* (Maryknoll, NY: Orbis, 1973), 295. For a fuller description of problems in his early work from an ecological perspective, as well as a discussion of his later development in this area, see Daniel Castillo, *An Ecological Theology of Liberation* (Maryknoll, NY: Orbis, 2019), 31–34.

is to reject the focus on economic growth found in the developmentalist program as well as the neutral encouragement of science and technology found in Teilhard.[83] At the same time, these writings sometimes connect these structural shifts to problematic models of technological development and social organization: "The development of productive forces, in which scientific and technological advances do indeed play an important part, dialectically demands … that the established order be questioned."[84] While more aware of the problem of sociotechnical systems, there is still a tie to Marxist models of the social control of the means of production, although with a call for the participation of the oppressed.[85] The bureaucratic structures necessary to manage society could embody the technocratic paradigm.

Such frameworks were not absent from the milieu of Latin American socialism that influenced liberation theology. Salvador Allende's government attempted to use operations research to build a computer system, Project Cybersyn, that would manage the Chilean economy through a cybernetic system of surveillance, monitoring, and control.[86] Such a vision ignores the issues of character formation through technology and the power structures at play in bureaucratic sociotechnical systems, a danger that has been apparent wherever socialism has been implemented. The problem is that such systems depend on rationalizing and reshaping the life of those whom they seek to help.[87] From Julius Nyerere's Tanzanian land reforms to dam construction, large socialist bureaucratic schemes end up suppressing tacit knowledge and ultimately harm the supposed targets of aid. They are exemplars of the technocratic paradigm.

In a general analysis of liberation theology, it would be a mistake to dwell on these aspects. It is a rich theology that draws on the best of social analysis to respond to the signs of the times, and it pushes back against some of the more overtly bureaucratic forms of modernity through innovations such as base communities. Moreover, Gutierrez provides an, admittedly underdeveloped, account of the need for a humanist, cultural/psychological liberation, alongside structural and theological levels of liberation.[88] Yet even at its best, as in the work of Gutierrez, the technophilia of Marx peeks through.

Some strands, such as ecoliberation would seem to solve these problems. For example, Leonardo Boff criticizes the phenomenology of technology as destructive of society and the earth, drawing on the language of connectedness and paradigm so central to *Laudato Si'*.

[83] Gutierrez, *A Theology of Liberation*, 21–25, 173.
[84] Gutierrez, *A Theology of Liberation*, 214–215.
[85] Gutierrez, *A Theology of Liberation*, 111–113.
[86] Eden Medina, *Cybernetic Revolutionaries* (Cambridge, MA: MIT Press, 2014).
[87] James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1999).
[88] For discussion, see Castillo, *An Ecological Theology of Liberation*, 39–48.

Yet he does so from within a framework of ecological cosmology dependent upon Teilhard, cybernetics, and system theory.[89] As described above, the former is dependent on technology, while the latter two view existence through the lens of homeostatic machines.[90] Boff's theology of interconnection depends on feedback mechanisms theorized in a way that has been shown inadequate to characterize ecological systems.[91] Further, it is unclear how this ultimately would translate into policy. Boff's few specific proposals point both to an increase in local participation as well as to global authorities providing studies and documentation in order to manage problems.[92] Only recently has liberation theology begun to deal with the problematic relationship to technology found in its sources, such as in the work of Daniel Castillo, who interprets sustainable development through the lens of an eco-liberationist reading of the technocratic paradigm. The difficulties caused by the technocratic paradigm are apparent even here, though. Castillo laments the current lack of a clear alternative to market capitalism, such as the early liberationists found in democratic socialism. He confronts the need for both phenomenological and systemic change, proposing alternative practices as well as an alternative vision of the human as gardener.[93]

Liberationist strands of thought have flourished in contemporary moral theology, embracing feminism, black liberation theology, Latinx theology, queer theory, and ecotheology. Generally, such Catholic scholars also draw on Catholic social teaching and progressive social ethics that emerged under the post-War Keynesian regime.[94] This mixture of different intellectual traditions makes for a rich emphasis on social justice. Yet a problem with this school of thought is that, despite a focus on the participation of oppressed communities, its practical solutions tend to depend on either medical or bureaucratic technical systems. It is clear why such solutions would be attractive.

