# THE AQUINAS REVIEW

## THOMAS AQUINAS COLLEGE

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# Contents

# FREEDOM, GOODNESS, AND EVIL: A CHRISTIAN *APORIA* AND ST. THOMAS'S RESOLUTION

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Most people who study Aristotle's works are familiar with a certain pattern of investigation. On a given subject (such as happiness or the soul) Aristotle likes to collect "what is said." These *endoxa* or common opinions might be, for instance, "happiness is virtue" or "happiness is wisdom." Such opinions often conflict with each other, and debate over them can lead to a seemingly irresolvable problem, an *aporia.* The philosopher's task is to move forward, finding a solution that will not only capture whatever truth is in the common opinions but fit with our experience and explain the reasons people hold them. Aristotle's role is not to be a whole-hearted partisan for one side of the debate. Instead, he reveals why the debate occurs, in light of a discovered—and deeper—truth. It is not as important to show why the common sayings are wrong as it is to show in what ways they are right; even those who think money is happiness are right in a certain respect. As he puts it in the *Metaphysics*:

> [E]very one says something true about the nature of things, and while individually we contribute little or nothing to the truth, by the union of all a considerable amount is amassed. . . . [T]ruth seems to be like the proverbial door, which no one can fail to hit.[1]

Thomas Aquinas understood, admired, and often followed this Aristotelian method. In collecting objections and *sed contras* for scholastic questions, especially questions of broad significance, Thomas is not primarily preparing to crush his opponents, but

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1   Aristotle, *Metaphysics* 2.1, 993b2–5, trans. W. D. Ross, in *The Basic Works of Aristotle,* ed. Richard McKeon (Random House, 1941).

rather he is laying out a problem for all to see, hoping to reconcile the truth behind the various views at a deeper level.

This essay explores how Thomas uses this Aristotelian pattern to talk about a topic just as broad as happiness or the soul: the topic of freedom. Even if we set aside vexatious dilemmas about grace and predestination, thinking about freedom and human free will has repeatedly given rise to a certain *aporia* among Christians: There is tension between the ideas that freedom is the ability to choose the good and that freedom requires the ability to do evil. Thomas was aware of this tension. However, instead of picking one of the *endoxa* and acting as a partisan, he sought an Aristotelian resolution, in which the common opinions are preserved and understood in the light of the newly discovered truth. His treatment can be a helpful guide for us. After all, no matter how much we might wish to avoid them, questions about free will are bound to arise, and very few minds can be satisfied by simple sayings or unresolved dilemmas.

This discussion is of timely as well as perennial interest because some of Thomas's influential contemporary readers have failed to strike the same balance he did, and they do not seem to recognize that Thomas's teachings about freedom move beyond the *endoxa* rather than championing one side of a dilemma. By reflecting on Thomas's position as a resolution to this *aporia*, we can gain greater insight into his teaching and a more complete idea of the truths about freedom that we wish to grasp.

This paper will begin by introducing what I consider "the Christian *aporia* of free will" and then discuss some of the difficulties of coming down on one side (part 1). After this, I will show that the writings of Thomas Aquinas contain a solution of the necessary depth, allowing us to capture the truth in the preliminary opinions in light of a greater truth (part 2). Like many solutions to *aporia*, Thomas's can be best understood as a dialogue, and so the second part will proceed in three stages:

The first stage shows a partial solution Thomas was able to adopt from Peter Lombard, the second stage explains a difficulty with this solution, and the third stage details how Thomas moved beyond this solution to a yet deeper one.

## Part 1: The Christian Aporia of Free Will

When I talk about free will with young Christians, I inevitably encounter two assertions. These are, in fact, the "things that are said" about free will in our community:

1. "Evil occurs because God gave us free will. If we weren't able to do evil and go against God's commands, we would just be mindless robots."
2. "True freedom is the ability to choose the good."

Where did these sayings come from? My interlocutors are likely to have heard these soundbites from sources that trace back to the great authors of the twentieth century. I suspect C.S. Lewis is frequently a source for the first assertion. In *The Problem of Pain,* he wrote that one of the good things God made, "namely, the free will of rational creatures, by its very nature included the possibility of evil; and . . . creatures, availing themselves of this possibility, have become evil."[1] St. John Paul II seems to be the most frequent source for the second claim. In *Redemptor Hominis,* for example, he wrote that "an honest relationship with regard to truth is a condition for authentic freedom."[2]

But these teachings also express primary, almost instinctive responses that have always belonged to the Christian tradition. They are affirmed because they fit experience and express the Christian worldview. When the struggling Augustine asked the Christian community why evil existed, he was told that

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[1]  C.S. Lewis, *The Problem of Pain* (Harper Collins, 1996), 63.

[2]  John Paul II, *Redemptor Hominis*, section 12.

"we do evil because we choose to do so of our own free will."[3]
Christians who say this have scriptural texts to support them,
the most famous one being from Sirach: "When God, in the
beginning, created man, he made him subject to his own free
choice. . . . [B]efore man are life and death, whichever he chooses
shall be given him" (Sir 15:14, 17). Why did God give us this
kind of choice? Augustine did not use the term "mindless robot,"
but he expressed the idea that human dignity requires choice
when he wrote, "Since, therefore, it is fitting for us to be good
not of necessity but voluntarily, it was fitting for God to give the
soul free will."[4]

The second assertion has an equally deep history in
Christianity. It is rooted in Christ's words in the Gospel of John:
"Everyone who commits sin is a slave to sin. . . . [I]f the Son
has freed you, you will be free indeed" (Jn 8:34, 36). We see this
claim made very robustly in Augustine's writings also: "What
sort of freedom of the will can those people have who have not
yet been rescued from the power of darkness?"[5] Because Christ
teaches that the truth will set us free, the ability to turn away
from the truth toward error and evil cannot really be called free-
dom. Freedom must lie in the pursuit of the truly good.

Though anyone entering into a conversation about human
freedom will have a handful of other primary certainties, these

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3  Augustine, *Confessiones* VII.3: "Et intendebam ut cernerem quod audiebam,
liberum voluntatis arbitrium causam esse ut male faceremus." English transla-
tion by R.S. Pinecoffin (Penguin Books, 1961), 136 (hereafter "Pinecoffin.)

4  Augustine, *Acta seu disputatio contra Fortunatum Manicheum* 15: "[C]um ergo
oporteat non necessitate, sed voluntate bonum esse, oportebat, ut deus animae
daret liberum arbitrium." English translation from *The Writings Against the
Manicheans and Against the Donatists,* ed. Philip Schaff (Eerdman's Publishing
Company, 1983), 116.

5  Augustine, *Contra Iulianum Opus Imperfectum* 6.15: "[Q]ualem liber-
tatem voluntatis habere possunt, qui nondum de potestate eruti tenebrarum?"
English translation by Roland Teske, from *Answer to the Pelagians III: Unfin-
ished Work in Answer to Julian* (New City Press, 1999), 639 (hereafter "Teske").

two assertions can be called the most basic Christian *endoxa* of free will. Like all *endoxa,* they are not particularly precise, and their sloppy language can grate on professional thinkers. Yet it is important not to rush into precision before the time is right; distinctions cannot be made to solve problems until we see what the problems are.

In fact, most Christians have not realized that there is tension, if not outright contradiction, between their two favorite claims. The first assertion indicates that free will is necessary for human dignity and that the ability to do evil—to choose death and disobedience—is necessary for free will to exist. Those making this pronouncement usually mean that Adam and Eve had to be able to sin in order to be free. Yet the second assertion conflicts with this view: If freedom does not truly exist except when directed toward what is good, how could the ability to do evil be a necessary condition for free will? The conflict is embarrassingly plain: The first assertion claims that the potential to do evil is necessary to the existence of free will, while the second assertion seems to exclude the potential for evil from freedom—at least, from the essence of "true" or "real" freedom. The tension between these assertions points to a pressing need to go beyond them.

In addition to this tension, each of our *endoxa* offers further difficulties. The first assertion states that the ability to do evil is required for humans to have the dignity of choice. But how could the potential for *evil* be necessary to the existence of a positive good like free will or, for that matter, human dignity? Augustine struggled with this question: "Who made me? Surely it was my God, who is not only good but Goodness itself. How, then, do I come to possess a will that can choose to do wrong and refuse to do good?"[6]

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6 *Confessiones* VII.3: "Sed rursus dicebam: Quis fecit me? Nonne Deus meus, non tantum bonus, sed ipsum bonum? Unde igitur mihi male velle et bene nolle, ut esset cur juste poenas luerem?" (Pinecoffin, 136).

There is also something troubling about the second assertion, which states that true freedom is found only in the ability to choose the good. If those with "true freedom" choose only the good—say, only what they have discerned to be God's will—do they have options in any significant way? For instance, is Mother Teresa literally unable to walk past a beggar without helping him? Hobbes, Hume, and Leibniz are among the philosophers who consider freedom of will to be compatible with a complete absence of psychologically possible alternate choices.[7]

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7  For Hobbes, see *Leviathan,* chapter 21, section 4: "*Liberty* and *necessity* are consistent: As in the water, that hath not only *liberty,* but a *necessity* of descending by the channel, so likewise in the actions which men voluntarily do, which, because they proceed from their will, proceed from *liberty,* and yet, because every act of man's will and every desire and inclination proceedeth from some cause . . . they proceed from *necessity*." Ed. Edwin Curley (Hackett Publishing Company, 1994). For Hume, see *An Enquiry Concerning Human Understanding,* section 7, part 1, 73–74: "For what is meant by liberty, when applied to voluntary actions? We cannot surely mean that actions have so little connexion with motives, inclinations, and circumstances that one does not follow with a certain degree of uniformity from the other, and that one affords no inference by which we can conclude the existence of the other. . . . By liberty, then, we can only mean *a power of acting or not acting, according to the determinations of the will*; that is, if we choose to remain at rest, we may; if we choose to move, we also may. . . . [L]iberty, when opposed to necessity, not to constraint, is the same thing with chance, which is universally allowed to have no existence." In *The Empiricists* (Anchor Books, 1974), 375–77. For Leibniz, see *Letter to Coste:* "[E]very time that the circumstances, taken together, tip the balance of deliberation more on one side than on the other, it is certain and infallible that the former side will be chosen. God or a perfectly wise person will always choose the best that they know of, and if one side were not better than the other, they would choose neither the one nor the other. The passions often take the place of reasoning in other intelligent substances, and we can always assert, with respect to the will in general, that choice follows the greatest inclination (by which I understand both passions and reasons, true and apparent). . . . One of the greatest principles of good sense is that nothing ever happens without a cause or determining reason. . . . Thus, although we have a freedom of indifference which saves us from necessity, we never have an indifference of equilibrium which exempts us from determining reason. There is always something which inclines us and makes us choose, but without being able to

The Christians I talk to, however, tend to shy away from such theories. Compatibilism simply isn't attractive to most of us.

The second assertion also gives rise to questions about those who are more viciously inclined. If those who choose evil do not act from a place of "true" or real freedom, how can they be held accountable for their actions? Do people who choose to shoot up a school or cheat on a chemistry test act by means of something other than freedom? Is accountability based on some kind of fake freedom, or on something else completely different from freedom?

Ideas about freedom have political implications, and the two Christian claims forming our *aporia* exemplify this. Whether they are guiding children in their households or adults in a larger community, Christian leaders who think about freedom through the lens of the first assertion tend to conclude that permitting evildoing is sometimes necessary in order to respect human dignity. They will regard it as a duty to create spaces in which their children, or their citizens, can make mistakes. Christians who emphasize the second assertion, on the contrary, tend to conclude that no amount of legislation lessens "true" freedom, as long as it directs the community toward habitually choosing the good for themselves. A strong adherent of the first assertion would regard the legalization of heroin as increasing one's freedom; a strong adherent of the second assertion would think that laws determining each person's clothing, career, place of residence, marriage partner, and diet (though perhaps impossible to enforce) would increase one's freedom.[8] Both attitudes

necessitate us." In *Philosophical Essays*, ed. and trans. Roger Ariew and Daniel Garber (Hackett Publishing Company, 1989), 194–95.

8  I do realize that men and women in religious life live under precisely these restrictions. But have they sacrificed their freedom or have they been liberated? Or both?

seem unhelpfully extreme—an *aporia* which mirrors the conflict we see in the two assertions about free will.

Thus, while there are good and traditional reasons to make the two most common Christian claims about freedom, asserting both claims together forces a fairly significant dilemma. Which one should we say: "Freedom must include the ability to choose evil, otherwise we would be mindless robots," or "freedom is the ability to choose the good"?

One way to approach a dilemma, of course, is to pick a side. Though there are thinkers who prioritize the first assertion, recent Catholic intellectuals have been inclined to settle on versions of the second assertion about freedom and use it as ammunition for rejecting the first one. Surely, they argue, it is better to view freedom as ordered toward the good than to consider it as the ability to choose either good or evil. Servais Pinckaers, in his popular and influential work *The Sources of Christian Ethics,* rejects the concept of "freedom of indifference," which he defines as the power to choose between contraries, and which seems to be the type of freedom that described in the first assertion.[9] Leaning on the texts of Aquinas, Pinckaers insists that Christian ethics can only be founded on "freedom for excellence"—the type of freedom best characterized by the second assertion. D.C. Schindler, in a similar narrative, rejects the concept he calls "modern liberty," which prioritizes power and choice, and argues that Christians should understand freedom in a way that approximates it more closely with receptivity, goodness, and love.[10] Both authors structure their works by creating

9  Servais Pinckaers, *The Sources of Christian Ethics* (Catholic University of America Press,1995)*, 375. The concept of "freedom of indifference," which Pinckaers develops at some length, has a number of important further features—in this piece, however, I am interested only in the aspect of it as "choice between contraries."

10  D.C. Schindler, *Freedom from Reality: The Diabolical Character of Modern Liberty* (University of Notre Dame Press, 2017), particularly the introduction,

a strong dichotomy between the "correct" idea of freedom—the one right-thinking Christians ought to accept—and the "wrong" idea of freedom, which Christian thought must reject. Schindler, indeed, could go no further in negative description of the concept of freedom he rejects: According to him, to say that freedom means one has the active power to act without being determined by the good is not just false, but diabolical.[11]

Pinckaers and Schindler have a compelling narrative: They blame modern thinkers such as Ockham and Locke for corrupting the ancient view of freedom as directed toward what is truly good. Freedom must be teleological, they claim—it is freedom *for* the good, not primarily freedom *from* anything that would determine choice to one outcome. However, these authors seem inattentive to the support for the first assertion within the Christian tradition. When Pinckaers rejects "the freedom to make mistakes" and says we must move away from thinking about freedom as "the choice of contraries,"[12] there is some friction with the claim of the inspired author who says that God has set before us life and death, a blessing and a curse. And when Schindler argues that the foundational account of freedom "coincides with the classical understanding of goodness,"[13] this does not fit particularly well with Augustine's claim that "the will is always free in us, but it is not always good."[14] Of equal

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chapter 3, and chapter 6, and *Retrieving Freedom* (University of Notre Dame Press, 2022), particularly chapters 2, 9, and 12.

11 Schindler, *Freedom from Reality,* 171–73, 210. The account of "modern liberty" that Schindler develops is extremely complex. I have no wish to over-simplify it into a straw man, but I am interested in his overall strategy, which describes two types of freedom and rejects one of them. Given the *aporia* discussed here, I will deal only with the aspects of Schindler's "modern liberty" that imply non-determination and the active power to reject the good.

12 Pinckaers, *Sources,* 356.

13 Schindler, *Freedom from Reality,* 292.

14 Augustine, *De gratia et libero arbitrio,* c. 15, n. 31: "Semper est autem in nobis voluntas libera, sed non semper est bona."

importance, at least to a philosopher, is the failure of the second assertion, when taken alone, to harmonize with common beliefs. The fact that freedom is directed to some end is insufficient to force us to reject the intuition that "freedom from" determination to one path is a real kind of freedom. As many a high-school teacher leading discussion has found, humanity is generally unwilling to abandon the idea that freedom has something to do with alternative or opposite choices, especially those that break out of the patterns or expectations set by others.

One must wonder whether it is the right method, philosophically, to champion one side of a dilemma and beat the other side into submission, labeling it "diabolical" or "deontological" and rejecting it forever more. Privileging one side of a dilemma is a risky way to make progress, because if there was any truth in the discarded assertion, we lose the chance to capture it. Of course, since we cannot accept that contradictory claims are both true, distinctions are necessary. But what would it look like to solve the Christian *aporia* about freedom *without* insisting that one side or the other must belong to history's trash heap of ideas? In the next part of the paper, I will describe St. Thomas's approach.

### Part II: How Thomas Deals with the Aporia

Briefly, the Christian *aporia* of freedom is this: Should we say that the potential for evil is necessary to defining free will, in order to protect our intuition that freedom involves alternatives and that freedom makes men responsible for their evil acts? Or should we exclude the potential for evil from the nature of true freedom, thus protecting the goodness of God as creator and giver of this power, and also protecting a teleological view of our ability to choose? Augustine, as we can see from the quotations in the first part of this piece, seems to have provided our tradition's first

explicit acknowledgement of the *aporia* and the first struggles toward solving it. I think Peter Lombard, through his careful collection of Augustine's teachings, is probably the author who first brought it to Thomas Aquinas's attention. Because of this, I will privilege texts from Thomas's *Sentences* commentary in explaining his resolution, bringing in texts from his other works in supporting roles. I believe it will be helpful to work through Thomas's resolution of this *aporia* in three stages. His resolution begins with a distinction taken from Peter that provides the foundation for his response: Lombard distinguishes between freedom from coercion and freedom from sin. (A) However, Lombard's solution introduces a complication; it conflicts with Augustine's strong conviction that freedom ought not to be said equivocally of God and us. (B) To address this difficulty, Aquinas embarks on a further, and deeper, resolution (C).

## A. *The First Stage: Distinguishing Between Freedom From Necessity and Freedom From Sin*

Part of tackling any problem involving *endoxa* is to clarify the terms used. Peter Lombard does this in his treatment of human freedom, and Aquinas does the same in his commentary. When people say that "evil happens because God gave us free will," what do they mean by "free will"? Presumably, we mean some human power that *can* choose evil but does not have to. Peter tries to give this some precision. Since we can will without choosing (I may *want* to smash my computer with a hammer but do not *choose* to do so), Peter uses the vocabulary of free choice or free decision (*liberum arbitrium*)[15] rather than free will (*libera volun-*

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15   I believe "free decision" to be the best translation, overall, of the Latin phrase *liberum arbitrium*. However, many translators use "free choice," and this phrasing is somewhat friendlier and easier to use. I will alternate between translations and indicate the Latin occasionally.

*tas).* According to Peter, when Christians talk about free choice, they mean the following:

> Free choice is a faculty of reason and will by which the good is chosen with the assistance of grace, or evil without its assistance. . . . [S]ometimes someone who has the power to discern between good and evil chooses what is evil; sometimes, that which is good.[16]

"Faculty of reason and will" is still not a particularly clear phrase—so, when commenting, Aquinas wrote several questions to give yet more precision to our grasp of this human power. Free choice (or free decision) is "a power whose proper act is to choose."[17] It is not a habit, nor is it the same power as the intellect; rather, when Christians talk about "that by which good or evil is chosen" Aquinas argues that they are talking about the will in its activity (formed by reason) of choosing means to an end.

Why do we care about all this precision? Whether we use Peter's formula or Aquinas's, the definitions have the useful result of distinguishing "free choice" as a faculty or power from "freedom"—a quality that many things might have, in many ways. Thus, Peter suggests that the two assertions Christians tend to make refer to two different ways of being free. The first assertion, "free will must be able to do evil," is talking about the fact that the power of choice has "freedom from necessity"—that is, it is not coerced to any single choice:

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16  Peter Lombard, *Liber II Sententiarum,* d. 24, c. 3: "Liberum verum arbitrium est facultas rationis et voluntatis qua bonum eligitur gratia assisente, vel malum eadem desistente. . . . [A]liquando quidem, discretionem habens boni et mali, quod malum est eligit; aliquando vero quod bonum est." English translations are taken from *The Sentences*, trans. Giulio Silano (Pontifical Institute of Medieval Studies, 2007), 109 (hereafter "Silano").

17  Thomas Aquinas, *In II Sent.,* d. 24, q. 1, a. 1: "illam potentiam cujus proprie actus est eligere." Translations from Aquinas's *Sentences* commentary are my own.

> Choice is equally free from necessity both before and after
> sin. . . . [W]here there is necessity there is no freedom;
> where there is no freedom, there is no will; and so there
> is no merit. This freedom is in all, both good and evil.[18]

It is freedom from necessity that gives us the ability to choose
evil, and this is the reason we hold people responsible when they
choose to do wrong. When Christians say that "true freedom
lies in choosing the good," however, they are talking not about
freedom from necessity but about "freedom from sin." This is the
kind of freedom Christ promises when he says that "if the Son
has freed you, you will be truly free" (Jn 8:36), and it lies in con-
stant direction to the good: "Those alone whom the Son frees
and restores through grace now have this freedom . . . and this is
the true and good freedom."[19] Thus, the conflict is resolved, and
both assertions are true. Aquinas strongly approves of this way
of sorting out the problem. In his commentary, he outlines the
distinction between the two kinds of freedom very crisply:

> Freedom includes, in its own account, negation of coer-
> cion. However, we distinguish privations according to
> what they deprive one of; so we must distinguish differ-
> ent kinds of freedom according to those things by which
> one can be forced or impeded. Moreover, as was said
> before, coercion is twofold: perfect coercion, which can
> be called coercion simply, and imperfect coercion, which
> is called rather influence than coercion. If, therefore, free-
> dom is considered insofar as it is removed from perfect

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18   Peter Lombard, *Liber II Sententiarum*, d. 25, c. 8: "A necessitate et ante
peccatum et post aeque liberum est arbitrium. . . . Ubi necessitas, ibi non est
libertas; ubi non est libertas, nec voluntas; et ideo nec meritum. Haec libertas
in omnibus est, tam in malis quam in bonis" (Silano, 120).
19   Peter Lombard., *Liber II Sententiarum*, d. 25, c. 8: "Istam libertatem, quae est
a peccato, illi soli nunc habent, quos Filius per gratiam liberat et reparat. . . . Et
haec est vera et bona libertas."

coercion, then it will be freedom from coercion and necessity, which always, and through itself, follows free choice. This is why Peter Lombard says that it is found in all men, and without it sin could not be imputed. If, however, we call something free because of the remoteness of an impelling or impeding thing . . . [it can be] because that which impels or impedes free decision does this in the way that habits and dispositions, which are made in the soul itself, do, and so there is freedom from sin.[20]

Thomas is quite clear here: There is a true or real freedom that always belongs to free choice (*liberum arbitrium*), whether the person is choosing to do good or not. We use the word "free" when we talk about this power of free choice to indicate that the choices made are not forced or necessary, and without freedom in this sense, people cannot be held responsible. In his usual way, Aquinas adds the reason behind the distinction Peter uses: There can be different kinds of freedom because there are different things one is free *from.* If someone cheats on a chemistry test, he is genuinely "free" from coercion in the sense that it is not necessary, given his character, that he copy the answer from his phone, the way it *is* necessary, given his material constitution, that if he moves beyond the edge of a cliff he will fall. However,

20   Thomas Aquinas, *In II Sent.,* d. 25, q. 1, a. 5: "Libertas in sui ratione negationem coactionis includit. Omnis autem privatio distinguitur secundum ea quae privantur; unde secundum ea quae cogere possunt vel impedire, oportet libertatis distinctionem sumi. Ut autem prius dictum est, duplex est coactio: quaedam perfecta, quae quidem simpliciter coactio dici potest; et quaedam est imperfecta, quae potius impulsio quam coactio dicitur. Si ergo consideretur libertas secundum quod removetur perfecta coactio, sic erit libertas a coactione et necessitate; quae quidem per se et semper liberum arbitrium sequitur; unde in littera dicitur, quod in omnibus invenitur, sine qua peccatum imputari non posset. Si autem dicatur libertas per remotionem impellentis seu impedientis, hoc est dupliciter: quia hoc quod impellit liberum arbitrium aut impedit, vel facit hoc per se, sicut habitus et dispositiones, quae fiunt in ipsa anima, et sic est libertas a peccato."

he is also genuinely not "free," in a different sense, because he has a habit of dishonesty: It is much harder for him to leave his phone in his backpack than it is for his well-formed classmate. If he had, instead, a trend toward honesty because of some habit or grace, he would be freed from this impediment in seeking his goal as a human being.