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[89] Leonardo Boff, *Cry of the Earth, Cry of the Poor*, trans. Philip Berryman (Maryknoll, NY: Orbis, 1997), 22–26. For a related discussion of the problems of such ecological cosmologies, see Castillo, *An Ecological Theology of Liberation*, 4–9; J. Matthew Ashley, "Reading the Universe Story Theologically: The Contribution of a Biblical Narrative Imagination," *Theological Studies* 71, no. 4 (2010): 870–902.

[90] For the history and problems of cybernetics, see N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999); Hans Jonas, *The Phenomenon of Life: Toward a Philosophical Biology* (Evanston, IL: Northwestern University Press, 2001).

[91] Celia Deane-Drummond, *Eco-Theology* (London: Darton, Longman and Todd, 2008).

[92] Boff, *Cry of the Earth, Cry of the Poor*, 127–134.

[93] Castillo, *An Ecological Theology of Liberation*, 194. As in many works, the technocratic paradigm here becomes closely tied to capitalism (59–61, 144), although without the turn to managerial socialism found elsewhere.

[94] Shadle, *Interrupting Capitalism*, 150–186.

As anthropologist Hugh Gusterson admits, "there is an idealistic impulse underlying much bureaucracy: the ideal that everyone will be treated equally, fairly, and in accordance with rationally configured administrative procedures." Systems now seen as racially and economically unjust were once solutions to such injustice: "borrowers' access to mortgages would be determined by objectively derived credit scores rather than a local bank manager who was prejudiced against women and minorities; criminal defendants' sentences would be driven by objective criteria rather than doled out by judges determined to lock up black men."[95] Contraception seems to address problems of contemporary family life. The anguish of gender dysphoria is addressed through surgeries and hormonal treatments that are high risk interventions transforming the individual into a subject of medical surveillance for the rest of their life. Technological solutions may address some glaring problems, but it is important to examine the phenomenological and technocratic damage they may bring in their wake, a step rarely taken.

For an example of how even the most insightful work is sometimes blind to these dangers, I turn to James Keenan's *University Ethics*, which draws attention to important problems affecting US universities, especially in relation to marginalized groups: violence against women; racial disparities in admission, retention, and hiring; the increasing use of low-paid adjuncts. Keenan recognizes that this is a problem of culture, but it is less clear how to change this culture. He only briefly touches on a solution to these problems, which seems to involve an explicit code of ethics tied to increased accountability, especially horizontal accountability, and transparency. This will involve more reports and quantitative data: reports on wage equality between men and women, reports on the hiring of higher level administrators, budget reports, reports on the numbers of foreign students recruited, assessment reports on progress in ethical culture, and an assurance that "any reports from below were answered by accountable reports from above."[96] Reports, reports, reports. These reports would require an increased bureaucratic structure of monitoring, evaluation, and accountability.

Yet this work neglects to provide a critical analysis of this increased regulatory burden. For over twenty years now, British scholars have been describing the problems of the audit culture found in British

[95] Hugh Gusterson, "Introduction: Robohumans," in *Life by Algorithms*, ed. Catherine Besteman and Hugh Gusterson (Chicago: University of Chicago Press, 2019), 1–27.
[96] James F. Keenan, *University Ethics* (Lanham, MD: Rowman & Littlefield, 2015), 79, 215.

academia.[97] Faculty and departments are subjected to intensive regulatory oversight in regard to teaching, publishing, grantsmanship, public engagement, and other factors. This has been much to the detriment of scholarship since faculty scramble to find ways to meet these metrics rather than seeking the goods internal to the practice of scholarship. Such audit systems of accountability ultimately decrease the power of practitioners only to increase the power of administrators and "consumers." Keenan is aware of the growing power of administration, but he dismisses critiques by saying that the ties between accountability culture and neoliberal governance are not inevitable.[98] However, in our cultural moment, quantified accountability metrics are so tied to forms of bureaucratic governance that it would require a great effort to disentangle them.