As we saw, one of the two major difficulties with taking "true freedom is the ability to choose the good" as our sole account of freedom is that it makes it hard to hold people responsible for wrong actions, given that they did not choose them in an authentically free way. Operating with Lombard's solution, Thomas claims that there is a true and genuine freedom (one that belongs by nature to a power of the human soul) involved in choices to do evil; such acts, however little they were guided by grace or suited to the natural end of human acts, were not coerced or necessitated, and thus one is accountable for them.

It seems, then, that with Lombard's distinction in hand one need not abandon or even alter either of our two Christian sayings. God gave us free choice, with its ability to do evil, and then, in addition, his grace bestows freedom from sin, and we are freed from impediments to our flourishing. The first kind of freedom includes the ability to do evil; the second kind of freedom—whether it is caused by some immediate grace or by what Pinckaers describes as "the slow, patient work of moral education"—is directed only to the good.[21]

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21  Thomas uses the same distinction between the natural liberty of the power to choose and the acquired liberty of freedom from sin in *ST* I, q. 83, a. 2, ad 3: "Man is said to have lost free decision by falling into sin, not as to natural liberty, which is freedom from coercion, but as regards freedom from sin and from misery." ("Homo peccando liberum arbitrium dicitur perdidisse, non quantum ad libertatem naturalem, quae est a coactione; sed quantum ad libertatem quae est a culpa et a miseria.") English translations from the *Summa theologiae* are from the English Dominican Fathers (Benziger Brothers, 1948). See also *De ver.,* q. 24, a. 1, ad 7.

## *B. Should Freedom be Said Equivocally?*
## *An Augustinian Objection*

Whether we use Peter Lombard's language or Thomas Aquinas's, the distinction between freedom from coercion (which naturally belongs to the will, even of those who do evil) and freedom from sin (a gift of God that not every human naturally has) seems to resolve the tension in the Christian *aporia* quite happily. I have found that most young Christians accept it as a satisfactory solution: Free will can do evil, and it means that we are not robots, and the freedom given by grace is the true freedom that chooses the good. However, Peter himself noticed a possible problem with it—and because he describes the problem rather carefully, we know that Thomas saw it also. If the free choice the first assertion talks about is *defined* as the power of choosing either good *or* evil, as Peter tends to define it, then we cannot say God has free choice. For, though it seems clear that God's will is not coerced, it seems equally clear that God is not able to choose evil. Peter cites St. Jerome, who said that "God is the only one in whom no sin happens or can happen."[22] In other words, if the ability to choose evil belongs to the essence of free choice, God does not have it. Peter himself simply accepts this: Free choice should be "understood otherwise in the Creator than in the creature."[23]

Another way of describing Lombard's view on free choice in God is to say that the term "freedom" is used equivocally in our Christian *endoxa*. Since we confidently say that "free will is the cause of evil," that "freedom is about choosing the good," and, in addition, that "God is free," and that "God cannot do evil," we must be talking about three different freedoms: the freedom

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22  Peter Lombard, *Liber II Sententiarum*, d. 25, c. 1–2 (Silano, 116–17): "Solus Deum est in quem peccatum non cadit nec cadere potest."
23  Peter Lombard, *Liber II Sententiarum*, d. 25, c. 1–2 (Silano, 117): "Aliter accipitur liberum arbitrium in Creatore quam in creaturis."

from coercion that we have by nature, the freedom from sin that we have by grace, and the freedom God has. Since the free choice we have by nature has the ability to do evil as part of its definition, and the other two do not, we are speaking equivocally, not analogically: There is no primary meaning of the word "free" that ties the three together.

Aquinas was aware, however, that there was controversy over the idea of using "freedom" equivocally. He was probably also aware, through at least one text, that St. Augustine decisively rejected the idea that free choice in God and in us is equivocal. In fact, the distinction between natural freedom and the freedom of a holy life was once suggested to Augustine by Julian the Pelagian, who wrote:

> Freedom, after all, is a term we use in many senses: In this passage [John 8] it means holiness . . . but that term is also used for free choice. Let us separate these cases so that the realities which are very different are not confused because of their common name.[24]

Shouldn't we say, Julian says, that there is a natural freedom, by which we can do either good or evil, and then the different freedom of Christian perfection, which Christ gives us? Augustine, however, decisively disagrees. Though it took him some time, he seems to have eventually clarified what troubled him about Julian's perfectly natural suggestion:

> You suppose that this belongs to the nature of free choice, namely, that it can will both, that is, both to sin and not to sin. And you think that man was made to the image

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24 Augustine, *Contra Julianum opus imperfectum*, I.87: "Multis enim modis libertas appellari solet: ut in hoc loco sanctitas . . . eo autem nomine et libertas nuncupatur arbitrii. Dividantur ergo causae, ne res multum distantes confundantur nominis communione" (Teske*,* 112).

of God in this respect, though God himself cannot will both.[25]

For Augustine, free choice is one of the powers by which we are made in the image and likeness of God. If our free choice and God's are essentially different, though—if the ability to do evil is essential to ours and absent from God's—then we are not made in his image. For Augustine, then, we cannot solve our dilemma by defining free choice as the ability to sin or not to sin, to do good or to do evil, and then distinguishing this power from freedom from sin.[26]

Augustine has a strong point here. In fact, it seems sufficient grounds to re-open the *aporia*. Ought we to go with Lombard's suggested distinction between two types of freedom, which preserves our two Christian sayings and protects both accountability (which is linked to the first kind of freedom) and teleology (which is linked to the second)? Or should we, like Augustine, add a third assertion, "God is free," and, on the basis of this, reject the distinction because it seems to deny that our natural freedom of choice is made in God's image?

## C. A Deeper Resolution: How Aquinas Protects Three Fundamental Assertions

Aquinas would have realized, then, that a strong solution to the *aporia* of Christian freedom needed to somehow preserve and reconcile more than just the first two assertions we have discussed. It seems true that freedom, in at least one sense, must

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25 Augustine, *Contra Julianum opus imperfectum*, V.38: "Et hoc putas ad naturam liberi arbitrii pertinere, ut possit utrumque, et peccare scilicet, et non peccare; et in hoc existimas hominem factum ad imaginem Dei, cum Deus ipse non possit utrumque" (Teske, 562).
26 For more on Augustine's discussions on whether freedom requires the possibility of sin, see M. Huftier, "Libre Arbitre, Liberté et Péché chez S. Augustin," *Recherches de théologie ancienne et médiévale* 33 (1966): 187–281.

mean that agents have alternatives and thereby render created agents accountable for their actions. It seems likewise true that freedom—not just in one sense but in *any* sense—must be understood as directed toward the good and toward the ultimate enjoyment of God. Reflection on the writings of Augustine would have suggested a third and equally fundamental assertion: Since it belongs to our rational nature, free choice must be defined in such a way as to make man an image of God, and, as a result, it cannot be defined by the potential for evil. When commenting on the *Sentences,* then, Aquinas had three options: a) he could be simply loyal to Peter Lombard, defining free choice as the ability to choose either good or evil and accepting that free choice is said equivocally of us and of God, b) he could, in order to protect the claim that God has free choice, hold to one of the other positions Peter describes—for instance, the claim that the freedom to do evil is not free choice itself, or c) he could seek a deeper solution, bringing together the truth of all three *endoxa.* Not surprisingly, as a good Aristotelian, Thomas chooses the third option. The following paragraphs will detail how his commentary preserves the truth in all three of these assertions.

## 1. Protecting the image of God: Free choice is not essentially the ability to do evil.

Not to keep the reader in suspense, Aquinas answers the question of whether God had free choice by saying "yes." But how could he, if free choice must include the ability to do evil? It doesn't. Aquinas breaks with Lombard to say that the ability to choose evil is not part of the definition of free choice:

> It does not pertain to the nature of free decision that it be related indeterminately to good or to evil, because free decision in itself is ordered to the good, since the good is the object of the will. Nor does free decision tend toward

evil except on account of some defect (when evil is appre-
hended as good), since there is no will or choice except of
the good, or of the apparent good.[27]

Upon reading this passage, one might assume—as Pinckaers
and Schindler do—that this text shows Thomas's partisanship
toward one side of our original dilemma: namely, that he prior-
itizes the claim that freedom is toward the good and rejects the
equally prevalent notion that free choice involves the ability to
do evil. This interpretation, though, is fairly flawed. First, nei-
ther Pinckaers nor Schindler seems to acknowledge the fact that
Thomas distinguishes between free choice and freedom taken
broadly. Instead, both authors write long passages in which they
describe Thomas's account of freedom without making any par-
ticular attempt to distinguish it from the power of free choice
and without any acknowledgement that what is true of the one
may not be true of the other.[28]

Because of this conflation, Pinckaers's interpretation con-
flicts rather literally with Thomas's assertions in nearby sections
of the commentary. According to Pinckaers, Thomas upholds
"freedom for excellence," which he describes as a *habitus*—such
freedom leads one to choose the good and must be developed
over time and through choice.[29] Thomas is clear, though, that
free choice (*liberum arbitrium*) is not a habit, but a power. He
argues for this precisely because habits direct one toward choos-
ing either well or badly, but free choice does not. Instead, it causes

27   *In II Sent.,* d. 25, q. 1, a. 1, ad 2: "Ad rationem liberi arbitrii non pertinet ut
indeterminate se habeat ad bonum vel ad malum: quia liberum arbitrium per
se in bonum ordinatum est, cum bonum sit objectum voluntatis, nec in malum
tendit nisi propter aliquem defectum, quia apprehenditur ut bonum, cum non
sit voluntas aut electio nisi boni, aut apparentis boni." There is a very similar
exposition in *De malo,* q. 16, a. 5.
28   For Pinckaers, see chapters 15–16 of *Sources of Christian Ethics.* For Schin-
dler, see *Retrieving Freedom,* chapter 9.
29   Pinckaers, *Sources,* 355.

choice "sometimes well and sometimes badly, and indifferent-ly."[30] Or, as he says in the *Summa theologiae,* "free decision is indifferent to good or evil choice."[31] This is, of course, not a total indifference—we choose under the aspect of good and for the sake of the highest good. However, it isn't virtue either, because the apparent good chosen—whether it is another's death or just one's third consecutive Nutella sandwich—may not be good simply speaking. In other words, even though he claims that free choice is not defined by the ability to do evil, Aquinas continues to distinguish this power and its freedom from the freedom we attain by virtue.[32]

Similarly, Schindler seems to think that Aquinas would reject as diabolical a concept of freedom that defines it as self-determination (in opposition to determination by another).[33] And yet, Thomas explicitly contrasts agents who determine themselves (intellectual agents) and those who do not: "[S]ome determine for themselves the end and those acts which are toward that end, and others do not."[34] God determines the other ani-

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30  *In II Sent.*, d. 24, q. 1, a. 1: "Liberum autem arbitrium ad electionis actum se habet ut quo talis actus efficitur quandoque bene, quandoque quidem male et indifferenter."

31  *ST* I, q. 83, a. 2: "Liberum autem arbitrium indifferenter se habet ad bene eligendum vel male."

32  For more on the freedom from sin and misery achieved by grace, see Thomas's commentary on Romans, chapter 8.

33  Schindler, *Freedom from Reality,* 210. Schindler believes that to act in accordance with an understood form is to be determined by another; Aquinas does not seem to think so, since he describes the cognition determining the action as conjoined with (*conjuncta*) the agent.

34  *In II Sent.*, d. 25, q. 1, a. 1: "[H]aec est differentia in agentibus quia quaedam determinant sibi finem et actum in finem illum, quaedam vero non." See also d. 34, q. 1, a. 3, ad 4: "[V]oluntas autem non est determinata ad unum, sed seipsam determinat secundum quod huic vel illi adhaeret; et in tali adhaesione primum malum voluntatis consistit." ("The will is not determined to one but rather determines itself insofar as it adheres to this or that, and in such adhesion consists the first evil of the will.")

mals to a given course of action through their instincts, but he has made humans in such a way that the determination of their actions is "constituted within the power of free decision."[35]

It seems wrong, then, to think that Aquinas wanted to go back to a broad, one-sided account of freedom that associates it solely with goodness. Certain elements implied by the first assertion, such as indifference and self-determination, remained important to him. And yet, he *does* embrace the idea that free choice was defined by goodness, to the extent of saying that it cannot be defined as the ability to do evil. Can he do this without facing the problems of the one-sided version? We have said that those who define freedom as directed toward the good alone face two problems:

(1) "Freedom is the ability to choose the good," as a formula, seems to lack the idea of options or alternatives.

(2) "Freedom is the ability to choose the good" also seems to mean that evil choices come from some source other than freedom, making it difficult to place the accountability for wrongdoing where it belongs.

To achieve a true advance in solving the *aporia* of Christian freedom, Thomas needed to deal with these concerns. How does he do this?

## 2. Protecting options: Free choice essentially requires alternatives.

One of the major problems with simply asserting that freedom is to be defined univocally as "the ability to choose the good" is that this definition seems compatible with the absence of alternatives. This goes against one of our primary certainties about freedom. Don't we have to be able to choose otherwise to be

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35  *In II Sent.*, d. 25, q. 1, a. 1, ad 3: "[D]eterminatio actionis et finis in potestate liberi arbitrii constituitur."

free? Furthermore, don't we need to be able to reject something proposed to us? Isn't it true that, as Peter Block says, "If we cannot say no, then our yes has no meaning"?[36]

Schindler and Pinckaers would have no trouble brushing off these ideas as the product of corrupt Enlightenment thought. But I cannot imagine Aquinas doing so. This view is one of the *endoxa.* A great many people say it because a great many people think it, and they cannot all be totally wrong. There is a truth here to be captured, and in fact Aquinas wholeheartedly accepts it: "To choose is to prefer one over another,"[37] he says, and, "Since choice is the taking of one thing in preference to another, it must of necessity be in respect of several things that can be chosen."[38] In other words, Aquinas agrees that the free agent *does* need to have alternatives. It "belongs to the perfection of its liberty for free decision to be able to choose between opposite things, keeping the end in view."[39] Moreover, Aquinas also gives some primacy to rejection. In the *Sentences* commentary, he specifically says that God has free choice because he is able *not* to do things: Free decisions are made by someone "able to do or not to do, and this belongs to God; for the good that he does he is able not to do."[40] In later works, Thomas argues that humans (in

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36  Peter Block, *Community* (Berrett-Koehler Publishers, 2008), 132. I do not regard Block as an authority except insofar as he expresses a view held by a great many people.

37  *In II Sent.,* d. 24, q. 1, a. 2: "Eligere est alterum alteri praeoptare."

38  *ST* I-II, q. 13, a. 2, c.: "Cum electio sit praeacceptio unius respectu alterius, necesse est quod electio sit respectu plurium quae eligi possunt."

39  *ST* I, q. 62, a. 8, ad 3: "Unde quod liberum arbitrium diversa eligere possit servato ordine finis, hoc pertinet ad perfectionem libertatis eius." This passage is on angels, but Thomas explicitly compares them to us humans in the following sentence: "Unde maior libertas arbitrii est in angelis . . . quam in nobis."

40  *In II Sent.*, d. 25, q. 1, a. 1, ad 2: "Sed hoc ad libertatem arbitrii pertinet ut actionem aliquam facere vel non facere possit, et hoc Deo convenit; bona enim quae facit potest non facere." Free decision in Christ, also, can either act or not act; see *In III Sent.,* d. 18, q. 1, a. 2, ad 5.

this life) always have the ability to will or not to will something, to accept it or to reject it. "No matter what the object be, it is in man's power not to think of it, and consequently not to will it actually."[41] Or, again:

> [A] person will be able to will the opposite even while cogitating about it, since perhaps it is good or fitting according to some other particular consideration; as for instance what is not good so far as enjoyment is concerned is good for health.[42]

How can Aquinas say that free choice requires alternatives and yet dismiss the notion that it is essential to free choice to be able to do evil? The answer is fairly simple: The "alternatives" required for choice need not be good and evil. They can be a good and a different good. God, for instance, could choose "other creatures and another order," even though he cannot do evil.[43] In later writings, Aquinas gives examples of such choices between goods in the human realm: choosing to go on a journey by horse or by foot, or building a house that is either square or round.[44] These simple examples remind us of the hundreds of choices humans make without any necessity that one alternative be "evil." We make choices in our work, of food and of friends, of where to live and how and when to serve. In fact, such creative

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41  *ST* I-II, q. 10, a. 2, c.: "[V]oluntas a nullo obiecto ex necessitate movetur, potest enim aliquis de quocumque obiecto non cogitare, et per consequens neque actu velle illud."

42  *De malo,* q. 6, a. 1, c.: "[P]oterit enim aliquis velle eius oppositum, etiam de eo cogitans, quia forte est bonum vel conveniens secundum aliquod aliud particulare consideratum, sicut quod est bonum sanitati, non est bonum delectationi." English translation from *De malo* are from *On Evil,* trans. John and Jean Oesterle (University of Notre Dame Press, 1995).

43  *De pot.,* q. 1, a. 5, c.: "Sicut enim manifestatur divina bonitas per has res quae nunc sunt et per hunc rerum ordinem, ita potest manifestari per alias creaturas et alio modo ordinatas."

44  See *ST* I, q. 19, a. 3, and *De malo*, q. 6, a. 1, respectively.

and practical choosing is one of the major distinctions between human lifestyles and those of the other animals.

What about Thomas's emphasis on rejection and saying no? How can the ability to reject a proposed good be essential to free choice if free choice is by definition directed toward the good? For Aquinas, our power to reject what is offered derives from the limited character of what is on offer. He explains this in some detail in the *Sentences* commentary:

> However much anything appears to be good, it remains in will's power to choose it or not. This is because, while the object of the intellect is the true, the object of the will is the good. And we find some truth in which no appearance of falsity can be mixed, as is clear in the first principles, and so intellect is not able to avoid assenting to them. . . . Similarly, also, we find some falsehood that has no appearance of truth, as is clear in the opposites of the first principles, so those can in no way be assented to by the intellect. In the same way, if there is proposed to the will some good that has the complete account of good (as the last end does, on account of which all other things are desired), the will is not able not to will this; whence no one is able not to will to be happy, or to will to be miserable. In those things, however, that are ordered to the last end, nothing is found bad to such a degree—rather, it has some good mixed in; nor is something found good to such a degree that it suffices to all things. So, as much as anything appears good or bad, will can always adhere to it or fly to the contrary, by reason of the other which is in it. And so will accepts a thing, if it is bad simply speaking, as an apparent good, and if it is good simply speaking, as an apparent bad. And thence it is that in all things that fall under choice, will remains free, with this

determination alone, that it naturally desires happiness,
and it is not determined to this or that thing.[45]

In Thomas's analysis, then, any particular means of achieving
happiness is rejectable simply because it isn't happiness itself—
it does not have the fullness of perfection we find in the vision
of God. Horses are swift, but they are not God—reflection on
the fact that a horse is expensive and prone to illness renders us
capable of choosing not to ride a horse on a journey. Pinckaers is
right to point out that Thomas does not understand free choice as
an ability to choose things contrary to the judgment of reason or
contrary to our natural inclination. However, he wrongly extends
this to mean that Thomas rejects the concept of free choice as
directed toward contraries, period. To have free choice means
to be able to pick contrary means to our natural goals—one can
either ride a horse or *not* ride a horse. Indeed, dissenting from
some proposed good in order to do things "my way" is not by
nature opposed to doing things "God's way." When God created

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45  *In II Sent.*, d. 25, q. 1, a. 2, c.: "Quantumcumque enim aliquid ostendatur
esse bonum, in potestate ejus remanet eligere illud vel non eligere. Cujus ratio
est quia objectum intellectus est verum, objectum autem voluntatis est bonum.
Invenitur autem aliquod verum in quo nulla falsitatis apparentia admisceri
potest, ut patet in dignitatibus; unde intellectus non potest subterfugere quin
illis assentiat. Similiter etiam invenitur aliquod falsum quod nullam veri appa-
rentiam habet, ut patet in oppositis dignitatum; unde illi nullatenus intellectus
assentire potest. Similiter etiam si proponatur voluntati aliquod bonum quod
completam boni rationem habeat, ut ultimus finis, propter quem omnia appe-
tuntur; non potest voluntas hoc non velle; unde nullus non potest non velle
esse felix, aut velle esse miser. In his autem quae ad finem ultimum ordinantur,
nihil invenitur adeo malum quin aliquod bonum admixtum habeat, nec ali-
quod adeo bonum quod in omnibus sufficiat: unde quantumcumque osten-
datur bonum vel malum, semper potest adhaerere, et fugere in contrarium,
ratione alterius quod in ipso est, ex quo accipitur, si malum est simpliciter, ut
apparens bonum; et si bonum est simpliciter, ut apparens malum: et inde est
quod in omnibus quae sub electione cadunt, voluntas libera manet, in hoc solo
determinationem habens quod felicitatem naturaliter appetit, et non determi-
nate in hoc vel illo."

us with the power of choice, he showed that God's way—the nature he gave us to act with—*is* for us to do it our way. Similarly, Schindler is right to point out that we cannot act unless we are aware of, formed by, and oriented toward, the good. However, he wrongly assumes that true Christian thought will reject any concept of freedom which implies non-determination. For Aquinas, though, the dignity of free choice involves not only awareness of and response to the good, but awareness of the fact that the goods we choose in the present life are too limited to determine us.

In fact, emphasizing this lack of determination helps Thomas preserve the insight that free choice is made in the image of God. Free choice is an image of God precisely because it is the intellectual power for self-determination:

> There is a difference in agents, because some determine the end for themselves and act toward that end, and others do not. Neither can some agent give himself his end, unless he knows the account of the end and the order of those things that are for that end. And this is only in those beings having intellect. And therefore judgment of one's own proper action is only in those having intellect, as if it has been established in their power to choose this action or that—whence they also are said to have dominion over their act.[46]

Thomas establishes the dignity of choice by contrasting humans not with "mindless robots" but with the other animals. Spiders are determined to spin webs by God, and beavers must build

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46   *In II Sent.*, d. 25, q. 1, a. 2, c.: "[E]st differentia in agentibus quia quaedam determinant sibi finem et actum in finem illum, quaedam vero non: nec aliquod agens finem sibi praestituere potest nisi rationem finis cognoscat et ordinem ejus quod est ad finem ipsum, quod solum in habentibus intellectum est: et inde est quod judicium de actione propria est solum in habentibus intellectum, quasi in potestate eorum constitutum sit eligere hanc actionem vel illam; unde et dominium sui actus habere dicuntur."

dams, but humans can build houses of wood, brick, or stone, as they choose—their understanding of what a wooden house is does not determine the house they construct.

### 3. Protecting accountability: The choice of evil as the choice of an apparent good.

Aquinas protects the Christian insight that free choice is made in the image of God by arguing that the ability to choose evil does not belong to it by definition. Although free choice *does* require alternatives, neither alternative needs to be evil. Since evil is thus quite marginalized from his account, it is natural to ask whether Thomas is able to protect another of our major insights about freedom: Under his theory, are agents accountable for their evil choices? If free decision is not to be defined as the ability to choose evil, should evil choices be attributed to this power at all? Thomas is quite clear about this: The activity of choosing evil, though it can happen only in created and limited natures, has all the elements necessary for a free choice. In the commentary on the *Sentences,* he considers the objection that doing evil cannot be the result of a genuinely free choice:

> That which is beyond will is also beyond free decision, since free decision is a faculty of reason and will, as was said above. But, as Dionysius says, evil is beyond the will. Therefore the free decision of man does not extend itself to evil acts.[47]

However, Aquinas argues that evil becomes an object of the will as an apparent good—thus, it is chosen under the proper account of free choice:

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47 *In II Sent.,* d. 25, q. 1, a. 3, obj. 5: "Illud quod est praeter voluntatem est etiam praeter liberum arbitrium, cum liberum arbitrium sit facultas voluntatis et rationis, ut supra dictum est. Sed, ut Dionysius dicit, malum est praeter voluntatem. Ergo liberum arbitrium hominum ad mala opera non se extendit."

Evil, insofar as it is evil, is beyond the will. But the human operation, insofar as it appears good, can fall under the will, and so the choice of it is able to exist and be subject to free decision.[48]

In other words, although evil choices are made because of a defect, they are still made by the same power that good choices are made by, and they are made possible by our ability to choose between alternate goods. The choice is defective because the good is only apparent, not real—but the particular kind of freedom we call free choice is present even in a vicious or sinful person: "This, however, belongs naturally and essentially to free decision, that it is not sufficiently forced by compelling coercion, and this is true in whatever state."[49] Though he does not uphold C.S. Lewis's formula that "by its very *nature*" free will is able to choose evil, Aquinas found a way to uphold the truth of the first assertion: We are able to sin because God gave us free will. This is not because the ability to do evil is essential to free will, however, but because when free choice is given to a defective and limited nature, it shows up as a power that makes evil actions possible.[50]

A somewhat clumsy analogy may help. A blue light source does not have, of its essence, the power to make a white object look purple. "Able to make things look purple" is not part of the definition of being a blue light source. However, if the blue light source is combined with a red one, the power to make things

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48   *In II Sent.,* d. 25, q. 1, a. 3, ad 5: "Malum in eo quod malum est, praeter voluntatem est; sed operatio humana, inquantum apparet bona, sub voluntate cadere potest; et ita potest esse ejus electio et libero arbitrio subjacere."

49   *In II Sent.,* d. 25, q. 1, a. 4, c.: "[N]aturale et essentiale libero arbitrio ut sufficienter non cogatur coactione compellente, et hoc sequitur ipsum in quolibet statu."

50   Thomas thinks that, in this life, even holy men can fall away from charity due to free choice (*liberum arbitrium*). St. Paul, for instance, knew that he might be lost. See *Commentary on the Romans*, c. 8, lec. 7.

look purple will belong to the combined light—and it will be there, in part, *because of* the blue light. Similarly, in Aquinas's solution to the Christian *aporia* of freedom, "able to do evil" is not part of the definition of free choice. However, when the power of free choice belongs to a limited nature, the possibility for turning to evil will be present in that nature—and it is there, in part, *because of* the free choice.

## 4. Protecting teleology: Free choices are always ordered toward the good.

Since Aquinas emphasizes that free choice a) requires options and b) is fully active in the choice of evil, we might (again) wonder whether he can maintain a fully teleological view of the power of human free choice. But his way of protecting the insight that freedom is always directed toward the good is fairly simple: The good toward which the choice is directed might be only apparent. Suppose I can either go out for drinks or finish my grading, and that, given the circumstances, going out for drinks is an apparent good rather than a real one, yet I choose to go out for drinks. On Aquinas's account, this bad choice is still about goodness for three reasons. First of all, the drinks in themselves are good. As Augustine puts it: "When the will abandons what is above itself, and turns to what is lower, it becomes evil—not because that is evil to which it turns, but because the turning itself is wicked."[51] However, although the drinks are not evil, my action of going out *is* evil. Even so, I choose it under the

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51   Augustine, *De civitate Dei* XII.6: "Cum enim se voluntas relicto superiore ad inferiora convertit, efficitur mala, non quia malum est, quo se convertit, sed quia perversa est ipsa conversio." English trans. Marcus Dods (Modern Library, 1993), 286. Thomas almost always uses the example of the desire for sexual pleasure to illustrate this point; for example, in *ST* I, q. 19, a. 9, c.: "The fornicator has merely pleasure for his object, and the deformity of sin is only an accompaniment." ("[F]ornicator intendit delectationem, cui coniungitur deformitas culpae.")

aspect of good—Aquinas says that "Never would evil be sought after, not even accidentally, unless the good that accompanies the evil were more desired than the good of which the evil is the privation."[52] Finally, my will remains directed toward God, goodness itself, as the ultimate end—that "on account of which all things are desired"[53]—because I am still *trying* to be happy. Oddly enough, then, free choice can reject what is morally good while remaining essentially directed to goodness. Willing *anything* is saying yes to at least an apparent goodness, one that involves a participation in the divine.

## Conclusion

Let us take a moment to summarize what Thomas has achieved.

1.   Thomas argues that freedom in one sense—present in the natural human power of free choice—*does* essentially involve doing what we want and having alternatives, which include dissent. He also thinks that freedom in this sense is intrinsically present even in evil choices. By arguing for these positions, he preserves the core of the first assertion: "Evil exists because man has free will." He also preserves the idea that man's accountability rests on his freedom.

2.   At the same time, Thomas can preserve the second assertion, that freedom is the ability to choose the good, in two ways. First, the freedom from sin given by grace and virtue can be straightforwardly defined by this formula. Second, the freedom from coercion that belongs to free choice remains directed toward the good, even

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52   Thomas Aquinas, *ST I*, q. 9, a. 9, c: "Nunquam igitur appeteretur malum, nec per accidens, nisi bonum cui coniungitur malum, magis appeteretur quam bonum quod privatur per malum."

53   Thomas Aquinas, *In II Sent.,* d. 25, q. 1, a. 2. Text cited in full in note 46.

though a defective action of this power brings about evil.

3. Finally, Thomas preserves the role of choice in human dignity and the beauty of Augustine's insight that free choice in man is an image of God. This is because free choice, though it involves both indifference and self-determination, involves them essentially after the divine pattern. God is a being able to understand the good for himself and achieve it in alternate ways, and so are we. Thomas is able to provide, then, an analogical account of freedom: Our free choice is free because it involves participation in the divine nature in one way, and the life lived in grace is also free because it is a participation in the same divine nature in a higher way.

In fact, then, Thomas arrives at a solution that saves all three *endoxa,* fits with the experience those sayings are based on, and reaches toward a deeper truth. He accomplishes the daunting task of developing a Christian theory of freedom that has room for accountability, alternatives, and evil, yet also privileges goodness and the final end of man in God. Philosophically, it is a delight to think through such a thorough solution to an *aporia.*

A number of the claims I have discussed in this piece are fairly well known. What I hope to add to the conversation is a sense of where these claims belong. When reading St. Thomas, we need to bring our understanding to the right philosophical level. Summarizing the claims he makes is not enough, and although it is an advance to situate those claims within Thomas's overall account of creation and contrast it with modern views, one will still be missing the meaning of his teaching until one fully grasps the *aporia* he was trying to solve. Until this is done, authors like Pinckaers and Schindler will often tend, without

knowing it, to a one-sided version both of Thomas's teaching and of the truth that they use this teaching to attain.

## *Practical Postscript: So What?*

Because this paper is about an *aporia* that seems to arise naturally whenever free will is discussed among Christians, I thought it might be appropriate to answer two more questions before I finish. First, is it possible to take Thomas's solution out of the technical vocabulary of the *Sentences* commentary and into an informal classroom discussion or a conversation at a barbecue? Second, even if it is possible, *should* we attempt to do this? I think the answer to both questions is yes.

First of all, it is possible to make Aquinas's solution clear in conversation because it was driven by two fairly simple questions: "What if free choice and freedom aren't the same thing?" and "Isn't God free?" Tossed into non-technical debates, these questions can act just as they did for Aquinas: as a catalyst to open up a sense of alternatives that can be, but need not be, evil, and as a spur toward a sense of freedom that is about doing things in one's own way while seeking one's natural end.

Depending on the audience, one can also make the conversation productive by talking about the political and domestic implications of Aquinas's solution. Because the choice to do evil is a defect of freedom, acknowledging human dignity does not *per se* mean that we increase freedom by increasing the opportunities for evil. Respecting freedom does not mean legalizing meth or "trusting" one's teenage children to attend every orgy planned by their peers. However, there are still reasons to leave choices in the hands of the governed. If Aquinas is right, acknowledging human dignity *does* mean permission for the choice of opposite goods, such as getting married or remaining celibate, enlisting as a combat soldier or refusing to do so. There are different ways

of achieving our ends. Choice does not require a vast number of alternative goods, nor does every agent need to have alternatives at all times—but it does require some. Since God himself freely chooses to create creatures that are less good than those he could create,[54] authentic freedom is compatible with the choice of lesser goods. Leaving the governed free to choose clothing, marry someone, speak an opinion, or embark on a career other than the one a more knowledgeable agent might decide upon is a reflection of the fact that, as Thomas puts it, "There are many ways of reaching the last end, and for different people different ways prove suitable."[55] Human leaders must acknowledge that choices of alternate and even lesser goods do not conflict with the final achievement of the ultimate good. Human leaders must also acknowledge that they themselves might be mistaken regarding the apparent good and the real good. The young Thomas Aquinas himself, we are told, defied his family in pursuit of a vocation considered by older and more authoritative figures to be merely an apparent good.[56]

But *should we* try to move beyond many Christians' basic certainties about free will in search of a resolution to problems some do not even perceive? The political and domestic implications mentioned above are one reason to do so: Persons involved in leadership deserve to have a balanced and richer sense of what "respecting freedom" would mean. More important than

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54  *ST* I, q. 25, a. 6, ad 1: "[H]e can always make something else better than each individual thing, and he can make the same thing in one way better than it is." ("[Q]ualibet enim re potest facere aliam meliorem. Eandem vero potest facere meliorem quodammodo.") See also ad 3: "Yet God could make other things, or add something to the present creation, and then there would be another and better universe." ("Posset tamen Deus alias res facere, vel alias addere istis rebus factis, et sic esset illud universum melius.")

55  *De ver.*, q. 22, a. 6, c.: "[A]d finem ultimum multis viis perveniri potest, et diversis diversae viae competunt perveniendi in ipsum."

56  See Jean-Pierre Torrell, *Saint Thomas Aquinas, Vol. 1: The Person and His Work* (Catholic University of America Press, 1996), 9–11, 16.

these implications, however, are the implications of Aquinas's theory of freedom for our spiritual lives. Reflection on Aquinas's theory of free choice increases one's love of God. This is because all of us enjoy acting freely and without constraint, at least some of the time. And, on Aquinas's account, this sense of enjoyment is realistically grounded: All kinds of human freedom are good in themselves, even the kind by which we disobey. Free choice is a natural power, not a loaded gun. Our primary attitude to it should not be an overwhelming awareness of the threat it poses, especially since such an awareness can easily give rise to the conviction that such a thing would be best left unused or surrendered to another. Free decision is a positive good, a desirable source of natural delight, because all freedom is sourced in God. As the highest good, God provides the formal and final cause for each act of free decision in every human, *even in the sinner*, since the will turns toward things only insofar as those objects participate in the divine perfections, and it cannot be filled by anything less than God. God is also the source of free decision's success in the saint, since grace heals the ignorance and weakness that—while they do not remove choice—push it to objects that participate less in the sources of its freedom. Neither the freedom we have by nature nor the freedom we gain by grace separates us from God by their essential attributes. The enjoyment and use of our freedom is a way also of enjoying, imitating, and seeking the divine presence in our lives.[57]

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# ON THE MEASUREMENT OF CURVES
# WITH STRAIGHT LINES

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Do finite curves bear ratios to finite straight lines? Must a given finite straight line be either longer than, shorter than, or equal to a given curve? Can all curves, like all straight lines, be somehow measured with a straight line chosen as a unit length? This essay proposes a way to think these things through.

To someone who has devoted little time or thought to them, the questions may seem to present no difficulty at all. All of us routinely apply common measures to curved and straight lengths. We do so whenever we employ tailor's tapes or odometers, for instance, and we do so, moreover, without encountering any practical difficulties.

But our inquiry is theoretical rather than practical. It concerns the exact science of geometry as well as the philosophy of mathematics and of measurement. When we look to the great authorities in these disciplines, we soon discover that some of them appear to have disagreed about our questions. On the one hand, we find that nearly all mathematicians regard the matter as settled. Today's calculus has devised well recognized methods of rectifying curves, that is, of measuring curved lengths by some real number of straight units. Most great mathematicians of the past, too, have acknowledged the existence of ratios between curved lines and straight ones. Even some of the ancients did so. Archimedes, for instance, postulated that "of all lines which have the same extremities the straight line is the least," and that "if a polygon be inscribed in a circle, it is plain that the perimeter of the inscribed polygon is less than the circumference of

the circle."[1] Centuries later, Newton helped to pioneer a general technique for the measurement of curves with straight lines.[2]

On the other hand, no less a geometrical authority than Descartes has cast doubt, if not on the existence of ratios between curved lines and straight ones, at least on the ability of the human mind to determine them.[3] Perhaps it is no coincidence that the mathematician who showed some hesitation in the matter of measuring curves with straight lines was also a philosopher. Turning our attention to "the Philosopher," we find that Aristotle not only doubted that the human mind possessed the capacity to discover the ratios of curved lines to straight ones, but also called into question, or implicitly denied, the very existence of such ratios.[4] More than that, he seems to have held that this is self-evidently impossible, or nearly so, since he offers no explanation for his tacit denial. St. Thomas Aquinas, too, commenting on Aristotle, appears to take it as evident that no circumference of a circle can equal a straight line.[5]

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1 Archimedes, *On the Sphere and the Cylinder I*, assumptions 1 and 5. See *The Works of Archimedes*, trans. Thomas L. Heath (Dover, 2002).

2 See, e.g., *Principia*, Book 1, lemma 7, in which he asserts that in the construction there under consideration "the ultimate ratio of the arc, chord, and tangent, any one to any other, is the ratio of equality." If that is their ultimate ratio, then they have other ratios while approaching that limit. The translation here is taken from Motte-Cajori. See Isaac Newton, *Principia: Vol. 1 – The Motion of Bodies*, trans. Andrew Motte, rev. Florian Cajori (University of California Press, 1962), 32.

3 "[T]he ratios between straight and curved lines are not known, and I believe cannot be discovered by human minds, and therefore no conclusion based upon such ratios can be accepted as rigorous and exact." René Descartes, *Geometry*, trans. David Eugene Smith and Marcia L. Latham (Dover, 1954), 91 (Book 2).

4 In *Physics* 7.4, he apparently supposes no fewer than three times that it is impossible for the circumference of a circle to equal a straight line (see 248a13; 248b1; 248b5).

5 At any rate, he does not voice any opposition to Aristotle's way of reasoning. See *In VII Phys.*, lec. 7 and lec. 8.

Confronted with opposed authorities such as these, we can hardly escape the conclusion that the matter involves some subtlety. Any adequate solution must be able to explain why each side thinks as it does. In acknowledgment of this need to consider opposing positions, this essay will begin with a dialectical approach, presenting arguments for both sides.

This method may require some further justification, since it is not customary to use it in mathematics, and since the very question whether curves are measurable by straight lines in principle and in the abstract is one proper to mathematics. But I believe this unusual way of entering into a mathematical matter is warranted in this case, for three reasons. First, the question is one of mathematical principle, not of mathematical proof. While some mathematical principles admit of a properly mathematical manifestation of one sort or another, and the possibility of measuring curves with straight lines may well be a case in point, all of them must also be somehow made known in light of principles more universal than themselves; and to make that sort of consideration seems, if not entirely appropriate to, at least not altogether foreign to, philosophy, whose property it is to understand and order the common and most universal principles of the sciences, and to know something of their power to illuminate more proper principles. Second, some of the difficulties surrounding the measurement of curves arise from philosophical considerations, and accordingly their resolution must be at least in part philosophical. Third, just as first philosophy is the only science to make a universal consideration of the notions of whole and part, so too is it the only science to make a universal consideration of the notion of a measure, since doing so constitutes part of the philosophy of the one or of unity.[6] Awareness of the central meanings of *measure* and of the connection between them is useful for discovering whether and

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6  See Aristotle, *Metaphysics* 10, for example (especially chs.1 and 6).

in what sense curves are measurable by straight lines—and it is philosophy, not mathematics, that is tasked with distinguishing and ordering these meanings. Since the question borders on philosophy in these ways, and it is appropriate to philosophy to discover the truth as a solution to dilemmas and as the result of preserving the elements of the truth found in contrary views, a dialectical approach seems warranted here, at least to start with.

Accordingly, section one of this essay surveys dialectical arguments for the position that curved lines can bear ratios to straight ones. Section two considers arguments for the contrary position. Section three assesses both sets of arguments, pointing out their faults or inadequacies and subsequently drawing out the truths that they contain and that any satisfactory account of the matter must preserve. Section four distinguishes and orders different notions of measure. Finally, section five presents a definition of the "length" of a curve, in light of which it becomes evident: (1) that curved lines can in a determinate sense be measured by straight ones and bear ratios to them, (2) that "measure" is not said of straight lines in relation to curves in the same way in which it is said of straight lines in relation to other straight lines, (3) that this equivocation is neither pure and absolute nor such as to render the comparison of curved lengths with each other and with straight ones inexact or foreign to mathematics. The definition and these reflections on it will also make plain why difficulties and disagreements concerning the question have arisen in the first place.

## I - Arguments Concluding that Curves Are Measurable by Straight Lines

At least five arguments can be made in favor of the position that curves and straight lines bear ratios to one another.

1. *Argument from Asinine Behavior*. One such argument is an adaptation of a criticism of Proposition 20 in Book 1 of Euclid's *Elements*, which proves that "In any triangle two sides taken together in any manner are greater than the remaining one." Heath reports that

> It was the habit of the Epicureans, says Proclus, to rid-
> icule this theorem as being evident even to an ass and
> requiring no proof, and their allegation that the theorem
> was "known" (γνώριμον) even to an ass was based on
> the fact that, if fodder is placed at one angular point and
> the ass at another, he does not, in order to get his food,
> traverse the two sides of the triangle but only the one
> side separating them (an argument which makes Savile
> exclaim that its authors were "digni ipsi, qui cum Asino
> foenum essent"). Proclus replies truly that a mere per-
> ception of the truth of the theorem is a different thing
> from a scientific proof of it and a knowledge of the reason
> *why* it is true. Moreover, as Simson says, the number of
> axioms should not be increased without necessity.[7]

Although this argument is not a particularly strong criticism of Euclid's Proposition 20, it can be modified into a reason-able argument concluding that a straight line is shorter than any curve (or jointed path) joining its ends. Like the ass of the Epicureans, any unprejudiced person, when asked whether the curve is longer than, shorter than, or equal to the straight line joining its ends, or instead bears no ratio to it whatsoever, will

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7  Euclid, *The Thirteen Books of the Elements*, three volumes, trans. Thomas L. Heath (Dover, 1956), vol. 1, 287. All other citations of either Heath or Euclid are from this same edition. To the criticisms Heath mentions, one could also add that perceiving something in particular instances is not the same thing as seeing its universal truth. Note that Savile's exclamation might be translated as saying that Euclid's Epicurean critics were "themselves fit to eat hay alongside the ass."

reply that it is longer. Nor can this kind of response be set down to blind belief in the familiar definition of a straight line as "the shortest distance between two points," since the same response is returned by those who have never heard that definition, and since everyone's practical behavior, like that of the ass, coincides with the common perception and reply. And while a mere perception is not the same thing as a scientific proof, it can ground the intuition of a self-evident principle, such as "motion exists" in natural science, or "man has freewill" in moral science, or "coplanar and converging straight lines must eventually intersect if extended in the direction in which they converge" in geometry. One may therefore argue as follows: If a basic geometrical statement has never been proved false, and those who hear it for the first time naturally think that it is true, then very likely it is either self-evident or else demonstrable; the statement that curves bear ratios to straight lines is of this description, and evidently it is not demonstrable from prior principles; therefore, it is itself a first principle of geometry.