Even in terms of efficacy, such methods of accountability do not lead to improved performance. It is tough to design a metric that actually measures the desired outcome, and people cheat to meet targets when incentives are at stake.[99] Keenan claims that such systems of norms and accountability have been successful in medicine,[100] but the literature suggests that this claim is false. Autonomy has not necessarily empowered patients while the increasing bureaucratic oversight of doctors has empowered administrators at the expense of doctors, leading to problems of staff burnout and the corporate "efficiencies" that we see in medicine today aimed at increasing corporate profit rather than patient care.[101] The ethics of medicine and science were captured for bureaucratic ends.[102] As social scientists have shown, systems of monitoring and evaluation as deployed in health and development frequently harm the very poor they seek to help and engender their own forms of corruption.[103]

It is this strand of moral theology that has the most to gain from an engagement with social scientific analyses critiquing sociotechnical organization and interventions. There are critiques of developmentalism, biopolitics, and audit culture, among others, that are straightforward to adopt. All of these would provide their arguments with a more sophisticated understanding of social systems. This would allow them

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[97] This is a large literature, but seminal works include Michael Power, *The Audit Society: Rituals of Verification* (Oxford: Oxford University Press, 1999); Marilyn Strathern, *Audit Cultures: Anthropological Studies in Accountability, Ethics and the Academy* (London New York: Routledge, 2000).

[98] Keenan, *University Ethics*, 64–68, 180–182.

[99] Jerry Muller, *The Tyranny of Metrics* (Princeton: Princeton University Press, 2018).

[100] Keenan, *University Ethics*, 10–12.

[101] For the history and problems of this ethical oversight, see David Rothman, *Strangers at the Bedside* (New York: Basic Books, 1991).

[102] Evans, *Playing God?*

[103] China Scherz, *Having People, Having Heart* (Chicago: University of Chicago Press, 2014); Vincanne Adams, ed., *Metrics: What Counts in Global Health* (Durham, NC: Duke University Press, 2016).

to truly aim at the liberation of the poor rather than possibly subjecting them to increased technocratic systems of surveillance and control.

PATHS FORWARD

While there are ways to amend the problems in the schools of thought discussed so far, there are still limitations in each of their methodologies. None of them have the resources as of yet to grasp the phenomenon of contemporary technology in its fullness. Given such problems in prevailing sources, the way forward might be found in a more eclectic style of theology.[104] Many contemporary moral theologians do not belong to any single theological school. They are just as comfortable using Aquinas, Augustine, Hauerwas, manualist categories, Catholic social teaching, or philosophical resources. Even if they primarily follow one thinker, they are continually in dialogue with work of other provenances. The institutional locus most indicative of this style of work is the New Wine, New Wineskins conference, a group of moral theologians between their comprehensive exams and tenure. This meeting has led to the development of many fora: edited volumes, blogs, even this journal.[105]

Such scholars are already engaging issues of technology. Sometimes, of course, these are only incidental to other projects. In a chapter on pride, Charles Camosy addresses how the vice of pride can be displayed on social media, but it is not an article about social media per se and leaves broader questions of technology untouched.[106] Such work offers casuistry or illustrations for other work as the theme of technology did in relation to reproductive technologies. There are also weaknesses in an eclectic approach in that it can tend toward one-off efforts using tools already at hand, which, as we have seen, are not always helpful for technology. There is no underlying, theoretical development as part of larger projects to address the greater issues of the ethics of technology. Yet the fact that they are occurring at all shows the strength of an eclectic approach. It is not bound by the categories or predominant questions of any single school. This allows a freer engagement with emerging problems and secular insights. Once they

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[104] By terming this approach eclectic, I am not intending a slur. Cicero, who exercised more influence upon Western theology than any other philosopher save Plato or Aristotle, was fundamentally eclectic. Philosophical eclecticism was the style of many of the great Fathers of the Church, who would take advantage of whatever spoils the Egyptians had to offer.