2. *Argument from Straightening a String.* A string or tape wrapped tightly around a circle or some other curved line coincides with it and therefore evidently shares its length. But the curved length of the string or tape can then be translated into one and only one straight length upon being pulled straight. So it would appear that curved lengths in physical things correspond to definite straight lengths. Of course, a string is a certain changeable object in the world, one that suffers only slight compression or distension upon being straightened out, whereas other physical things[8] cannot be thus straightened. This latter fact implies that such straightening is essentially a physical property and therefore does not or may not translate into the abstract world of geometrical objects. Also, physical measurements are necessarily inexact, whereas those of geometry must

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8   E.g., a glass coil, a long rubber band, or a curved tree trunk.

be perfectly exact. Still, our use of strings and tapes to measure curved lengths in units that measure also straight lines shows at least that in the natural world there is sense to saying that a curved line has the same length as a definite straight one, even if this fact is ascertained by an experiment that cannot be performed in mathematics. And the inexactness of our physical measurement does not prevent similar relationships and ratios from obtaining among exact and abstract quantities—in fact, it is abstraction from the inexactness of nature that permits certain precise relationships into the consideration of mathematics. If, for example, perfectly straight lines, perfectly circular circles, and tangents that share only a single point with a circle are all impossible things in the world of nature, they are nonetheless possible in mathematics. Again, if each of two prime numbers, *n* and *m*, is impossible to find physically instantiated in the sensible world because each exceeds any physical multitude of things, then indeed neither can their ratio be found in nature, and yet each of those numbers and also their ratio can be considered in exact mathematics. Likewise, then, if physical curves bear ratios to physical straight lines that approximate equality, then abstract ones may be exactly equal to abstract ones.[9]

3. *Argument from Physics*. Physicists routinely assume that curved lines can bear ratios to straight ones, and from this assumption derive physical theorems that predict the

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9  It is remarkable that Descartes and Galileo seem to have thought in quite contrary ways about this sort of consideration. Descartes has no time for the argument from the string: "[G]eometry should not include lines that are like strings, in that they are sometimes straight and sometimes curved, since the ratios between straight and curved lines are not known, and I believe cannot be discovered by human minds, and therefore no conclusion based upon such ratios can be accepted as rigorous and exact." *Geometry*, 91. Galileo, by contrast, wished to know "who is so blind as not to see that, if there are two equal straight lines, one of which is bent into a curve, that curve will be equal to the straight line?" "The Assayer," in *Discoveries and Opinions of Galileo*, trans. Stillman Drake (Doubleday, 1957).

behavior of natural bodies with astonishing accuracy and precision. Consider an example from classical mechanics. Proposition 11 in Newton's *Principia*, Book 1, demonstrates that if a body revolves in an ellipse, then the force acting on that body and holding it in that orbit is inversely as the square of the distance to the focus. Newton's alternative demonstration ("*idem aliter*") for this proposition relies on Proposition 10, the alternative demonstration for which in turn relies on Proposition 4, which states:

> The centripetal forces of bodies, which by equable motions describe different circles, tend to the centres of the same circles; and are to each other as the squares of the arcs described in equal times divided respectively by the radii of the circles.[10]

Here Newton asserts that there is a ratio of the arcs of unequal circles. Arcs of unequal circles cannot be made to coincide in any part, any more than an arc of a circle and a straight line can be made to coincide in some small part. Therefore, two arcs of unequal circles have as much reason to be regarded as incomparable as do a curve and a straight line. But if the circular arcs are assumed to be comparable, physical theorems necessarily follow, and, as Einstein notes,

> Even though classical mechanics does not supply us with a sufficiently broad basis for the theoretical presentation of all physical phenomena, still we must grant it a considerable measure of "truth," since it supplies us with the actual motions of the heavenly bodies with a delicacy of detail little short of wonderful.[11]

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10  *Principia*, Book 1, proposition 4, theorem 4 (Motte-Cajori, 45).
11  Albert Einstein, *Relativity: The Special and the General Theory*, trans. Robert W. Lawson (Penguin, 2006), 17.

This cannot be a coincidence, but it would have to be if no ratios existed between curves incapable of coinciding, and if by the same token curves and straight lines bore no ratios to one another.[12] Therefore, straight lines and curves, as well as curves of varying form, must all be comparable in respect of their lengths.

4. *Argument from Beauty and Intelligible Fertility*. If we assume that straight lines and curves bear no ratios to one another, we have reached a dead end. This assumption leads to no further mathematical or physical results whatsoever. If instead we assume that straight lines and curves are comparable, we are greeted by countless astonishing new relations whose beauty could be denied only by those not well disposed to see it. Euler's identity, for example, and all numerical series summing to pi must be regarded as statements of real and complex analysis lacking any applicability to geometrical lines if we refuse to compare curved lines with straight ones. The beauty and fertility of the opposite assumption's results, which harmonize not only with themselves but with the rest of mathematics, must be taken as a sure sign of its truth. Therefore, curved lines have ratios to straight ones.

5. *Argument from Authority and Consistency*. While arguments from merely human authority are relatively weak, and must play a very small role in teaching, learning, and discovery in mathematics (the most demonstrative of disciplines), it does

12   And although the true can follow from the false, Kepler is right to mock those who make this elementary observation against his argument for the conclusion that the Martian orbit is an ellipse (*Astronomia nova*, chapter 21). They are right that the true can follow from the false, but wrong to suppose that all the true positions of Mars can easily be made to follow from a fully specified and false model of its motion. A few of the facts involved in a murder inquiry can be made to follow from a false theory of the murder, but to make dozens of varied facts follow from a false theory that is in itself quite simple and plausible is nearly impossible. Similarly, if countless conclusions of a physics that relies upon the comparability of straight lines and curves check out empirically, it is extremely unlikely that the presumed comparability is just a fiction.

not follow that such arguments are of no value or utility in that science. If all or most mathematicians agree on some statement of mathematics, surely their statement is due careful consideration and should be rejected only if there is some demonstration to the contrary. Even should their statement turn out to be wholly false, there must still be some good reason why all the experts were deceived in the matter. Yet there seems to be no such reason available to explain why all mathematicians agree that a curved line can be equal to a straight one, if that is in fact somehow impossible. Instead, they seem to have been moved to this position just by the things themselves, naturally and automatically responding to the way things are. Moreover, they have proposed a determinate and precise definition of the rectilinear length of a finite curve, a definition on which they all agree: It is the limit of the successive sums of chords inscribed from one end of the curve to the other, as the number of these chords increases without limit and the length of each shrinks as near to zero as we please. This definition has produced no disagreements among the mathematicians and resulted in no inconsistencies.

## II - Arguments Concluding that Curves Are Not Measurable by Straight Lines

At least five arguments can be made against the position that curves and straight lines bear ratios to one another.

1. *Argument from Non-Coincidence.* The first of these to come to mind is the impossibility of getting a curve to coincide with a straight line, whether in whole or in part. No matter how small an arc of a circle we choose, and no matter how "straight" it may appear, it is impossible for it to coincide with the straight line joining its ends for any amount of its length. It can share no more than two points in common with any straight line, and of course neither point has any length whatever. But the possibility

of coinciding is the basis of equality among magnitudes. Euclid's fourth common notion bears witness to this: "Things which coincide with one another are equal to one another."[13] Presumably this is laid down as the proper foundation of equality in geometry. Accordingly, things altogether incapable of coinciding are incapable of inequality. Curves and straight lines, being thus incapable, are therefore unable to be equal to one another. From here it seems to follow further that they are incapable of bearing any other ratio to one another, since the greater of two magnitudes must contain a part equal to the lesser one.

2. *Argument from the "Cornicular Angle."* Another way to argue for the same result rests on the angle between the circumference of a circle and its tangent, known in antiquity as the "horn-like" or "cornicular angle," and featured in Proposition 16 of Book 3 of Euclid's *Elements*.[14] Euclid demonstrates that this angle is less than any acute rectilineal angle. This result implies, further, that the horn-like angle, $h$, has no ratio to any given rectilineal angle, $r$. If it did, then it could be multiplied by some finite number, $n$, so as to exceed it, and we would have $nh > r$, since only such magnitudes as can be thus made to exceed one another have a ratio to each other.[15] Dividing both sides by $n$, we would then have $h > \left(\frac{1}{n}\right)r$ where $\left(\frac{1}{n}\right)r$ is some finite rectilineal angle (e.g., $\left(\frac{1}{100}\right)90°$). Thus $h$ will be greater than a certain rectilineal angle, whereas Euclid has shown this to be impossible. Therefore, the horn-like angle, $h$, has no ratio to any rectilineal angle whatever.

Moreover, if $h$ were comparable to some rectilineal angle $r$, then, since every ratio that an angle can have to $r$ must be one

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13  Euclid, *Elements*, common notion 4 (Heath, vol. 1, 155).

14  *Elements*, Book 3, proposition 16 (Heath, vol. 2, 37–39).

15  *Elements*, Book 5, definition 4 (Heath, vol. 2, 114): "Magnitudes are said to have a ratio to one another which are capable, when multiplied, of exceeding one another."

that some rectilineal angle, *a,* can bear toward it, it would follow that *h* would have the same ratio to *r* that some other rectilineal angle *a* has to it, and thus *h* would be equal to *a*. But that is impossible, since *a* is either obtuse, right, or acute. And *h* cannot equal an obtuse or right angle, since it falls inside the right angle between the diameter and tangent and thus divides the right angle, and so it is less than it. Nor can *h* be equal to any acute rectilineal angle, since it must be less than any, as Euclid proves. Therefore, the angle between the circumference and diameter is not comparable to any rectilineal angle.

So, the magnitude of the cornicular angle is incomparable to that of any rectilineal angle.[16] And what is the cause of this? Surely it is nothing else than the fact that one of its legs is a curved line rather than a straight one, for which reason the angle can be contained within a rectilineal angle, but cannot possibly coincide with any. Now, if the difference between straight and curved can thus cause incomparability in the angular quantities they bound, all the more must they be incomparable in themselves. Therefore, the lengths of straight lines and those of curves can bear no ratios to one another.

3. *Argument from Otherness of Kind*. Euclid defines a ratio as a "relation in respect of size between two magnitudes of the same kind."[17] According to this definition, the proper subject of a ratio is not merely two magnitudes, but magnitudes of the same kind. And with good reason. If we left off this part of the definition and said instead that a ratio is simply "a relationship of one magnitude to another with respect to size," the implication would be that any two magnitudes would have a ratio. And that is plainly false. An angle does not have a ratio to a length, nor a length to an area, nor an area to a volume. Hence the added

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16   See Newton's *Scholium* following lemma 11 of Book 1 of his *Principia* (Motte-Cajori, 37–39).

17   *Elements*, Book 5, definition 3 (Heath, vol. 2, 114).

restriction "of the same kind." Accordingly, magnitudes differing in kind cannot have a ratio to one another. But curves and straight lines differ in kind, if indeed *line* is a genus while *straight line* and *curved line* are different species of it. And *straight line* must constitute a species, or else it will be like *green triangle*, an *ens per accidens* that cannot serve as a subject of scientific conclusions. It follows that straight lines and curved ones cannot have ratios to one another.

4. *Argument from "The City Block Theorem."* A curved length cannot have a ratio to a straight one unless it is possible for a curve to equal a straight line. A ratio, after all, must be either that of a greater to a lesser, or that of a lesser to a greater, or that of an equal to an equal. But if a curve is greater than a straight line, then some part of it, which is also a curve, will be equal to the straight line, since the greater contains the equal. Similarly, if a curve is less than a straight line, then some part of the straight line will be equal to the curve. So in any case the existence of a ratio between the straight and the curved entails the consequence that a straight line can be equal to a curved one.
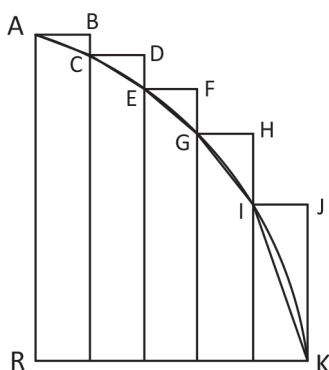
But what justification could this have? None, if not one given along these lines: A series of chords inscribed in a curve from one end to the other can be made to share as many points with the curve as we please, and can be made to appear as indistinguishable as we please from the curve both to sense and to imagination, as both the number of chords and their individual lengths are diminished without limit. For example, if inside a curve AK we take chords AC, CE, EG, GI, IK, then the total

path composed of AC + CE + EG + GI + IK approximates the curve both by sharing with it the points A, C, E, G, I and K, and also by its appearance. Both the number of points that the bent path shares with the curve, and also its approximation of the curve's appearance, increase as far as we please when more and more chords are taken, so long as all the chords eventually shrink to less than any assigned length. Because the bent path can be made to share in the curve's points and appearance to whatever extent we wish, it is assumed that the curve is a sort of limit of the process, and that the successive lengths of the bent paths also better and better approximate that of the curve. And if that is true, then of course the finite straight line which is the limit of the lengths of the bent paths must be equal to the curve.

But this thinking is unjustified, as the following considerations will show. Taking any particular series of chords running from A to K, describe a semicircle on the first chord, AC. On the arc of this semicircle, choose any point B, and join AB, BC, which thus form the legs of a right angle. Do likewise for all the subsequent chords, but always choosing the legs of the right angles in such a way that one is parallel to AB, the other to BC, giving us CD, DE, EF, FG, GH, HI, IJ, JK. We now have a jointed path shaped like an uneven staircase running from A to K. Just like the path formed of chords, this one, too, can be made to share as many points with the curve AK as we wish, and, as more and more steps in it are taken, it too can be made to appear as indistinguishable from the curve AK as we please, so far as sense and imagination are concerned. Does it follow that the total length of our stepped path is approaching the length of the curve? Certainly not. It is in fact always equal to the fixed sum AR + RK, where R is a point on the semicircle with diameter AK, with AR parallel to BC and RK to AB. This is because in taking more steps, we never increase or change in any way the total horizontal distance we must cover to get from A to K, nor do we

affect the total vertical distance, but only chop these up into ever finer portions. This fact may be called the "City block theorem" because it can be used to minimize time spent waiting at traffic lights when walking or driving in a city whose streets are laid out as a grid (e.g., one can turn right at a red light and left at the next one without increasing the total distance of travel).

Since the very same facts used to justify the notion that the chords approach the length of the curve are also true of stepped paths, and yet these clearly do not approach the length of the curve, it follows that there is no justification for thinking that the successive sums of the chords are approaching the length of the curve.

5. *Argument from the Authority of Aristotle and St. Thomas.* Aristotle, as noted earlier, seems to deny the possibility of circular lines being equal to straight ones.[18] St. Thomas describes Aristotle's position and does not oppose it:

> For if all rectilinear motions and circular ones are [capable of being] equally fast, and motions are equally fast when they pass through equal magnitudes in equal time, it follows that a straight magnitude and a circular one will be equal. Which is left as something incongruous [*pro inconvenienti*].[19]

Although Aristotle and St. Thomas are not mathematicians, they are arguably the two best philosophers in the history of the human race. Moreover, this question, like the question whether a line is composed of points, is as much philosophical as mathematical, and so their wisdom and expertise are relevant to it.

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18  See: *Physics* 7.4, 248a13; 248b1; 248b5.

19  *In VII Phys.*, lec. 8, n. 943: "Si enim omnis motus rectus et circularis sunt aeque veloces; sunt autem aeque veloces motus, quando aequales magnitudines pertranseunt in aequali tempore; sequitur quod magnitudo recta et circularis sint aequales. Quod relinquitur pro inconvenienti." All translations of St. Thomas will be my own.

It is extremely unlikely, then, that they were simply mistaken in this matter.

### III - *Assessments of the Foregoing Arguments*

We next consider the weaknesses of these arguments. Recall the first, from the behavior of the ass—even an ass knows, so to speak, that the curved path from point A to point B is longer than the straight line joining them. So too do we ourselves naturally perceive this, if we are not somehow prejudiced against the idea. Thus it would appear to be self-evident. One weakness of this argument is that things can appear self-evident to us, and evoke a natural assent, yet not truly be self-evident, and can even in some cases be false—for example, the classical theorem for the addition of velocities seems like a self-evident truth about how to add velocities in two coordinate systems in order to find the resultant velocity of a body in one of those systems, and yet it is false.[20] Moreover, the argument does not explain what the self-evidence of the comparability of curved and straight lines would consist in conceptually, or specify any cause or basis of equality between curved lines and straight ones.

Nor is the string-straightening argument decisive. True, some things found inexactly in nature are found exactly in mathematics, such as certain numerical ratios and straight lines and circles. But, like the previous argument, this one provides no mathematical meaning of, or test for, equality or any other ratio between a straight line and a curve. By weighing physical prisms of equal height we can determine the ratio of their bases, but this does not translate into any mathematical consideration of the comparison of areas, since weighing is not a mathematical operation. Similarly, stretching a string corresponds to no mathematical operation and does not of itself specify a mathematical

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20  See Einstein, *Relativity*, chapters 6, 7, and 13.

basis for determining the ratio of a given curve to a determinate straight line.

This same deficiency prevents the third argument from being perfectly satisfactory. Physical theories employing the notion that straight lines and curved ones are comparable do produce many and varied conclusions that empirically check out. But physics has metrical procedures available to it that are not available to the pure mathematician. Hence more must be said, if "greater than," "less than," and "equal to" are to be assigned determinate sense in relating mathematical lines to one another. So too the fourth argument, from the many beautiful and purely mathematical results of the assumption that straight lines and curves are comparable, while it may be a sign of something, does not specify the nature of such comparability.

The fifth argument alone made mention of the mathematician's way of defining equality between straight lines and curves. But, while it noted certain imperfect indications of its validity, such as the fact that all mathematicians agree on the definition, and the fact that it has resulted in no known contradictions thus far, it still fails to address the heart of the matter: Why is the generally accepted mathematical definition of the length of a curve thought to be a genuine definition or measure of its *length*, and not merely a way of defining a straight line that is somehow associated with it?

Certain deficiencies weaken the arguments on the other side of the question as well. The first, based on the fact that no curve can be made to coincide with a straight line for any amount of length, does establish that coinciding in length cannot be the basis for defining and determining equality between a straight line and a curve. But it does not show that there can be no other basis for these things. Indeed, there can be no doubt that quantities can have a ratio even if they cannot be made to coincide as wholes; no parabolic segment can be made to coincide with

a rectangle, and yet any such segment must have a ratio to any given rectangle. A parabolic segment can even be proved equal to a certain rectangle, despite the fact that the two figures cannot be composed of coincident parts. Their equality is seen instead through the notion of a limit as applied to other things whose equality is seen through coincidence.

The argument from the "cornicular angle" is not only not decisive, but is in fact fallacious. According to the argument, the incomparability of the cornicular angle with rectilineal angles proves that magnitudes of different species within the same genus can be rendered incomparable as a consequence of the difference between curved and straight. The cornicular angle and any rectilineal angle are meant to be an example of such incomparable magnitudes. More than that, the cornicular angle provides a basis for arguing *a fortiori* that the difference between curved and straight must cause incomparability in lines themselves, if it causes incomparability in the angles between them.

But this argument assumes that the cornicular angle is an actual magnitude, that it has a non-zero angular quantity. For if this angle has no magnitude or quantity, then its incomparability with rectilineal angles would result not from the difference between straight and curved, but from the mere fact that one of the supposed quantities in question is no quantity at all.

At first it may appear that the cornicular angle must have some finite, non-zero angular magnitude, since (1) it consists in two distinct but intersecting lines, and (2) they stand some distance apart from one another, and (3) these fit inside an acute rectilineal angle and are thus "less than" it in some sense, and so must constitute some angular quantity.

Such facts about two lines do not suffice to guarantee that they contain an angular quantity. They do not define or specify what the quantity consists in. The fact that the lines in question are two is quantitative, but "two" is not the quantity of the angle.

The fact that they stand some distance apart is quantitative, but this cannot constitute their angle, since their angle cannot be a quantity without being a determinate one, whereas "the distance between the lines" names no definite quantity or distance, since there are as many distances as we please between the two legs of an angle. Nor does it follow from the fact that the cornicular angle falls entirely within an acute rectilineal angle that it is "less than" it by having some angular quantity—no more than it follows from the fact that a point falls entirely within a line (or a line within a surface, or a line inside an angle, etc.) that it has a quantity of the same genus as the line, only a lesser one.

What the quantity of an angle actually consists in is a quantitative difference of rotational position. This is true in the simplest way of rectilineal angles. In their case, the quantity consists in the fraction or percentage of a whole rotation that one of the legs must undergo in order to arrive at and coincide with the other leg. For the angle of an equilateral triangle, for example, this amount is one sixth of a full rotation. No such quantity can be defined in the case of the cornicular angle, since neither leg can be rotated so as to coincide with the other. Leaning on mere appearances and words, the foregoing argument relies on our thinking of the "cornicular angle" as an angular quantity, although it has provided no reason for thinking it truly is one.

Moreover, a little reflection shows that one angle falling inside another does not by itself prove that it is a quantitative part of the other. Let *BCD* be a quadrant of a circle with center *C*, and *Bcd* a quadrant of another circle lying within the first, and with its center *c* lying between *C* and *B*, and having as its radius *cB*. Thus *CD* and *cd* are parallel radii in the two circles. Let *BA* be drawn parallel to these, hence tangent to both circles at *B*. Drop *DA*, *da*, at right angles to *AB*. Thus *ABCD* is a square, and so is *aBcd*, and each square has been divided by a quadrant of the circle whose radius is one of its sides. Hence *ABD* is a "cornicular
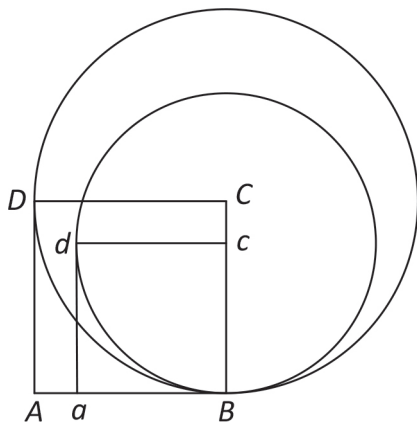
angle," and so too is *aBd*. Now, one of these cornicular angles falls inside the other, that is, *ABD* falls inside a*Bd*. Is *ABD* therefore a part of, hence less than, *aBd*? Not at all. In fact, these two "angles" are equal. This must be so, since the entire figure *aBcd* (square, quadrant, cornicular angle and all) is only a scaled-down version of the entire figure *ABCD*, being in all ways similar to it, and similarity is based upon the equality of corresponding angles. Likewise, the mixed angle *DBC*, formed by arc *DB* and radius *BC*, is equal to the corresponding mixed angle *dBc* in the quadrant of the other circle, since they differ only in scale. Otherwise one will have to say that quadrants of unequal circles are dissimilar, since they are formed out of unequal angles. Are we thus obliged to say that the whole, *DBC*, is equal to one of its parts, *dBc*? No, since *dBc* will be a "part" of *DBC* only if the arcs *DB* and *dB* themselves constitute and add some angle to the "angle" *dBc*. But this is not the case. What, after all, is the "angle" between arcs DB and dB? Not the growing distance between them as we proceed along them from their point of contact, since that is an infinity of different distances, and not a single angle. Instead, their "angle" is found just where they meet and is determined by how much they cut one another there, or how much one of them is inclined into the other one at that point—but they do not cut, but only touch there, and neither one is there inclined into or away from the other. Thus the "angle" of the difference between the angles of the quadrants (which is also the difference of the cornicular angles), formed by

these two arcs DB and dB, is zero! And so the mixed angles of the quadrants remain equal even though they do not coincide throughout their lengths. Similarly, the cornicular angles themselves are not true quantities or angles at all, since the straight leg in each case merely touches the curved one, whereas the essence of an angle consists in cutting, not in tangency or contact. This analysis enjoys the support not only of today's mathematicians, but also of many eminent ones of the past, including the French geometer Peletier (Peletarius), Viète (Vieta), Galileo, John Wallis, and Cantor.[21]

Later we shall return to the question of how to define angular quantity, and we will see once more that the cornicular "angle" must have a value of zero. For now, we may conclude that the argument against the comparability of curved and straight lengths based on the cornicular angle presumes it has some actual angular magnitude, but neglects to prove that it has one or even to define what that would mean, and ignores the evidence forcing us to say that its quantity is in fact nothing. The argument is not just non-decisive, then, but sophistical.

The third argument concluding that straight lines and curves are incomparable rested on the otherness in kind between such lines. Those magnitudes alone can have a ratio to one another that are "of the same kind," as Euclid observes, whereas straight lines and curves differ in species, hence in kind. This argument, however, appears to confuse otherness in species with otherness in "kind" or genus. At any rate, what Euclid says is that ratios are a relation of "two magnitudes of the same genus" (δύο μεγεθῶν ὁμογενῶν).[22] And in general it is obvious that quantities can differ in species and yet be comparable with each other and have ratios to one another. Among

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21  See Heath's commentary on proposition 16 of Book 3 of Euclid's *Elements* (Heath, vol. 2, 39–43).
22  *Elements*, Book 5, definition 3 (Heath, vol. 2, 116).

numbers, for example, two differs from three in species (though not in the genus *number*), and yet they manage to have a ratio to one another. Among magnitudes, "two cubits long" differs from "three cubits long" in species (though not in the genus *length*), and yet they have a ratio. Also, the difference between curved and straight is a difference of quality, not of quantity. A square differs in kind, that is, in species, from a circle, but this is not a difference of area but of shape, hence of quality, not quantity. To be a square is not to be a certain size, but to be a certain figure. And just as this difference in quality cannot prevent a circle and a square from having a ratio, so too the difference of curved and straight cannot prevent two lines from having a ratio, so far as this argument has shown.

Like the argument based on the cornicular angle, the one based on the "City block theorem" is fallacious. Having shown quite decisively that the successive sums of straight-line segments associated with a curve in one specific way do not approach the length of the curve, it concludes that sums of segments associated with the curve in quite another way also do not approach its length. This is like reasoning that since a great number of small vertical lines reaching a total height of 3 and a great number of small horizontal lines reaching a total horizontal distance of 4 can together form a stepped path that looks like the hypotenuse of 5 as near as we please, and yet 3 + 4 is not equal to 5, nor does the stepped path approach 5 in length as we increase the number of little steps in it, therefore no series of small lengths approaches 5.

Finally, we come to the argument from the authority of Aristotle and St. Thomas. While it rightly points out that the question before us is in some measure the business of philosophy, and that the authority of Aristotle and St. Thomas ought to be recognized as towering over that of most or all other philosophers, nonetheless the argument does not appear to be on solid

ground in supposing that their authority comes down cleanly on one side of the question. First of all, in the passages cited, Aristotle argues that if rectilinear and circular motion were comparable in speed, then a straight line would be equal to a circle—which he leaves as a puzzle for us to contemplate. He leaves it as "an incongruity," or at best as something presumed to be absurd without explanation. This he does in a chapter composed mainly of questions, and reading more as a dialectical investigation than as his sure and finished doctrine. Nor does he make use of the supposed incomparability of the straight and the curved in what remains of his *Physics* or in his *Metaphysics*, in contrast with his far more consequential thesis that circular motion is primary.

More than this, Aristotle and St. Thomas both appear to speak rather differently in other places. They have no difficulty saying that motion through a greater circle can be faster than motion through a smaller one, thus implying that arcs of a greater circle can be compared with those of a smaller one:

> And one can see this difference most of all in spherical motion, because the speed of the parts that move nearby the center and that of the parts that are on the outside (that is, at the outer surface of the sphere), which is also the speed of the whole [sphere], is not the same—as though it were not the motion of one thing, but of different things. For it is clear that that is faster which in an equal time passes through a greater magnitude. But when the sphere moves, it is clear that a more outward part of the sphere goes through a greater circle than a more interior part does; and so the speed of the more outward part is greater than [that] of the interior one.[23]

23   St. Thomas, *In VI Phys.*, lec. 12, n. 874: "Et hanc differentiam aliquis maxime potest considerare in motu sphaerico: quia non est eadem velocitas partium quae moventur circa centrum, et partium quae sunt extra, idest versus superficiem exteriorem sphaerae, et quae est etiam velocitas totius:  ac si motus iste non sit unius sed diversorum. Manifestum est enim quod velocius

But if the circumferences of unequal circles, which cannot possibly be made to coincide in anything but points, admit of being more and less in linear magnitude, it becomes difficult to see why a straight line cannot also be longer or shorter than a circumference. And indeed St. Thomas goes so far as to make such comparisons between straight lines and curved ones in certain passages such as this one:

> The least distance between any two given points is a straight line, only one of which can be between the two points. But curved lines between two points can be multiplied to infinity, as when two curved lines are taken as arcs of greater and lesser circles. And since every measure must be finite (otherwise it could not make known a quantity, which is the proper [job] of a measure), the maximum distance between two points cannot be measured with a curved line, but only with a straight line, which is finite and determinate.[24]

est, quod in aequali tempore pertransit maiorem magnitudinem. Dum autem sphaera movetur, manifestum est quod maiorem circulum pertransit pars exterior sphaerae quam pars interior; unde maior est velocitas partis exterioris quam interioris." See also *In I De caelo*, lec. 3, n. 26. St. Thomas goes on to say that the different parts of a rotating sphere are not actual, and so these motions are not actually different motions going on at the same time but are only potentially distinct. But that makes no difference to the point made here; it remains that circumferences of unequal circles are comparable in length.

24  *In V Phys.*, lec. 5, n. 688: "Ad cuius intellectum considerandum est quod minima distantia quae est inter quaecumque duo puncta signata, est linea recta, quam contingit esse unam tantum inter duo puncta. Sed lineas curvas contingit in infinitum muliplicari inter duo puncta, secundum quod duae lineae curvae accipiuntur ut arcus maiorum vel minorum circulorum. Et quia omnis mensura debet esse finita (alias non posset certificare quantitatem, quod est proprium mensurae), ideo distantia maxima quae est inter duo, non potest mensurari secundum lineam curvam, sed solum secundum lineam rectam, quae est finita et determinate."

If a straight line is "the least distance between any two given points," then it must be less than any curved length lying between them. So it seems that straight lines and curved ones are somehow comparable after all, according to St. Thomas. Here is another noteworthy passage in this regard:

> Of all motions the fastest is the motion of the heaven. And here "the fastest motion" means the one that runs its course more quickly in terms of the brevity of the time [it takes], although equality on the side of the magnitude over which the motion goes is not supposed, as it is supposed in *Physics* 6, where it is said that the "faster" is what in less time goes through an equal space, or even a greater one. And so here he adds that the fastest motion is observed with respect to the least magnitude. Now of all lines that return to the same point from which they start, the circular one is the least—because in rectilinear figures there are angles, and the lines drawn to these from the center are greater [than the radius], and in this way the angles of those figures exceed the circular line. And therefore it is necessary that the heaven, which moves circularly and as it were from and to the same [point], [move] also with the fastest motion, because its motion is over a circular line. And so it is necessary that it be spherical.[25]

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25   *In II De caelo*, lec. 6, n. 356: "[O]mnium ergo motuum velocissimus est motus caeli. Et accipitur hic motus velocissimus, qui citius peragit cursum suum ex parte brevitatis temporis, licet non supponatur aequalitas ex parte magnitudinis super quam transit motus, sicut supponitur in VI *Physic*, ubi dicitur quod velocius est quod pertransit in minori tempore aequale spatium vel etiam maius. Unde hic subdit quod velocissimus motus attenditur secundum minimam magnitudinem. Inter omnes autem lineas quae ab eodem in idem redeunt, minima est circularis:  quia in figuris rectilineis sunt anguli, ad quos lineae protractae a medio sunt maiores, et sic anguli illarum figurarum excedunt lineam circularem. Et ideo oportet quod caelum, quod movetur circulariter quasi ab eodem in idem, et velocissimo motu, quod motus eius sit super

After taking care not to say that the circular path of the heaven is equal to any rectilinear path, St. Thomas says in the passage above that it is somehow less than any rectilinear path that would circumscribe it, an indication of which is that the angles of that path would lie outside the circle. He makes a similar observation in this passage:

> From the fact that a body moved circularly is spherical, it moves most quickly: both because the circular line is the least of all figures containing an equal area; and also because rectilinear bodies do not have uniform motion in every part.[26]

Are St. Thomas and Aristotle being inconsistent? They appear to be saying (1) a certain straight line can be called greater than a certain circular line (as in the passage immediately above), and any straight line can be called less than any curve (including a circular line) joining its endpoints, but at the same time (2) it is meaningless to say that a straight line can be equal to a circular one. They seem to be thinking that "greater" can be seen by non-coincidence, by the extravagance or inefficiency of one thing in comparison to another, whereas "equal," so far as they are aware, must be both defined and verified by coincidence of parts, which is impossible in the case of circular and straight lines with each other. Hence they saw a way to judge "less than" and "greater than," but no way to judge "equal to," for a curve and a straight line, or in general for two lengths incapable of coinciding (except perhaps in the case of unequal circular arcs).

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lineam circularem. Et ita oportet quod ipsum sit sphaericum." See Aristotle, *De caelo* 2.4, 287a11–b21.

26 *In II De caelo*, lec. 13, n. 412: "Per hoc enim quod corpus circulariter motum est sphaericum, velocissime movetur: tum quia linea circularis est minima inter omnes figuras continentes aequale spatium; tum etiam quia corpora rectilinea non habent uniformem motum ex omni parte."

If that is a fair way to interpret them, then what Aristotle and St. Thomas denied is not that straight and curved lengths are comparable at all, but only that they are equatable by the method of length comparisons of which they were aware. Now, while they possessed many notions of *limit*, they obviously lacked the modern mathematical notion of a limit developed long after their time. Evidently they did not contemplate defining a certain line length as a limit of sums of inscribed chords, which is why they unsurprisingly make no mention of it and say nothing against it. Accordingly, they are not true parties to the dispute, but philosophers who made an elementary and true observation on the subject that must be preserved in any responsible account of it. They say no more than that the obvious and elementary method of measuring a straight line by a straight one, or a circular line by an arc that fits into it, is not available if we wish to equate a curved line with a straight one. A measure common to both the curve and the straight line that coincides with both is impossible. This general, elementary, and correct doctrine cannot be compelled to bear witness against the mathematicians, who do not oppose it. Nor should Aristotle or St. Thomas themselves be brought forward as witnesses against the mathematicians of later centuries, since they say nothing about those later doctrines, and unsurprisingly show no sign that they had them in mind. Moreover, what they did say bears all the hallmarks of an unfinished doctrine, or perhaps of a matter puzzled over and left unresolved.

While none of the foregoing arguments on either side of our question settles the matter, we need not come away from them empty-handed. Certain points in some of them seem to have withstood the criticisms. From the arguments that were made against the possibility of comparing curved lengths with straight ones, the following truths emerge untouched:

1.  The first and most fundamental way to define and verify equality of magnitudes, including lengths, is by their coincidence.
2.  Straight lines and curves cannot be made to coincide in any length, but only in points.
3.  If straight lines and curves have ratios to one another, this must be established through a method that goes beyond the use of coincidence.

From the arguments that were made for the possibility of comparing curved lengths with straight ones, the following stable points can be extracted:

4.  There is something natural, something other than mere education or habituation, that moves people to say that a curve is longer than the straight line joining its ends.
5.  There are physical ways of comparing curved lengths with straight ones.
6.  The countless beautiful results of assuming their comparability in the abstract, and the coherence of these among themselves and with the rest of mathematics, are sure signs that curved and straight lengths are in fact mathematically comparable in some way or other; only those whose minds are somehow prematurely closed to these results could think they indicate nothing at all.

A satisfying resolution of the question must preserve all of these points and explain, moreover, why it has been the occasion of some disagreement or doubt.

## IV - In What Sense a Straight Line Is a Measure of a Curve

This section of this essay consists in a three-step proposal of the way to resolve the question of the comparability of curved lines with straight ones. Step one is to define certain senses of *measure* and to distinguish between intrinsic and extrinsic measures. Step two is to look at a few extrinsic measures helpful to consider in preparation for defining a certain straight line as a measure of a curve's length. Step three is to define the straight line that is an extrinsic measure of a curve.

### 1. The Definition(s) of Measure

*Measure* has many meanings. In its strictest sense, it means what in some way makes known the quantity of something, as St. Thomas would agree: "A measure is properly spoken of in regard to quantities, for that is called a measure through which the quantity of a thing becomes known."[27] This is not yet a complete definition, however. "What makes known some quantity" would describe many things not called measures. For example, a pocket calculator can in some way make known the quantity of something—is the calculator therefore a "measure" of the quantities it makes known?

Another ingredient in the definition of *measure* in its strict sense, an ingredient which, together with the one just mentioned, constitutes a complete definition, is that the thing called a measure is somehow a principle of the quantity it makes known. Somewhat as a demonstrative premise or first principle does, a measure bears the *ratio principii*, since it is a cause both of our knowledge of a thing and also of that thing itself:

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27   *In I Sent.*, d. 8, q. 4, a. 2, ad 3: "[M]ensura proprie dicitur in quantitatibus: dicitur enim mensura illud per quod innotescit quantitas rei."

> A measure possesses the characteristic of being a princi-
> ple, since things measured are known through a measure,
> and things are known through their proper principles.[28]

This notion in the definition of a measure implies that a quantity, like a conclusion or like a thing composed of several elements or principles, is knowable through something simpler than itself. This is clearest in the case of numbers, which are not only measured or counted, but also defined, by the units that measure and compose them. Magnitudes are also made known by their measures, although not as evidently or perfectly as numbers are made known by theirs. A length is not measured by what is too simple to have any length as a number is measured by an indivisible unit with no multitude or composition. Instead, a length is measured by a smaller length. This may sound pointless, since a smaller length can likewise be measured by a still smaller length, and so on *ad infinitum*. But it makes possible the numerical comparison of lengths, which makes their lengths more known. It is useful, for instance, to know that the walk from A to B is a thousand strides. So a measure, whether of a number or of a magnitude, is "that by which the quantity of a thing is known."[29]

How does a measure make a quantity known? In the case of what is called a measure in the fullest sense, it does this by being applied to all the parts of the quantity successively, or by the division of the quantity into so many instances of the measure. A measure, or unit length, laid out so many times along a road tells the length of the road.

In a sense closely related to this first sense of a measure, *measure* can mean something used to divide a whole and thus

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28  *In V Metaphys.*, lec. 8, n. 872: "[M]ensura autem habet rationem principii, quia per mensuram res mensuratae cognoscuntur, res autem cognoscuntur per sua propria principia."

29  *In X Metaphys.*, lec. 2, n. 1938: "Mensura autem nihil aliud est quam id quo quantitas rei cognoscitur."

measure off a part that it does not divide, as when a fixed length marked on a table is used to measure off a determinate portion of a whole bolt of cloth.[30] In this sense, the measure still makes known the quantity of something, but not by being laid off in it repeatedly, but simply by coinciding with it. What it divides is not the quantity it makes known, but a larger whole out of which it takes a sought quantity.

The word *measure* has acquired other meanings that are derived from its first sense but are much further removed from it than the second sense just described. This happens mainly by dropping the notion of quantity in its strict, proper, and categorical sense, and substituting it with more loosely quantitative notions:

> Measure, properly speaking, is spoken of in regard to quantities, for that is called a measure through which the quantity of a thing becomes known. And this is a least thing in the genus of quantity, whether simply [least], as in the case of numbers, which are measured by the unit, which is the least simply, or else the least thing we have posited, as happens in the case of continuous things, in which there is no least simply speaking. Whence we posit a span as the least for measuring fabrics, or a furlong as the least for measuring a road. From there the name *measure* is transferred to all genera, so that that which is first and simplest and most perfect in any genus is called a measure of all the things that are in the genus, because each thing is known to have the truth of the genus more or less insofar as it approaches that thing or withdraws from it—white, for example, in the genus of colors. So too in the genus of substance that which has the most

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30  See *In II Sent.,* d. 2, q. 1, a. 2, ad 1.

perfect and simplest existence, as God has, is called the measure of all substances.[31]

As the sense of "more and less," of "most and least," and of "how much" included in these broader senses of *measure* comes closer to the proper notion of categorical quantity, the more nearly they approach the notion of *measure* in its first and strictest sense. The sense in which law is a "measure" of human acts,[32] for example, is closer to the strict and original sense than the sense in which God is a "measure" of all substances. Law often makes known the right quantity of a thing, where "quantity" is taken in its strict sense; it sets speed limits and property limits, for example, and amounts to be paid in taxes, and minimum and maximum fines or prison sentences.

In all senses of *measure*, however, there remains some notion of the quantitative, however remote from the category of quantity. Truth, for example, involves something like a quantitative notion in its definition. If my understanding of things puts more in reality than is actually there, then it is false, or if it allows less than is actually there by denying what is there, it is again false, whereas if it is true it does not take away anything that is

31  *In I Sent.,* d. 8, q. 4, a. 2, ad 3: "[M]ensura proprie dicitur in quantitatibus: dicitur enim mensura illud per quod innotescit quantitas rei, et hoc est minimum in genere quantitatis vel simpliciter, ut in numeris, quae mensurantur unitate, quae est minimum simpliciter; aut minimum secundum positionem nostram, sicut in continuis, in quibus non est minimum simpliciter; unde ponimus palmum loco minimi ad mensurandum pannos, vel stadium ad mensurandum viam. Exinde transumptum est nomen mensurae ad omnia genera, ut illud quod est primum in quolibet genere et simplicissimum et perfectissimum dicatur mensura omnium quae sunt in genere illo; eo quod unumquodque cognoscitur habere de veritate generis plus et minus, secundum quod magis accedit ad ipsum vel recedit, ut album in genere colorum. Ita etiam in genere substantiae illud quod habet esse perfectissimum et simplicissimum, dicitur mensura omnium substantiarum, sicut Deus."
32  *ST* I-II, q. 90, a. 1, c.: "[L]aw is a rule and measure of acts" ("lex quaedam regula est et mensura actuum").

in reality nor does it put more there than is really there. Thus
St. Thomas will speak of truth consisting in a sort of equality,
equalizing, or equating of an understanding with a thing under-
stood.[33] But since a measure also *habet rationem principii*, or
possesses the characteristic of a measure, it follows that

> [A]n intellect which is the cause of a thing is related to
> it as a rule and measure, but it is the other way around
> in the case of an intellect that gets science from things.
> Therefore, when things are the measure and rule of an
> intellect, the truth consists in the fact that the intellect is
> made equal to a thing, as happens in us, for it is because
> a thing either is, or is not, that our opinion and speech is
> true or false. But when an intellect is the rule and mea-
> sure of things, truth consists in the fact that the things
> are made equal to the intellect; in this sense it is said that
> an artist makes a true work when it agrees with his art.[34]

And thus

> among created things truth is found both in the things
> themselves and in the intellect, as is plain from the things
> already said—in the intellect, insofar as it is made equal
> to the things a notion of which it possesses, and in the
> things themselves, insofar as they imitate the divine

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33  See, e.g., *ST* I, q. 21, a. 2, c.: "[V]eritas consistit in adaequatione intellectus
et rei."
34  *ST* I, q. 21, a. 2, c.: "Intellectus autem qui est causa rei, comparatur ad ipsam
sicut regula et mensura, e converso autem est de intellectu qui accipit scientiam
a rebus. Quando igitur res sunt mensura et regula intellectus, veritas consistit
in hoc, quod intellectus adaequatur rei, ut in nobis accidit, ex eo enim quod res
est vel non est, opinio nostra et oratio vera vel falsa est. Sed quando intellectus
est regula vel mensura rerum, veritas consistit in hoc, quod res adaequantur
intellectui, sicut dicitur artifex facere verum opus, quando concordat arti."

intellect, which is their measure just as an art is the measure of all the things made by the art.[35]

Even in its strict sense, as applied to categorical quantity, the notion of a measure is found unequally in different things. Aristotle and St. Thomas both teach that measure is found first of all in number:

> Next, when [Aristotle] says, "*et quo primo*," he says in which species of quantity there is first found "one" and "measure." . . . First he shows that the notion of a measure is found first in discrete quantity, which is number, in saying that that by which quantity is known first is "the one itself," that is, the unit, which is the beginning of number. For "the one" in other species of quantity is not "one itself," but something to which "one" belongs; for example, we speak of "one hand" or "one magnitude." Whence it follows that the one itself, which is the first measure, is the beginning of number as number.[36]

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35  *De ver*, q. 1, a. 8, c.: "Dicendum, quod in rebus creatis invenitur veritas in rebus et in intellectu, ut ex dictis patet: in intellectu quidem secundum quod adaequatur rebus quarum notionem habet; in rebus autem secundum quod imitantur intellectum divinum, qui est earum mensura, sicut ars est mensura omnium artificiatorum." For more on the connection between truth and measure, see also: *De ver.*, q. 1, a. 4, ad 1; a. 5, c.; a. 6, c.; a. 10, c.; *De pot.*, q. 7, a. 10, ad 5; *In V Metaphys.*, lec. 17.