[105] William Mattison III, *New Wine, New Wineskins: A Next Generation Reflects on Key Issues in Catholic Moral Theology* (Lanham, MD: Rowman & Littlefield, 2005); David Cloutier, ed., *Leaving and Coming Home: New Wineskins for Catholic Sexual Ethics* (Eugene, OR: Cascade, 2010). For blog, see www.catholicmoraltheology.com. See discussion in Charles Curran, *Diverse Voices in Modern US Moral Theology* (Washington, DC: Georgetown University Press, 2019).

[106] Charles Camosy, "Pride," in *Naming Our Sins*, ed. Jana Bennett and David Cloutier (Washington, DC: Catholic University of America Press, 2019), 162–64.

make the effort to develop an ethics of technology, eclectic scholars will be the best positioned to address these issues. Thus, this is perhaps the most promising school of thought for an ethics of technology, if the one in which the way forward is least clear.

Already, there are developments on this front. For example, Jana Bennett has analyzed modes of doing theology on the Internet.[107] Her focus is on theology and the Church, leaving aside aspects of the effects of technology on users and the larger economic environment within which these technologies reside, but she provides helpful insights into theological discourse on the Internet. Similarly, a recent issue of *The Journal of Moral Theology* focused largely on casuistry in regard to new technologies, such as the payment for artists on music platforms and drone warfare, but it also addressed more fundamental issues such as the interaction between technology and anthropology or natural law.[108] Luis Vera has perhaps gone furthest down this road, acknowledging the insights of the phenomenological critique but also trying to rescue what is positive in augmented reality technologies.[109] It is this kind of casuistical engagement offered by these authors that is crucial.

Much of this work still needs to integrate the phenomenological and sociotechnical aspects of the technocratic paradigm into a coherent framework in order to provide a consistent casuistry. A first step may be a deeper engagement with secular authors on these issues. Many of the commentators mentioned at the beginning of this article writing from a generally humanist worldview have provided excellent descriptions of emerging problems. Yet they lack the normative resources to provide a full explanation of why these developments are problems. They sense it but can give no more of a normative critique than an intuitive disquiet over the use of power or failure of conversation. Rather than just using them as data, moral theologians can provide these scholars with much deeper normative foundations. This effort will take the work of redescribing these problems in the language of Catholic philosophy and theology. Once redescribed, these authors' work can provide the observational resources for theological development. The second major area of development ought to be the reexamination of earlier Catholic voices on these problems. More needs to be

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[107] Jana Bennett, *Aquinas on the Web?* (London: T&T Clark, 2012).

[108] See *Journal of Moral Theology* 4, no. 1 (2015). James Caccamo and David Matzko McCarthy, the editors of this special issue, have both done much work developing this kind of casuistry of technological systems that goes beyond instrumentalism, including Caccamo's work founding a Technology Ethics Interest Group in the Society of Christian Ethics, and publications such as Caccamo, "The Message on the Media: Seventy Years of Catholic Social Teaching on Social Communication"; Pinches and McCarthy, "Natural Law and Our Contemporary Institutions."

[109] Luis Vera, "Augmented Reality and the Limited Promise of 'Ecstatic' Technology Criticism," *Journal of Moral Theology* 9, no. 2 (2020): 147–174.

written on Guardini, Illich, Caldwell, Maritain, Yves Simon, Bernanos, and others who engaged earlier instantiations of these dangers. Much that is anachronistic in these authors will need to be sifted out, but there will be many important seeds for further development.