36  *In X Metaphys.,* lec. 2, n. 1939: "Deinde cum dicit et quo primo dicit in qua specie quantitatis primo sit unum et mensura. . . . Primo ostendit quod ratio mensurae primo invenitur in discreta quantitate, quae est numerus; dicens, quod id quo primo cognoscitur quantitas est ipsum unum, idest unitas, quae est principium numeri. Nam unum in aliis speciebus quantitatis non est ipsum unum, sed aliquid cui accidit unum; sicut dicimus unam manum, aut unam magnitudinem. Unde sequitur, quod ipsum unum, quod est prima mensura, sit principium numeri secundum quod est numerus." See also the other passage from *In X Metaphys.*, lec. 2, quoted earlier (note 31): "Measure, properly speaking, is spoken of in regard to quantities, for that is called a measure through which the quantity of a thing becomes known. And this is a least thing in the genus of quantity, whether simply [least], as in the case of numbers,

The unit measures number in a way that is prior to the way in which a magnitude is a measure of other magnitudes, and in a way that is also more perfect and universal, and more natural.[37] It is prior because whenever a magnitude measures a magnitude the unit also measures a number, but not vice versa; when a foot, for instance, is used to measure a yard, 1 of something has measured 3 of something, but it is not true that whenever 1 measures 3 a foot has measured a yard, or a magnitude a magnitude.[38] The unit measures number in a way that is also more perfect and universal because the unit goes exactly into every number (taking *number* in the strict sense of a multitude measured by one), and thus all numbers have a common measure,[39] whereas not all magnitudes do. And it is also more natural, because the unit is by nature and absolutely least in the genus of multitude and is altogether indivisible, whereas a magnitude taken as a measure is a matter of choice, is always divisible, and thus is least among magnitudes within some class, but not least among magnitudes

which are measured by the unit, which is the least simply, or else the least by our positing it, as happens in the case of continuous things, in which there is no least simply speaking."

37   The unit is also the first, most natural, and most universal measure of numbers. Other numbers besides the unit can measure composite numbers, as 2 and 3 measure 6, but 1 is the first measure of 6, since it also measures 2 and 3 but not vice versa. And it is most natural because it defines the numbers—"Et ideo dicit quod numerus est pluralitas mensurata uno," *In X Metaphys.*, lec. 8, n. 2091 ("And so he says that a numer is a plurality measured by one")— whereas other numbers that measure a number are taken for a special purpose and do not define them. And it is most universal, since 1 measures all numbers, but no number measures all numbers: "unum est prima mensura numeri, quo omnis numerus mensuratur," *In V Metaphys.,* lec. 8, n. 872 ("one is the first measure of number, by which every number is measured").

38   Hence St. Thomas can say in general that "the quantity of a thing," even of a magnitude, "is made known through the unit or a number" ("Quantitas vero rei cognoscitur per unum aut numerum"), *In X Metaphys.,* lect. 2, n. 1938.

39   "For all numbers have a common measure, namely the unit." *In V Metaphys.*, lec. 17, n. 1021 ("Omnes enim numeri habent unam communem mensuram, scilicet unitatem").

absolutely.[40] Of course, this inequality in the notion of measure as verified in number and magnitude does not imply that a measure in magnitudes is not truly a measure, or not properly so, or that it is not the concern of mathematics. But it does help to explain the Cartesian endeavor to arithmetize geometry, and the Dedekindian project of arithmetizing calculus.

In addition to distinguishing meanings of *measure*, St. Thomas also lays down certain principles or rules concerning measures. One such rule is that of one thing there can be only one proximate measure, although there can be many measures some of which measure others.[41] For instance, the proximate measure of 6 is 3, since that is the measure closest to 6 in quantity, and there is only one such measure of 6; but 6 is also measured by 2 and 1, which are further removed from 6 in quantity. Another rule is that a proximate measure must be homogeneous with what it measures, or in the same genus with it, but a remote measure need not always be in the same genus with what it measures.[42] Human law, for example, is in some way in the same genus as human action, being its proximate measure and numbering among things that proceed from human reason, whereas eternal law, being a remote measure of human action, is not in the same genus with it, or in any genus at all.

St. Thomas also draws another distinction among measures, one that is more pertinent to our present inquiry. This is the distinction between intrinsic and extrinsic measures:

> Measures are of two sorts. One is intrinsic, which is in the thing measured as an accident in a subject; and this is multiplied upon the multiplication of the thing

measured—for example, there are many lines that measure the length of many equal bodies. There is also an extrinsic measure, and this is not necessarily multiplied upon the multiplication of the bodies, but is in one thing as in a subject in relation to which the many things are measured—for example, many rolls of fabric are measured to the length of one ell.[43]

Of extrinsic measures, some are measures in the strict sense, while others are not, depending on whether they measure categorical quantity or instead something that is "quantitative" only in a broader sense. For example, law is an extrinsic measure of human acts,[44] not of quantities as such, and so it is not a measure in the strict sense, and it does not belong to the science of measure to study it. Similarly, the first truth is an extrinsic measure of created truths.[45]

Other extrinsic measures, by contrast, are measures in the strict sense, measuring categorical quantities:

A body is measured both by an intrinsic measure, such as a line [or length], a surface [or an area], or a depth [or a volume], and by an extrinsic measure, for example, a thing placed by a place, and a motion by a time, and a fabric by an ell.[46]

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43  *In II Sent.*, d. 2, q. 1, a. 2, ad 1: "[M]ensura est duplex. Quaedam intrinseca, quae est in mensurato sicut accidens in subjecto; et haec multiplicatur ad multiplicationem mensurati; sicut plures lineae sunt quae mensurant longitudinem plurium corporum aequalium. Est etiam quaedam mensura extrinseca; et hanc non est necesse multiplicari ad multiplicationem mensuratorum, sed est in uno sicut in subjecto ad quod multa mensurantur, sicut multi panni mensurantur ad longitudinem unius ulnae."

44  It is, at any rate, an exterior principle of them (see *ST* I-II, q. 90, *prooemium*.) This is opposed to the intrinsic law, written in the heart of one who is justified or upright (see *ST* I-II, q. 106, a. 2, c.).

45  *De ver.*, q. 1, a. 5, c. and ad 1; a. 6, c. and ad 1.

46  *De ver.*, q. 1 a. 5, c.: "Mensuratur autem corpus et mensura intrinseca, ut linea, vel superficie, vel profunditate, et mensura extrinseca, sicut locatum

That a place is outside the thing placed is clear enough. That a place or container is also a measure of the thing placed or contained in it is also plain: A measuring cup has its own dimensions, but also tells us how much liquid it holds. Hence place is an extrinsic measure of the placed, and it is also a measure in the strict sense, or at any rate it is a measure of quantity in the strict sense. A ruler or yardstick, too, is clearly an extrinsic measure of any length to which it is applied.

That time is an extrinsic measure is less clear. When St. Thomas explains this, he seems to suppose that time exists in the first motion as in a subject, and thus that it measures all other motions and rests in other subjects as an extrinsic measure.[47] It seems to me truer both to reality and to Aristotle's teaching on

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loco, et motus tempore, et pannus ulna."

47   "There is also an extrinsic measure, and this is not necessarily multiplied upon the multiplication of the things measured, but rather is in one thing as in a subject, in relation to which many things are measured . . . and in this way are many motions measured in relation to the number of the one first motion, which number is time, and many permanent things in relation to the unity of one permanent thing, which is aeviternity." *In II Sent.*, d. 2, q. 1, a. 2, ad 1 (Est etiam quaedam mensura extrinseca; et hanc non est necesse multiplicari ad multiplicationem mensuratorum, sed est in uno sicut in subjecto ad quod multa mensurantur, sicut multi panni mensurantur ad longitudinem unius ulnae: et hoc modo multi motus mensurantur ad numerum unius primi motus, qui numerus est tempus; et multa permanentia ad unitatem unius permanentis, quod est aevum); *In IV Phys.*, lec. 23, n. 636: "So, then, it is plain that time first measures and numbers the first circular motion, and through that it measures all other motions. Whence there is just one time, due to the unity of the first motion; and yet whoever senses any motion whatever senses time, because changeability is caused in all mobile things by the first motion, as was said earlier. . . . And so to understand the true unity of time one must have recourse to the unity of the first motion, which is measured by time first, and by which time is also measured." ("Sic igitur patet quod tempus primo mensurat et numerat primum motum circularem, et per eum mensurat omnes alios motus. Unde est unum tempus tantum propter unitatem primi motus; et tamen quicumque sentit quemcumque motum, sentit tempus, eo quod ex primo motu causatur mutabilitas in omnibus mobilibus, ut supra dictum est. . . . Et ideo ad accipiendam veram temporis unitatem, oportet recurrere ad

time, however, that time exists indifferently in all motions and is a number they all share when their termini coincide. But it is at least true that we can measure the number of a motion by something outside it, such as a clock, whether one on the wall or a cosmic clock such as the motion of the heavens (or the earth). Since time measures a multitude of parts of a motion, which is a quantity in the categorical sense, it follows that time itself (on St. Thomas's understanding), or else the motion of the device chosen for the measuring of time, is both an extrinsic measure and also a measure in the strict sense.

## *2. Three Extrinsic Measures Helpful to Consider*

As preparation for understanding the particular way in which a straight line can be a measure of a curve, I now propose to the reader's consideration three instances of extrinsic measure, one natural and two mathematical.

### *i) Average Speed*

Varying speed demands a measure. It seems to be somehow not one speed but many, and, if it varies continuously, infinitely many. Some of its speeds are faster than a certain uniform speed, others slower, others perhaps equal to it—but what shall we say of the whole motion that has varying speed? Is its "speed" equal to, less than, or greater than a uniform speed that it exceeds only at times? If we try to answer in terms of all the speeds that it somehow has, we can only say that at some points its speeds are greater, at others lesser, at others equal. The case is similar if we try to compare one part of a nonuniform motion with another. Thus a nonuniform motion is not comparable with a uniform one, nor is one part of it comparable with another, as

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unitatem primi motus, qui primo mensuratur tempore, et quo etiam mensuratur tempus").

one uniform motion is comparable with another; there is not one speed in it to consider, but many.

But what if there is a certain uniform speed among those belonging to the nonuniformly moving mobile that is somehow representative of all the different speeds it in some way has, and that is somehow a measure of their total power? This would deserve to be considered a measure of the mobile's entire speed. We may, for example, consider its average speed, the ratio or quotient of the numbers measuring the total distance covered by the motion and the total time it takes. Looking to this ratio or quotient, it becomes possible to numerically compare nonuniform motions with uniform ones and with each other.

Such a measure, however, is in some degree an extrinsic one. It is determined by two other measures of the motion, namely the total time it takes and the total distance it covers, and at least the total distance it covers is clearly an extrinsic measure since it does not inhere in the motion as in a subject.

## ii) The Angle between Tangents

A curvilinear angle requires a measure because we tend to think of one as greater than another. It may not be possible to rotate one leg of it until it coincides with the other, if the two curved legs do not happen to be alike in form, scale, and orientation. In such cases, the rotation of either leg considered by itself cannot define the measure or quantity of the angle between the legs.

But what if there is a certain straight line associated with each curve at the point they have in common, which line is somehow indicative of the orientation or rotational position of the curve? Then the angle between these straight lines would constitute a measure of the angle between the curves, since the rotational difference between the straight lines would somehow indicate or be the same as that between the curves. And this is

the case with the two tangents to the curves at their common point. Neither curve cuts its tangent, but at the point of tangency shares with it the same "instan-taneous direction"—the direction in which it is "going" at the common point; and either one would cut its tangent if it were rotated by however small an amount we please while its tangent is kept still. Moreover, if one curve together with its tangent is rotated until its tangent coincides with the other tangent, then the rotated curve will now be tangent to the other curve—its angle with the other curve will have been closed up completely, even though the two curves do not coincide. Though they do not coincide, they now *touch* rather than cut at the point they share, and the difference in their rotational position has been entirely removed. Thus do the tangents represent the rotational positions of the curves, and thus does the angle between the tangents measure or make known the angle between the curved legs themselves. (Note that, according to this measure of a curvilinear angle, the cornicular angle discussed earlier has a value of zero.)

Such a measure, however, is extrinsic. With the exception of the single point at the vertex of the angles, the tangents may lie entirely outside the curves, and the rotation of one into the other is not the rotation of the curve into the other curve.

## iii) Equimultiples of Proportional Magnitudes

Ratios among magnitudes require a measure (although a ratio does not have a "quantity" in the first and strictest sense). Intuitively, we have the sense that if two ratios are not the same, one of them must be somehow greater than the other. But in what can this "greater" consist? If we say that $A : B > C : D$, for example, do we mean that $A > C$ and that $B > D$? Hardly, since we would say that $10 : 1 > 100 : 11$, even though $10 < 100$ and $1 < 11$.

But what if we "scale up" the first ratio, by taking some multiple of its terms, so that its antecedent is the same as that in the second ratio? Then we will have levelled the playing field, and we might be able to make a comparison. Multiplying both antecedent and consequent in the first ratio by 10, we have the new ratio 10(10) : 10(1), or 100 : 10, which is the same ratio as 10 : 1 except that it is between different numbers. And now we also see clearly that 100 : 10 > 100 : 11, since the antecedent in each ratio is the same, and yet in the first case that common antecedent exceeds the consequent by more.

We cannot always use this method in the case of magnitudes, however, since if $A$ and $C$ are incommensurable magnitudes, it is not possible to multiply them so that the results are equal magnitudes. Euclid gets around this difficulty in his definition of same ratio by taking equimultiples of $A$ and $C$ and of $B$ and $D$ instead, as $mA$, $nB$, $mC$, $nD$, and looking to see whether $mA$ and $nB$ have always the same order of inequality as do $mC$ and $nD$.[48] This, too, levels the playing field for the two ratios, making comparable their powers to produce inequalities. So we say that if it ever happens that $mA > nB$, but $mC \ngtr nD$, then $A : B > C : D$.

In thus comparing ratios of magnitudes, we are employing their equimultiples in some sense as measures. And clearly they are extrinsic measures, since they do not compose the terms of the ratios being compared, but instead are composed by them.

### 3. The Straight Line that Is an Extrinsic Measure of a Curve's Length

The length of a finite curve requires a measure. One may wonder whether a curve even has a "length" at all, particularly if it nowhere maintains a uniform curvature, as we find in the case of

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48  *Elements,* Book 5, definition 5 (Heath, vol. 2, 114).

a semiparabola. In that case, it will not be divisible into identical parts, and so no single unit of length can be laid off within it. Such a line does not have length in that way, that is to say, uniformly and homeomerically.

But every line must have both length and a measure. Either a line has no length, or it has some length, and if some, either many lengths or one length. It cannot have no length, since, as Euclid says, a line is by its essence a breadthless length; a line with no length would be like a surface with no area, or a number with no multitude. Besides, a lengthless line would seem to be a point, since it has no length, no breadth, and no depth. So every line has length somehow. And it is not possible to have length without having so much of it, and thus it is also necessary for a line to have a measure: "For a line is a measurable length."[49] Nor can a single curved line, such as a semiparabola, have many lengths, since in that case it will either have finitely many or infinitely many. Not finitely many, since in that case the curve would be somehow naturally broken into, say, five lengths, whereas it is one and continuous, not naturally divided. Nor infinitely many, since then each one of those infinitely many lengths must have no length, in order for the whole not to be of infinite length, and so we would now be composing a length out of non-lengths, which is impossible. It remains, therefore, that a curved line has a single measurable length, though possibly a nonuniformly arranged one.

Despite its non-uniformity, its parts must also be comparable with one another. They might not be able to coincide at all except in points, as happens in the case of the semiparabola. Even so, their incapability of coinciding cannot possibly cause the parts to be incomparable. If they did, then we would be back

49   *In V Metaphys.*, lec. 15, n. 978: "Linea enim est longitudo mensurabilis."

to saying that the line has no length, since a single length,[50] which is a quantity, cannot be composed of incomparables, any more than it can be composed of indivisibles. A continuous quantity cannot be composed of an area, a volume, and an angle, for instance. Instead, there must be a likeness of nature throughout the quantity: "Every continuous thing has something univocal between its limits."[51] And

> whenever from many things brought together something one comes to be, it is necessary that there be the same nature of quantity in each; and in this way from many little lines one line comes to be; but where there is another nature of quantity, from the many one does not come to be; for from many numbers one line does not come to be, nor conversely.[52]

Still, knowing that a finite portion of semiparabola (or any such curve) has comparable parts and must have a single and

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50   A semiparabola must have a single length since it is a single line. True, an irregular curve, and especially a jointed path, is not as unified or one as a straight line is or as a circle is: "An irregular motion can be called 'one' inasmuch as it is continuous, but it is called 'less one' than the regular, just as a line having an angle is called 'one' less than a straight line" (*In V Phys.*, lec. 7, n. 713). But even a straight line is less "one" than a circle is: "It is clear that a circular line is most one, because it has not only continuity, as a straight line does, but has also wholeness and completeness, which a straight line does not have. For that is complete and whole to which nothing is lacking, which indeed belongs to the circular line. For no addition can be made to it, as can be made to a straight line" (*In V Metaphys.*, lec. 8, n. 871).

51   Aristotle, *Physics* 6.3, 234a9; St. Thomas, *In VI Phys.*, lec. 5, n. 791: This is the nature of every continuous thing, that between any two indivisibles [in it], there must be a continuous middle; for example, a line between any two points" ("Haec est enim natura omnis continui, quod inter quaelibet duo indivisibilia sit continuum medium, sicut inter quaelibet duo puncta, linea.").

52   *De malo*, q. 7, a. 3, c.: "[Q]uandocumque ex multis aggregatis fit aliquod unum, oportet esse eamdem rationem quantitatis utrobique; sic autem ex multis parvis lineis fit una linea; ubi vero est alia ratio quantitatis, ex multis non fit unum; non enim ex multis numeris fit una linea, nec e converso."

somehow measurable length is not the same thing as knowing its length, or even knowing what sort of measure it can have or how its parts can be compared with one another.

But what if there is a determinate and finite straight line that, while incapable of coinciding with the curve in anything but points, presents us with some reason for saying it has the same length as the curve? This is just what mathematicians say. The straight line they thus associate with a given finite curved line is the limit of the sums of the chords inscribed from one endpoint of the curve to the other, as the number of these chords increases without limit and the size of each one becomes less than any assigned length. For convenient reference, I will call this straight line the "limit line" for the curve, denoting it as $L_C$ for a given curve $C$.

Does such a limit actually exist? Depending on what counts as "a construction," construction of such a line is not always possible. Construction, however, is not in general a requirement in mathematics for verifying something's existence or truth, though it sometimes is necessary. The same may be said for proof. Neither construction nor proof is required in the case of things that are first. One need not construct straight lines from more elementary things, for instance, or possess a demonstration, in order to know that straight lines, in general, "exist." Of course, a construction may be necessary in order to verify the existence of a particular straight line, such as "the straight line through points A, B, C," which points are in some way given. Similarly, that circles exist at all is evident without proof or construction, although the existence of a circle through certain points A, B, C, and D may not be knowable apart from construction and proof. Moreover, some things can be known in mathematics with certainty even if they are not yet known through proper causes. For example, the existence of triangles in general is known with certainty, if not as soon as (or even before) one knows the definition

of *triangle*, then certainly by the time one has seen how to construct an equilateral triangle on a given finite straight line. But that is not the same thing as scientifically understanding the universal causes responsible for triangles as a genus, the causes that explain why triangles are possible at all, or the conditions under which they are possible. That sort of knowledge must wait until one sees the demonstration that three straight lines can contain a triangle if, and only if, any two of them taken together add up to a length that exceeds the third.[53] Again, prior to determining the center of a given circle, one knows with certainty that it has a center, simply by the fact that it is a circle. And, prior to discovering a way to construct a third of a given finite straight line, one knows, simply by reason of continuity, that the line must be divisible into three equal parts.

Similarly, one can know the existence of the limit line for a given finite curve even without knowing how to construct it. The sums of successive inscribed chords cannot be made to exceed any given length; that much is demonstrable. Similarly, the sums of successive circumscribed tangents cannot be made as small as we please. Moreover, the sums of the chords and of the tangents can be made as near to equal as we please, and this, too, is demonstrable. Nor is there a greatest of the inscribable sums, or a least of the circumscribable ones, which is likewise demonstrable. Now, lengths of straight lines exist within a continuum, and this continuum must be divisible into the range in which lengths are equal to a sum of inscribed chords in our curve, and another range in which lengths are instead equal to a sum of circumscribed tangents. How can the continuum contain these two distinct ranges? Only if it is thus divided by a boundary length between those lengths that can be broken up into an inscribable set of chords and those that can be broken up into a circumscribable set of tangents. This bordering length, being greater

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53  See Euclid, *Elements*, Book 1, proposition 20 (Heath, vol. 1, 286–87).

than all the inscribable lengths and shorter than all the circum-scribable ones, is the length of the limit line.[54]

More could be said about this way of knowing the existence of something, but let that suffice for the purposes of this essay. Supposing that such a limit line exists for each curve, is it somehow a measure of the curve's own length? Evidently it must be an extrinsic measure if it is a measure at all, since it is a separate line lying entirely outside the curve and is incapable of coinciding with it. But is it nonetheless a measure of the curve?

Three different kinds of indication show that it is. First, the length of the curve and that of the limit line result from all the same causes. What are the causes of the length of the finite curve? There are three: the species of the curve (e.g., "circular arc x"), its scale (as determined, e.g., by the length of the circle's radius from which arc x was taken), and its terminations or endpoints (e.g., if these were taken on a circle so that arc x is one third of the whole circumference). If any one of these is left indeterminate, the length of curve is indeterminate; an infinity of different curved lines share species and scale but differ in length because of where their endpoints have been taken, for instance, and similarly an infinity of curved lines differing in length share endpoints and species (e.g., different circular arcs standing on the same chord). If all three are given, then the length of the curve is set.

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54  One could object that the same sort of argument might be proposed for showing that two numbers have the same ratio as the side and diagonal of a square, like this: "Of all the numerical ratios, there is a range of them that are less than the ratio of side to diagonal, and also a range that are greater, and none are neither. Surely, then, as one climbs from the range of ratios that are less to the range of ratios that are greater, one must pass through a numerical ratio that is equal to the ratio of the side to the diagonal." But of course that is false and impossible. This argument, however, is quite unlike the one made in the case of the limit line: Numerical ratios do not constitute a continuum, but something more like a set of ratios that can be found within a continuum.

What, now, are the causes responsible for the length of the curve's limit line, the straight line we have defined in relation to the curve? Its length is caused entirely by the series of successive chord-sums (or tangent-sums) of which it is the limit. But what is responsible for those chord-sums being such as they are? Nothing else than the species, scale, and endpoints of the finite curve itself. Hence, the same three causes fully determine both the intrinsic length of the curve and also the length of its limit line. Since these two lengths depend on all the same formal causes, they must be somehow the same. These three factors are not formal causes in the same sense in relation to both the curve's length and the length of the limit line; in the case of the curve's own length, its species, scale, and endpoints are intrinsic formal causes, whereas in relation to the length of the limit line these factors constitute an extrinsic formal cause (one might even say an exemplar).

Note that the same cannot be said for a "stepped path" that we can draw in association with a curve. We encountered this sort of path earlier, when we constructed the right-angled steps running from one end of curve AK to the other. Consider just the first step, composed of lengths AB and BC. What determines these? The first step begins with A, a point on curve AK, and the second ends with C, a point also on the curve. But these two points do not suffice to determine the lengths of the two lines AB and BC. That was decided by where we chose to take B, which was arbitrary. And the cause of the sameness of the length of the stepped path from A to K regardless of how many steps we take is caused not at all by the curve, but solely by our insistence on using the same arbitrarily chosen directions (e.g., horizontally and vertically) in which to draw successive lines in the path. Hence a stepped path from A to K that had no points in common with the curve at all other than A and K would also have the same length AR + RK, so long as it was composed entirely of
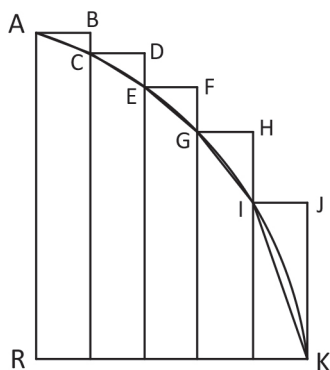
lines alternatingly drawn to the right and downward. Since the stepped path is thus determined by causes other than those that fix the length of curve AK, it is capable of having a length that is not equal to that of the curve. By contrast, the limit line depends on nothing but the features of the curve itself, the very ones responsible for its length, for which reason the length of the limit line must be regarded as equal to that of the curve—if indeed the effects issuing from the same causes must be the same.

Moreover, that sameness in the two lengths is confirmed by the sameness of their own properties and effects, which we come to next. This is the second sort of indication that the length defined is a measure of the curve's length: The length defined conforms to all the laws that ought to apply to the lengths of curves. First of all, there is one and only one limit line for a given finite curve, just as it has one and only one length. Moreover, this is true no matter how one takes the chords, so long as they are taken in a way that respects the definition. Again, it is true whether one takes the limit of inscribed chords or that of circumscribed tangents (which is unsurprising, since both arise from the same causes responsible for the curve's own length). This single length of straight line, in other words, is very strongly and uniquely associated with the curve. And, as one would expect, the length of curve as reflected in the length of its limit line can be either 1, fractional, finite but incommensurable with 1, or infinite, depending on the length of curve taken, and of course the length of a point is zero. Furthermore, the lengths of the limit lines of the parts of a curve are additive. If a curve C is

divisible into parts A and B, so that A + B = C within the curve itself, it is also true of the corresponding limit lines outside it that $L_A + L_B = L_C$. Nor is this true by definition; each of these three limit lines is fully defined independently of the other two. Nonetheless, it can be proved that the equation holds: Those two straight lines that are limits add up to the third one, and the cause of this is the fact that A + B = C within the curve itself. Again, the midpoint of a curve as determined according to its own intrinsic length and measure is the same as its midpoint according to the extrinsic measure of its length by its limit line; in other words, if curve A is half of curve C, then so too is $L_A$ half of $L_C$. And the same is true of any portion of curve C. This, too, while it is true, is not true by definition, since $L_A$ and $L_C$ are defined independently of one another; it is just a consequence of the limit lines being faithful to the lengths of the curves by which they are defined.

A third type of indication that the limit line for a curve is somehow a measure of its length is that it shares the known or expected metrical properties of the lengths of curves. For example, we know (or at the very least expect) that the circumference of a circle with a radius of 3r is triple that of a circle with the radius r, and, in agreement with this, it is also true that the limit line of the one circumference is triple the limit line of the other. Again, we expect the ratio of circumference to diameter to be the same in all circles, if the length of a circumference can be expressed in a straight line—and indeed the limit line of any circumference has always the same fixed ratio to the corresponding diameter.

## V - Why the Question Is Disputed

From the foregoing considerations, it follows that curved lines can be measured by straight ones and bear ratios to them. A

unique limit line exists in association with a given finite curve, and it bears the same properties that we know or expect to belong to the length of the curve itself. Lengths of limit lines also result from the same causes that are responsible for the intrinsic lengths of their corresponding curves. Accordingly, they are measures of the lengths of those curves.

But they are clearly extrinsic measures. An arc of a circle that is exactly one third of its circumference is an intrinsic measure of that circumference. But a limit line equal to that arc lies outside the circumference, and cannot be made to coincide with it in anything more than two points. So it is still somehow a measure of the circumference, being equal to one third of it, but it is an extrinsic measure.

This way of resolving the question of the comparability of curves with straight lines preserves all the elements of truth that came out of the earlier dialectical investigation of the matter. It concedes that the most fundamental way of verifying equality among lines, and among magnitudes generally, is coincidence and intrinsic measure. Unlike those who say that curves are composed of infinitely many infinitesimal straight lines, the foregoing resolution leaves intact the obvious impossibility of getting a curve and a straight line to coincide in any length, however small. But it also acknowledges that curves and straight lines must be comparable somehow, witness everyone's natural intuitions, physical facts, and the estimable authority and results of the mathematicians. What makes it possible to affirm all of these things is the use of straight lines as extrinsic measures of curves, just as a rectilineal angle is an extrinsic measure of a curvilinear one.

The resolution also explains why disagreement on the question is possible. Intrinsic measure would seem to have the *ratio mensurae* first and most perfectly, while extrinsic measure has it in a secondary way, and is also less known to us, at least

in mathematics. Moreover, intrinsic measure is used throughout mathematics, while extrinsic measures are rarer, and are in some sense a last resort or a way of making do. But if the nature of certain things in mathematics not only permits but even demands the use of extrinsic measures in order to understand them and their quantities, then we should be willing to acknowledge them and be aware when we are doing so. Lack of familiarity with the concept of extrinsic measure, or with the need for it in mathematics, or else a preference to exclude such measures in favor of relying solely on intrinsic measure presents an obstacle to correctly understanding the comparability of curves and straight lines and leads to disagreement.

On the other hand, those who affirm the comparability of curved and straight, but who are unaware of the notion of extrinsic measure or do not wish to avail themselves of it, will likely in their explanation of that comparability fall back upon the notion of intrinsic measure, which is more known and more commonly used in mathematics. Following intuition and other indications, they acknowledge that curved and straight are somehow comparable. Adhering to the notion of intrinsic measure and coincidence, they conclude that this is the basis of such comparability, and therefore that straight and curved coincide ultimately, or that a curve is made up of infinitely many infinitesimal straight lines, or that we may simply imagine a curve as being "straightened" in mathematics. Thus, while preserving some facts, they do violence to others.

Those who see that straight and curved lines can in no way coincide, and that talking of curves consisting of infinitely many infinitesimal straight lines is really talking nonsense, might also happen to be unaware of the notion of extrinsic measure or of the need for it in mathematics, or else might be for some reason unwilling to use it in mathematics at all or at least in this instance. In that case, they are apt to conclude that straight lines

and curves are in no way comparable, since they are in no way capable of coinciding, which is the first and most known method of measuring length and other magnitudes, and the sole means of carrying out intrinsic measurement of them. Those thinking in this way end up dismissing whole areas of mathematics and showing insufficient regard for the minds of mathematicians. In this way, they preserve and do violence to different sets of facts from the ones preserved and violated by those who see no difficulty in comparing curved lines and straight ones. And thus disputes may arise.

One final question is why there is a need for an extrinsic measure in the case of comparing curved and straight lines. The obvious reason has already been mentioned, namely that straight lines cannot coincide with curved ones. But the question remains whether this is our fault or theirs. If intrinsic measurement is the gold standard in mathematics, why do we sometimes find we have to make use of extrinsic measures? Oftentimes, when we cannot use the most perfect method of knowing something but must use one less perfect, the fault lies with us. Other times, the fault lies with the things themselves. Which is the case here?

When comparing ratios among magnitudes, we must resort to the use of extrinsic measures (or else imperfect intrinsic ones that do not always measure the original magnitudes exactly), namely, equimultiples, and the culprit responsible for this state of affairs is incommensurability, which is a way in which the things themselves fall short of perfect measurability. Similarly, we must measure angles between curved lines by using the angles between straight ones because angular quantity exists less perfectly, intelligibly, and simply in curvilinear angles. Measuring curves with straight lines extrinsic to them seems to be like these cases. We cannot employ a common intrinsic measure of a curved line and a straight one, because there is no intrinsic measure common to both. Using straight lines as the

common extrinsic measure of all length, rather than some curve, seems also to be forced on us by the nature of the things, since all curves participate more and more in straightness, or diverge from it less, as we take smaller and smaller portions of them. In other words, there is not some more perfect way of comparing the lengths of all lines than the one we find available to us. Rather, the way described by the mathematicians seems to be the only way in which all lines are somehow comparable.

The situation does not arise because we are imperfect measurers, then, but because the lines in question are imperfectly measurable. Irregular lines, such as semiparabolas, involve this imperfection even within themselves. Others have their own intrinsic measures quite perfectly (e.g., circumferences of circles are in some sense even more perfectly measurable than straight lines, as noted earlier), but these cannot intrinsically measure all other lines. The very notion of length itself seems to be found less perfectly in some lines than in others, if length, being a continuous quantity, means "a continuation of the same thing," as in general quantity means "more and more of the same." But imperfection is not the same thing as simple nonexistence, nor is it sufficient reason to banish something from the consideration of the mathematician. Incommensurables are in some sense imperfectly measurable, yet they belong in mathematics. Curvilinear angles are in some sense imperfectly measurable, yet they belong in mathematics. So too the common measurement of all lines requires a method that falls short of the most perfect definition of measurement yet still belongs in mathematics.

So, from the fact that something has a less perfect *ratio mensurae* it does not follow that the knowledge one acquires by means of such a measure is less perfect than a knowledge of it through some other measure. That cannot be true when there is no other measure, as in this case. Nor is it true when a thing's very intelligibility is imperfect, and for that reason depends on

something extrinsic. An accident cannot be understood except through something outside it, namely, a proper subject, and that is not our fault, but simply the imperfect way in which an accident has an essence. Similarly, motion and time cannot be fully understood without their subjects, but they also cannot be fully understood without the soul, since they cannot even fully exist without it. And creatures cannot be known by God except through himself, the extrinsic measure of them all, precisely because his knowledge must be supreme, and the supreme knowledge of them is through his substance and by how much they participate in it, whereas they are less perfectly knowable as they are in themselves.

# DARWIN'S INSIGHT: INDETERMINACY IN BIOLOGY[1]

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Although indeterminacy is a general feature of the natural world, it is in the biological world that this indeterminacy exists in its most significant and striking form. But the meaning of it in the biological world has gone largely either unnoticed or misinterpreted or both—even while its misunderstood presence has become a source of endless debate. I am going to argue in this essay that it is Darwin, first and foremost, who began to see the reality and significance of indeterminacy in the biological world. It isn't that he named it as such, but he recognized it, and saw at least some of its potentially vast significance.

One cannot, however, understand indeterminacy (at least philosophically) otherwise than as opposite to some kind of determinacy, and so if one misconceives the possible kinds of determinacy in created reality, the possibilities for indeterminacy will also be either misunderstood or simply unrecognized. This is part of what has led to debates over Darwin's theory, which began nearly at the very moment he published the theory and have continued ever since. Disagreements about the theory have been predicated largely upon tacit premises which are actually held in common by both Darwin's supporters and his opponents, but not, notably, by Darwin. Darwin himself had a fairly clear picture of what biological indeterminacy looks like, even if he didn't name it as such. It is more his followers who solidified the misinterpretation of what he himself had seen.

What I am going to argue here is that the key to understanding Darwin's theory is very decidedly not in the direction of the so-called "mechanistic" view of the world which Darwin

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1 This essay is the adaptation of a chapter from the author's book *The Search for Cosmic Meaning: Modern Science and the Pursuit of Wisdom,* forthcoming from the Boethius Institute.

is customarily associated with, but in the opposite direction—in the direction of the very teleology which Darwin is thought to reject, both by his supporters and his enemies.[2]

While this discussion will help us to better understand Darwin's theory and biology, it will also broaden and amplify one's understanding of the character and direction of modern science as a whole. This should help us to see that the things addressed bear upon the most universal questions that we can ask about the nature of our world and the cosmos as a whole, as well as about the science which tries to explain our cosmos. At the same time, this discussion should incidentally afford us an opportunity to revisit in a fresh way what might otherwise seem to be a rather worn-out debate about "Darwinism" versus "creationism."

I should note, however, that my main concern in what follows will not be to argue directly for or against evolution on

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2  An impartial reading of Darwin's seminal work *The Origin of Species* does not lend itself to the conclusion that Darwin rejected teleology, much less that he was trying to find an alternate "mechanistic" account of biological realities. Darwin writes very often of the purposes and the goods that natural selection accomplishes, and of the biological needs that it fulfills. What is more, his account of how this comes about not only acknowledges the fulfillment of biological ends but also describes how those ends can be understood as not merely factual but also causal. This essential criterion for a sufficient teleological theory is often overlooked, the result being a quasi-occasionalism implicitly espoused by those who defend what they call "creationism." The entire philosophical case against Darwin on the part of those who oppose him is largely based on no more than a presumption—one which happens to also be shared by most of Darwin's supporters—that natural selection cannot be understood teleologically, but only "mechanistically." A large part of the purpose of this essay is to show that this presumption is finally not defensible, once we understand the idea of "mechanistic" explanations. To be clear, incidentally, we should say that not all of Darwin's supporters rejected teleology, or understood Darwin himself that way. For example, there is a large body of correspondence between Darwin and his friend Asa Gray in which they discuss the compatibility of teleology with Darwin's theory. Gray himself, a botanist at Harvard, was both a supporter of Darwin's theory and also a defender of natural teleology. See *Letters of Asa Gray*, Vol. II, ed. Jane Loring Gray (Houghton Mifflin and Company, 1894), 454ff.

scientific grounds. I take the scientific evidence for evolution to be serious and compelling, but my aim here will be to cast the discussion of evolution in a new philosophical light, one which will enable us to contextualize the theory more adequately than the usual presumptions allow. A further caveat is this: Although developments since Darwin's time have refined his original ideas to a considerable degree, I will only be discussing the initial theory of Darwin himself. Doing this is useful because the initial philosophical presumptions and implications are still the same today, even though their implementation has developed. This examination will help us see that Darwin's theory is not just a scientific one, but by its tacit implications and presuppositions a very philosophical one which carries considerable weight.

On a historical and contextual note, it seems worth noting that Darwin's theory was attacked on both scientific and philosophical grounds more or less from the moment of its inception. But it seems to have been largely the philosophical objections which were most influential among Darwin's opponents, scientific objections often being raised more as an afterthought. Darwin, for his part, considered himself less a philosopher in the customary sense of that word than a careful scientific observer of the natural world. As a result, some of those who opposed him felt leave to pretend to a greater and more sophisticated understanding of philosophical matters than they thought Darwin himself could marshal. And thus in the unfortunate history of the debate which ensued, Darwin's own name has often become, among his opponents, practically a trade-name for what is taken to be heretical and philosophically untenable thinking. But there is more than a little irony in this, for Darwin's theory is not only compatible with philosophy, but in fact animated by deeply astute philosophical instincts—not, to be sure,

explicitly articulated ones for the most part, but no less real for that.[3] Darwin was in effect a far better philosopher than he was given credit for being even perhaps by himself, and he was a better philosopher than some of his main opponents pretended to be.[4] He was such not by any habitual use of the conventional philosophical terms and customs, but by an aptitude and

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3  One striking example of this is this passage from chapter 5 of *The Origin of Species*: "He who believes that each equine species was independently created, will, I presume, assert that each species has been created with a tendency to vary, both under nature and under domestication, in this particular manner, so as often to become striped like other species of the genus; and that each has been created with a strong tendency, when crossed with species inhabiting distant quarters of the world, to produce hybrids resembling in their stripes, not their own parents, but other species of the genus. To admit this view is, as it seems to me, to reject a real for an unreal, or at least for an unknown, cause. It makes the works of God a mere mockery and deception; I would almost as soon believe with the old and ignorant cosmogonists, that fossil shells had never lived, but had been created in stone so as to mock the shells now living on the sea-shore." Darwin clearly recognizes, here and elsewhere, that the views of some of his opponents amount to something nearly akin to the philosophical theory called occasionalism. Although he doesn't call it that by name, he recognizes that this kind of theory applied to the natural world is not a tribute to the power of God, and it does not help to defend what is claimed as being the "creationist" alternative to evolution.

4  This seems to be especially true of George Jackson Mivart, who quite early on wrote influentially about what he viewed as the deficiencies of Darwin's theory. Mivart refers copiously to well-known traditional philosophical works in his criticism of Darwin, in particular to the work of Aquinas. But it is not clear that Mivart understood well the philosophical ideas on the basis of which he tried to criticize Darwin. It is striking, for example, that Mivart criticizes Darwin on the supposed ground that natural laws do not support Darwin's way of thinking; but Mivart rarely if ever expresses a recognition of the fact that laws must be grounded in causes, and even less does he see the implication of that grounding in the possibility that there should be different kinds of laws deriving from different kinds of causes. And so when Mivart proposes alternatives to Darwin's theory, he completely fails to anticipate a need to look for different kinds of laws in different circumstances. Darwin, on the other hand, even while not professing to be a philosopher, still thinks much more philosophically about the real foundation of natural laws.

sensitivity to the natural world that, had it been better recognized and understood, might have given to the tradition of "natural philosophy" more of the credit it could have deserved.

## *A Heuristic Key for Thinking Philosophically About Evolution*

To avoid the worn paths of conventional debate over Darwin's theory, I am going to begin by proposing a heuristic principle, an interpretive key, for thinking philosophically about the question of evolution. One place where we find this key is in a seemingly obscure passage in the logical treatises of Aristotle. He writes this about what a definition is:

> Another kind of definition is a formula exhibiting the cause of a thing's existence. Thus the former signifies without proving, but the latter will clearly be a demonstration of essential nature, differing from demonstration in the arrangement of its terms.[5]

Various translations of this passage (including the one just quoted) have difficulty figuring out how to translate "differing from demonstration in the arrangement of its terms" (τῇ θέσει διαφέρων τῆς ἀποδείξεως) in an intelligible way. Some translations suggest that definition differs from demonstration by having terms "differing in position," and so forth. This doesn't seem to help much if we want to grasp what the point is. We may best understand the point by means of real, historical, scientific examples.

When J. C. Maxwell had finally articulated his theory of electromagnetism and had understood how electricity and

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5  *Posterior Analytics* 2.10, 94a: "Εἷς μὲν δὴ ὅρος ἐστὶν ὅρου ὁ εἰρημένος, ἄλλος δ᾽ ἐστὶν ὅρος λόγος ὁ δηλῶν διὰ τί ἔστιν. ὥστε ὁ μὲν πρότερος σημαίνει μέν, δείκνυσι δ᾽ οὔ, ὁ δ᾽ ὕστερος φανερὸν ὅτι ἔσται οἷον ἀπόδειξις τοῦ τί ἐστι, τῇ θέσει διαφέρων τῆς ἀποδείξεως."

magnetism interact, it became apparent through a mathematical argument that this interaction should be able to produce, and thus exist in the form of, a wave. In Aristotle's terms, we could say that Maxwell "demonstrated" the existence of this wave from its electrical and magnetic causes or "principles" even before it was actually observed. So, at least, it was thought. The ironic thing which was only later discovered is that the wave had already been observed, and was in fact deeply familiar to us before electromagnetic theory ever even existed. The wave was light! It took some time to discover and show experimentally that the eminently familiar element of experience that we call light was the very electromagnetic wave Maxwell had predicted, but in time this was proven without any reasonable doubt. (More precisely what was proven is that the light by which we see is a particular instance of this kind of wave).[6] Thus it became possible, in a way that had not been directly anticipated, to understand what light is, by recognizing it—by defining it, in effect—as an electromagnetic wave.

In this example we see a connection between two things, namely, a definition of something and a demonstration of that thing's existence from what causes it. Definition and demonstration cannot, however, be the same thing, since the second asserts something, whereas the first merely articulates an "essence" or a what it is; yet it is apparent from examples such as this that these are intimately connected. For to see what something comes from is virtually to know what it is.

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6   The proof of it consisted mainly in measurements of the speed of light compared with the speed that theory predicted for the electromagnetic wave. Since waves have distinctive speeds determined largely by characteristics of the media through which they travel, the fact that the speed of light is the same as the predicted speed of the electromagnetic wave was a compelling proof that these are in fact the same thing. There was also other confirmatory evidence, such as the fact that light responds to electromagnetic influences; it can be polarized, for example, by magnets.

This connection between demonstrations of existence and definitions is a logical application of a universal metaphysical fact, which is that in things which are essentially effects caused by something else, the same essential causes through which they exist and can be shown to exist are also the principles for the account of what they are, or of their essence.[7] Another, perhaps better and less technical sounding way to say this is to say that proofs of existence are closely connected with the discovery of meaning, which is what a real definition (not just a dictionary definition of a word, but a definition of what an actual thing is) provides.

Our heuristic principle, then, is that whenever we prove the existence of something, we are also at least implicitly defining that thing. How does this help us in understanding Darwin's theory of evolution? Often in traditional debates about Darwinian evolution, the entire question is framed as if it were merely about matters of "fact," not calling for any attention to what anything is. But the principle just enunciated tells us that whenever we examine the proper (and not merely accidental) causes of things in order to show their existence, our examination has a decisive bearing on what those things are, and thus on meaning.[8]

But this is not all, for the reverse is true also: Often attention to the question "what is it" can set us on the path to a more adequate search for the causes of a thing. Thus although a definition is not the same as an assertion, and not true in exactly the

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7   Aristotle's own example of this, although based on a largely fictitious idea, reveals the same thing: If it were true, as was once thought, that thunder is the "quenching of fire in the clouds," then it would also be provable ("demonstrable") that thunder should exist whenever fire is quenched in the clouds. See *Posterior Analytics* 2.8.

8   It is helpful to read the entire context of the passage from Aristotle quoted above, as it spells out the implications of a nominalist understanding of what definitions are, and also of the importance of attending to the causes of a thing before one can hope to define it adequately.

same way that an assertion is true, attention to the question of what something is can often be a decisive step in the search for what its causes are.

This is an important heuristic principle not only here but for all scientific and philosophical thinking, because it gives depth to our rational pursuits. For it can be no better than a caricature of reason to think that it merely consists of seeking always the same kind of flat rational arguments for this or that "fact," all being of some equal but ultimately uncertifiable meaning. Rather, reason is always towards or from principles, "first things," that are rooted in the "what it is" and the meaning of each thing. These principles also give meaning to the arguments that proceed either from them or towards them. Many if not most of the time-worn arguments over evolution simply ignore this; but as we shall see in a moment, understanding it can have a considerable bearing on how we think about Darwin's fundamental idea.