These theoretical efforts would then offer us what is most desperately needed: the resources to develop an effective casuistry of new technologies. As I have suggested, we have the resources for broader critiques of technological worldviews as they are tied to specific political programs. What we lack is an effective way to determine how to use technologies in ways that will not lead to these broader character and social defects. Which kinds of individual technologies are appropriate in a Catholic framework? What forms of implementation are dangerous, and which are most advantageous? Catholic bioethics has shown how to do this in restricted domains, such as genetic technologies or with distinctions such as ordinary versus extraordinary care. What casuistical distinction might serve in regard to decision-making algorithms, social media apps, autonomous robots? These are the applied intellectual tools that must be developed.

Yet casuistry alone will not serve. Causistry applied from within a problematic epistemological framework within fallen sociotechnical institutions will fail. This occurs in other areas of moral theology. Ordinary and extraordinary care distinctions frequently are inadequate in practice because individuals lack the deeper formation in Catholic understandings of life and death that lie behind the distinction. Subsidiarity is often misinterpreted because it is deployed without regard to underlying ideas of agency, participation, and the common good. Purely casuistical developments will swiftly devolve into misapplied norms. Purely philosophical denunciations of technological modernity will result in the impotent shaking of fists against the times. Both are necessary but inadequate on their own.

Francis rightly highlights the additional need for conversion. There needs to be more attention to the spiritual and social practices that are necessary for conversion in a hostile milieu encouraging the technocratic paradigm. I have tried to do this for the realm of biomedical research, describing the practices of the self that can properly shape the scientist's worldview in the face of dangerous incentives and formative forces in science.[110] Given everyday lab practices that encourage the objectification of living things and a research structure that incentivizes external goods like grant money and patents, the researcher needs to recognize these threats to a proper subjectivity and use spiritual practices to resist these dangers. Such work needs to be done for other sectors of society. Only with thickly-narrated practices of formation can the Church and individual Christians push back against the

[110] See Scherz, *Science and Christian Ethics*.

phenomenology shaped by sociotechnical institutions. Prophetic denunciation may spur one to action, and casuistry will set the boundaries that protect one against the worst dangers. However, only through proper practices can these insights be integrated into the self.

CONCLUSION

An ethics of technology need be neither an exercise in nostalgic denunciation nor an eager celebration of all that is new. At its best, it is simply a recognition of the unique challenges that face our age, just as other ages have faced their particular problems. The kinds of technology, their interpenetration of all realms of human life, that we face are unprecedented in human history. So far, moral theology has failed to meet these challenges, sometimes limping behind after secular critiques of technological systems.

This failure is due to inadequate theological and philosophical frameworks. In regard to technology, Thomism is using a framework that no longer applies to new technological developments. Teilhard, free market theorists, and theologies of social justice, in contrast, are tied to the self-understanding of the age and its faith in progress through technological innovation and control. Francis has awoken us to the need to address these flaws. These faults are remediable. Thomism is a tradition that develops and has already shown itself adaptable to the kind of phenomenological insights necessary for a proper understanding of contemporary technology. Free market Catholicism and liberationist movements need to become aware of the ways in which the social and personal effects of these sociotechnical systems can undermine their ultimate goals of freedom and liberation, instead concentrating power in oppressive ways. They already possess the required frameworks to deal with complex social systems.

While such modifications would make these schools better, it is unclear whether they would render them completely adequate to current questions. That is why a deeper exploration using a wide variety of philosophical, theological, and social scientific sources in an attempt to develop a better understanding of our situation is needed. Only then will moral theology have both a theology and a casuistry adequate to the contemporary world. Perhaps then, moral theology will be able to describe new problems in greater depth that are as yet unseen by secular scholars. Such a project will require sustained effort across a number of schools and theologians. Only then will we be able to confront the problems of the day.[111]

[111] I would like to thank the editors for organizing this issue and for their helpful comments on my essay. I am also grateful to Luis Vera for his thoughts on an earlier draft of this work.

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