## *Darwin's Intuition*

Darwin opens his classic work *The Origin of Species* with these memorable words:

> While on board H.M.S. 'Beagle' as naturalist, I was much struck with certain facts in the distribution of the inhabitants of South America, and in the geological relations of the present to the past inhabitants of the continent. These facts seemed to me to throw some light on the origin of species—that mystery of mysteries, as it has been called by one of our greatest philosophers.[9]

Why was Darwin "much struck" concerning a "mystery of mysteries"? These phrases suggest an intuition, which is generally

9  *The Origin of Species,* p. 1. Darwin refers here to English astronomer and polymath scientist John Herschel.

not only about arguments but also about meaning. What, then, is the meaning of "geological relations of the present to the past inhabitants of the continent"?

No argument is required to recognize that geology, as well as its close cousin geography, is a matter of very high contingency and indeterminacy. One does not demonstrate the geology of a continent, or its geography, in the way that one demonstrates that a triangle has two right angles. While there are certainly physical, chemical, and cosmological principles that exist and can help us to explain matters of geography or geology, no one would on that account conclude that the latter are themselves exactly "science" in a strict sense.[10] They are matters of contingent history.

What Darwin is expressing in the opening lines of his work, in a succinct and provocative manner, is the intuition that the world of living beings is not exempt from this very same contingency and indeterminacy that we find in geography, geology, and history. These apparently separate realms, that of the living and that of the terrestrial non-living, are not as separate as they seemed to be at first. This is not just an assertion about a "fact," but an intuition about meaning—more precisely, about what living things are in the determinate forms in which we find them. Why are the inhabitants of the Galapagos Islands distinctive in their forms? Answer: because these inhabitants are geographical beings. They have geography inscribed in their very nature.

I say that this is "intuition" rather than just an assertion of "facts." I do not mean that it has nothing to do with facts, nor am I suggesting that there is anything called "intuition"

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10 Hegel might be an exception to this assertion, but perhaps even he only by way of a kind of conceit of his. The conceit is intellectually useful, if by it we begin to apprehend that what we call history and what we call science are not as far apart as was once thought. See Georg Friedrich Hegel, *Philosophy of History*, trans. J. Sibree (Dover, 1956), 79ff, Introduction: "Geographical basis of history."

that can exist independently of observation. Darwin's assertion depends plainly enough on what he observes. But it is still not merely about matters of fact as if we should, in a radically positivist spirit, have to think that that is all knowing consists of. Intuition takes us beyond matters of contingent fact into the domain of meaning, and it enables us to suspect and then later verify that what we factually observe only becomes intelligible within a larger spectrum of the possible kinds of essential being. Thus what Darwin is engaged in in these opening lines of his work very much deserves to be recognized as not only science, but philosophy; for it is not only about facts, but also about the meaning that these facts contain within themselves.[11]

Guided by his first fundamental intuition, Darwin next turns to a discussion of domesticated animals and plants, in order to see if he can find there further insight into what he observed in the geographical character of species. He knows, of course, that domestic species of animals and plants display something notably similar to what he found in his voyages: namely, that what might be taken as circumstantial causes apparently turn out to have more than a little bearing on how animal and plant species develop. Thus there is evidently some kind of analogy between the human, artificial selection that produces domesticated varieties and what Darwin later calls the "natural selection" that produces natural species. In both cases we find two noteworthy points of similarity. The first, as just noted, is that

11  While it might belabor the obvious, one might note that what I am saying here is invisible to the thoroughly nominalist spirit, which insists on restricting the source of meaning to nothing but the act of assigning vocal sounds to their objects of signification. That spirit fails to see that there is another meaning of "meaning" that is not only different from this, but more fundamental. For if concepts themselves had no meaning rooted in the order of being itself, then their assignment to vocal sounds would itself be a meaningless act. One may find it worthwhile to compare this with Aquinas's remarkable observation about how concepts give significance to words, in *De veritate,* q. 4, a. 1, objection 7 and response.

the development of new species or varieties appears to result from circumstantial causes. The second is that there is a high degree of indeterminacy in what results. It is, after all, the same fundamental organisms that vary in either case, and therefore what is indeterminate in the one case cannot be less indeterminate in the other. And so the long nose of a Collie, the ability of a "pointer" to show his master where the birds are, the strange behavior of tumbling pigeon, the webbed feet of a bird that lives on land, and so on are not the sorts of things that just of themselves suggest an eternally fixed species. Rather, what they suggest is that highly contingent, indeterminate, circumstantial causes are somehow connected with much of the variation that we find in the biological world.

While this is not yet the critical moment of the discussion, it would be well to pause for a moment and dwell on the implied meaning of this contingency and indeterminacy. For, as noted above, what we seek in a theory ought not to be conceived of as merely about bare "facts," but also, and in a sense more fundamentally, about meaning. So let us ask a question about meaning: Despite the best of efforts, traditional philosophy never succeeded in defining beings even so familiar as a dog or a giraffe. Why? Are we not surely today familiar enough with these animals to know what they are?

What needs to be intuitively grasped here (even if at first perhaps only as a strong suspicion or surmise) is that a definition of dog or giraffe can never be achieved as long as the recognized spectrum of the intelligible remains restricted to the "scientifically" intelligible in the original Aristotelian meaning of "science," which refers always to the eternal. In the development of thought, it was inevitable that sooner or later an intuitive need should make itself felt for this restriction to be removed so that things less intelligible because more indeterminate and contingent, but yet still within the larger spectrum of the intelligible,

should finally also become intelligible to us. This was inevitable in the same way that it had before been inevitable that the original Platonic intuition of intelligible being should be expanded and refined to include material being as such.

There is, in short, a middle between the two opposite poles of the unqualifiedly eternal on one side, and the purely contingent, on the other. It is in this middle that we find the meaning of modern science and its connection with philosophy: This is where contingent realities are immediately subordinated to temporal and semi-contingent ends, even though they are mediately and ultimately subordinated to ends that reach beyond the contingent, even as far as the eternal.

But let us return to the thread of how Darwin's thought developed. Darwin, as noted, was convinced that there is an analogy between the development of domestic and wild species. In the case of domesticated animals and plants, it is human, artificial selection—selection in a literal sense—that leads to the refinement of species, for example, to the dogs with peculiar noses, or with an ability to "point," and so forth. Darwin infers that something analogous is taking place in the case of the wild organisms, and so he decides to call this "natural selection." He then proceeds to gather evidence that this natural selection really takes place, as well as to answer objections claiming that it does not.

As is appropriate, Darwin's reasoning is what we would today call "scientific" more than "philosophic" since it is based on considerations about contingent, observable circumstances (so far as it is possible to observe them either directly or indirectly), such as the places where organisms live, the amount of time they have had to develop, the availability of materials for particular developments, and so forth. But it is right at this moment that a philosophic rather than a "scientific" difficulty

arises—and it is a difficulty that lies at the very heart of the whole question about evolution.

The difficulty concerns the appropriateness of the phrase "natural selection." In human, or what Darwin calls "artificial" selection, the word "selection" denotes something literally and obviously real. It is actual choices on the part of human beings that make their dogs evolve towards those better for hunting, or their vegetables better for eating. This selection is clearly purposeful, oriented towards an end, and eventually it leads to that end being fulfilled. But can nature do anything like this?

Another telling and significant way to pose this question is to note that the results of "artificial selection" really are, quite literally, artifacts; they really are the result of our deliberate choices about how something should be formed.[12] And this is the beginning of a real, true answer to the question "What is a dog?" What we seek, then, is what would be the analogous answer to the question "What is a giraffe?" The challenge is now to see how, or indeed even whether, anything can analogously but truly be said to be "selected" in the case of what Darwin calls "natural selection." The difficulty is that in the case of natural selection, "nature" appears to play more the role of a circumstance than that of an actual agent capable of intending something.

In order to discuss this, a further incidental observation is necessary. Today it is taken as axiomatic that "anthropomorphic" explanations ought to be avoided in natural science. Yet it seems perfectly natural for Darwin to have looked to human, domesticated species for an analogy to understand natural selection, because it can hardly be doubted that something of at least a similar dynamic is apparently taking place in both cases.

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12   We can say something similar about vegetative life. J. Henri Fabre notes that the domesticated cabbage developed from a rather scrawny and unappealing looking vegetable which was found centuries ago on wild coastland. See chapter 15 of *The Wonder Book of Plant Life* (Carrot Sky, 2001), 168.

If Darwin is right to do this, then we should take his cue and go still further than he did in the examination of the analogy between human and natural causes. As we shall see in a moment, a careful comparison with the causal dynamic in human artificial selection, and indeed with human causality more generally, has rich consequences for our understanding of this thing called "natural selection." We should not have expected otherwise; for if the human is not merely inserted into the material cosmos as something essentially foreign, but is the very perfection thereof, then we should hardly expect a blanket claim to be true about a need to avoid any reference to the human in our thinking about the cosmos and its dynamic of causality. We should rather expect the opposite: that it is in the human generally, and in human causality in particular, that we find the culmination of things less perfectly present in the subhuman, so that by comparison and analogy with the former we can better understand the latter.[13]

Several aspects of the dynamic of human causality will help us find the clarifications we need in order to understand natural selection, and to see that the dynamic of natural selection is not "mechanistic" in the sense that is almost universally taken for granted. These can be found mainly in two particular

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13    The charge of "anthropomorphism" against the kind of approach I am suggesting here would be less paralyzing if it were better understood that "analogy" here refers not just to a comparison made between two things, but to a semi-univocal—but only semi-univocal—predication. In other words, words such as "cause," "agent," "end," and so forth have various different meanings when, for example, we use them in some moments in regard to human activity and at others to natural activity. But the meanings are not utterly different either; if they were, then we should have no right to use them in the ways that we do of natural things. The real challenge, as always, is not to claim an impossible perfect identicity of meaning, nor to utterly deny it, but to undertake the careful task of delineating likenesses and differences of meaning. The greatest minds of western thought have understood that without a grasp of the logic of analogy, serious intellectual life becomes not only more difficult, but impossible. See, for example, Aquinas, *ST* I, q. 13.

areas of human activity: namely, the artificial and the ethical, and within them there are three primary things to consider. The first is a distinction and relation between universal and particular causes; the second is what we have already begun to allude to, namely the relation between proper causes and circumstantial causes. Then lastly, we will want to consider the difference between different modal degrees of perfection possible among proper causes. This is a somewhat detailed discussion which will require patience from the reader, but the payoff may be a good deal more clarity about how to think about "natural selection."

## *Universal and Particular Causes and the Role of Instrumentality*

The dynamic of causality is founded on the axiom that a cause is not just a law of correlation, but something really endowed with a power to bring about an effect. This entails not just the bare existence of various "kinds" of causes, but a dynamic relationship among the several elements of causality; thus matter or material is formable, by agents, acting towards ends.[14] This fundamental dynamic further entails that there can be a subordination of various agents, ends, forms, and materials, in what we call instrumental causality.

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14   The four "kinds" of cause are not just four members of a genus called "cause," as when we say that there are three kinds of triangle, namely, equilateral, isosceles, and scalene. Rather, they are different essential elements in a integrated dynamic of causality; they must operate jointly, all at once, in any instance of natural causality. This joint operation shows that they are in fact mutually related and dependent, not only in their existence but in their very meaning. For example, to be matter or material means to be matter or material to a form, and to be a form means to be the form of a matter. In the same way, to act in the manner of an efficient or agent cause means to act towards some end, and with a view to instilling some form in a material. Thus these elements of causality are more unified than would be varieties of one thing, such as the various kinds of triangle.

Let us now go further. Within this dynamic, it can be seen that while both natural and human causes act in the here and now, they are not entirely and irreducibly confined to the here and now in their meaning; rather, they participate in an order of universality that is coextensive with natural things themselves. Thus, for example, each species of animal or plant is capable of, and aims towards, reproducing not a mere isolated individual, but its own kind. Since a "kind" is something universal, this suggests that there can be an order of, or relations of, universality among causes. Order and relations of universality are a familiar thing, of course, especially in the logical or taxonomic ordering of species; but this is an order not exactly of causes, but of names or categories. Is there something similar, or perhaps even related to this, to be found among causes? If we look to the human, we can find that there is.

In monarchical and military human regimes, it is common for someone higher up in a chain of authority to delegate power to someone lower. A king may give authority to make or to enforce laws to someone else; or a general may delegate or confer some more limited authority on someone else. This is even recognized in certain names given to positions of authority, such as "deputy prime minister," "lieutenant colonel,"[15] and so forth. In every such case the higher authority relates to the lower authority according to something resembling the relation of genus to species; thus while a king has the broad power to rule, certain persons delegated by him may be given power to do something more specific, such as to be a legislator and make laws, or to be someone who enforces laws.

But there are also important differences between this relation between higher and lower causes and the parallel categorical relation of genus to species. In the latter, the more universal

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15  "Lieutenant" is derived by transliteration from French, where it literally means "holding a place," i.e., empowered to act on behalf of someone else.

becomes such by its relatively indeterminate character, while the more specific is the more determinate. Thus equilateral triangle, for example, is more determinate than triangle because it includes something that the more universal lacks, namely, being equilateral. But in the case of the king and the legislator, this relation of determinate to indeterminate is reversed. The king's power, while more universal, is not less but rather more determinate than the less universal power of those under his authority, such as the legislator or the law-enforcer. One can see that this is true because, in the first place, there is nothing in the lower cause which is not in the higher cause, since in fact the power of the lower cause derives from the higher. Thus we may speak of more or less universal causes, just as we do of more and less universal categories, but we must recognize this important difference between them.

A further mark of the greater determinacy of the higher cause can be recognized by the fact that by virtue of its greater determination, it is able not only to do what the lower causes do, but also to provide order among them. A general, for instance, not only delegates authority to his subordinates, but also determines how that authority should be coordinated among the subordinates, so that they can work in cooperation with each other. Of themselves, the lower causes are more indeterminate with respect to this ordering, whereas the higher, more authoritative cause is the more determinate, and thus also more the source of the determination in the effect.

Further, and remarkably, this greater determination in the higher cause exists in a unity within the higher cause that does not reveal itself by interior divisions; it is only in the lower, subordinate causes that the perfect unity of the higher cause is, so to speak, spelled-out through distinctions between one lower cause and another. Thus, for example, a general may be the one able to determine that there should be a certain number of battalions,

each perhaps with distinct roles, formations, and so forth, so as to accomplish a desired end. The general is the one capable of this precisely by virtue of his own undivided unity of conception and purpose, which enables him to achieve an ordering of the whole that the subordinates by themselves cannot accomplish.

From this there follows a corollary, which as we shall see is a key to understanding the true dynamic of causality in evolution. Namely: An appearance of incongruity, or even of the absence of a cause, may result from the presence of a universal cause being at work to produce a more particular effect, whether it is with or without a subordinate cause. This is because we naturally discern relations between causes and their effects most easily by their commensurate character; but the power of a cause need not be exactly commensurate with its effect.[16] It is possible, for example, for a rational person to do surgery, even though surgery is but one particular effect among an infinite number of others that a person can do by his rational power. And so if one should search for a cause of surgery more proportioned to the effect itself, one may be liable to miss the true cause. And in like manner, generation is more universal as a cause than the particular variations which evolve in organisms as the effect of that cause. But even when the universal cause acts *with* a subordinate cause, if the subordinate cause is an instrumental one, an appearance of incongruity is still apt to persist, although in a different way.

To understand this better, it will help to understand more exactly what an instrumental cause is, and how the word "instrumental" designates something beyond being merely a secondary

16　More precisely, a cause must be at least as universal as its effect, since otherwise it would lack a power capable of the effect. But there is nothing that absolutely requires a cause to be *only* as universal as its effect. For example, a general or a king might perform by himself the duties of a subordinate, if it happens to be necessary.

cause within a sequence of causes. What exactly is signified by the word "instrument" or "tool," or ὄργανον as the Greek has it, from which our common word "organ" is derived? We speak of tools when we are dealing with causes that do not act of themselves but act only by virtue of their subordination to a more primary cause. Surgical tools, for example, are causes which take part in the act of a primary agent—in this case the surgeon. The surgical tools do not *do surgery* by themselves; rather, the surgeon does surgery through his instruments. For while the universal principle is true that every cause must be adequate to its effect, this is true of instruments only in a restricted way. It may happen that the surgeon never touches his patients directly, but only through his tools. Then the tools alone act directly on the patient; yet it is not their interior power that accomplishes the surgery, but that of the surgeon. Thus an instrumental cause is also a cause that acts not just by its own inherent power, but by a power which it receives temporarily from a principal cause. In a similar way, a child might cut out a five-point star with a pair of scissors. One could never explain the five-point star by the scissors, since they are but an instrument of the making of the star. It is the child who has an adequate mental representation of the star to begin with, and the scissors only receive that representation sequentially, temporarily, and instrumentally. And so to explain the star by its adequate cause, one must look to the child. But the child, like the surgeon, still acts by a power which is more universal than the effect which is the star.

Thus in this case as well, an appearance of disproportion may result if one does not understand that the instrument, despite being now proportionate to its effect, is *merely* an instrument as opposed to a primary cause. Surgical tools, for example, may be just as universal in their causality as surgery itself. But they cannot be said, as was just noted, to do surgery themselves. Hence if one searches for a cause of surgery and discovers

the tools of surgery, one will perhaps suppose that they are the cause; but they are only instruments, and not the immediate primary cause.

To return, then, to Darwin, one can begin to see better now what invariably lies at the heart of opposite views concerning the Darwinian theory—but it lies at the heart as something mostly only tacitly regarded and rarely discussed. Both opponents and supporters of Darwinian evolution take it almost always as axiomatic that if Darwin's theory (or perhaps a more modern and refined offshoot of it) is right, then it must follow that either pure randomness or pure mechanical action is the ultimate cause of organic evolution. Supporters of the theory generally take this as acceptable, while opponents reject it; but both agree on what they take to be the fact of the matter.[17] Neither side usually notices that this supposedly axiomatic presupposition is immediately subject to doubt if we recognize that a more universal cause than the ones immediately commensurate with the observed effects is at play, without which universal cause the entire supposedly "mechanical" dynamic would become unintelligible—in fact, it would cease to exist.

The more universal cause is *generation*. This simple, universally present element of what is called "natural selection" will prove on examination to be quite sufficient for explaining what is observed, by its action being not something purely mechanical, but a universal cause intrinsically correlative to a purpose or *telos* as its own basis and source of meaning.[18] One can imme-

17  There have been a few supporters of the theory who are the exception to what I have just said. A different account becomes possible through a recognition of the dynamic of causality which I am elucidating here.

18  I call the cause "intrinsic" to contrast it with what those who take evolution to be antithetic to creation. Intelligent design theory defends the reality of creation by proving that ends, purposes, and perfections are manifestly present in biological species. As long as it does only that, it can hardly be objected to. But often the idea seems to go further, to hold or imply that these ends are really

diately perhaps glean that the causal power of generation is like the power of the general vis-a-vis his subordinates, since both are universal with respect to more particular things that they cause. But we must also remember that generation does not here refer only to something with significance for individuals as such, but also with specific significance. For it is always a member of a species that generates, and what it generates is always endowed with fundamental perfections that are essentially connected with, and also commensurate with the species—such as a power of organic development, sensation, and whatever kinds of movement are commensurate with these powers. In order to indicate this clearly, we shall refer to this fundamental, universal cause as *species generation*. In the same way that a general confers power on subordinates, and in the same way that that power is divided in the subordinates but united in the general, so also the power of species generation is both the sufficient and necessary universal cause for understanding what natural selection is, how it takes place, and how it simultaneously involves unity in its principle and diversity in its effects.

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not within the power of natural selection, or of any other dynamic *intrinsic* to the natural world, to produce; and so the inference is that something *extrinsic* to the natural world must be the exclusive cause. As I have noted, this is close the strange doctrine of occasionalism, which posits that natural effects are only apparently the result of natural causes, and really derive only from God. Thus Divine causality, rather than being the most universal cause that acts through subordinate natural causes, becomes instead a replacement for those causes, and natural causal order is either denied or taken to be an illusion. Darwin himself saw, much better than many of his opponents, that this does no credit to the Creator.

This is not to say that God has no choice but to act through material, instrumental causes. The first cause of all things certainly can act just as he chooses; yet as Aquinas notes, it is more fitting that God should make natural beings both exist and be causes, rather than that he should make them only exist. It is also certainly true that there are some things in the created world—such as, most notably, its own original existence—which no created cause can explain, even as an intermediate agent cause.

## *Proper vs. Circumstantial Causes*

But what we mean here by "species generation" is still not quite clear, since it remains to be seen exactly what a species is, and what the universal power is more precisely that belongs to it. Indeed what a species really is was the very question that motivated Darwin to begin with, as we saw at the beginning. It had begun to be apparent in his day that taxonomic arrangements of the biological world into various "species" could not be viewed as some kind of first principle having no need of any physical explanation. To clarify this further from a more philosophical angle, we must turn to the second of the three things we intended to discuss, namely, the distinction between proper and circumstantial causes.[19] Here again, we shall do best to observe the distinction first in human activity.

In human ethical life, we observe a fundamental distinction between the principles and the circumstances of action. Both have a manifest bearing on what a person does but in two different ways. It is ethical principles rather than circumstances that constitute the primary source of action—of both the latter's coming into existence at all and also its meaning—and it is these principles which also have the universality that one ascribes to a universal cause. Circumstances, on the other hand, obviously matter too, but they matter more as particular material conditions than as what originally gives meaning to action.

Thus, for example, we recognize a need for truthfulness or respect for human individual property as principles to follow; but how we practice truthfulness or respect for property in a given instance necessarily depends a good deal on the circumstances in which these universal principles need to be followed. While being truthful and thus wishing to honor the truth, one

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19  This looks roughly like the same distinction as that traditionally expressed as between "proper" and "accidental" causes. But I prefer to express it as I have done here for reasons which will become more apparent as we proceed.

may not be as free or open about speaking it in the circumstance of being surrounded by liars, for instance. Or while recognizing respect for property as a fundamental principle of justice, one may with reason dispense with one's own property for the sake of someone who is dying; or one might, in the classic example, refrain from returning a weapon to someone who has lost his mind. In each of these examples, circumstances have a bearing on human action much more through, and on account of, the principles, than vice versa. For declining to return a weapon to an insane person, for example, is simply a recognition of a higher principle, which is that persons themselves ought to be protected.[20] Or again, truthfulness is the virtue which honors truth; but the honor it is due may not be able to be revealed as much as one would like in particular circumstances; and so forth.

It also bears noting, though, that circumstances do in a way acquire a determinate meaning or significance in light of principles; in fact they may be seen as giving rise, loosely speaking, to more determinate subordinate causes such as we spoke of above. But as considered just in themselves, they seem to be less a source of meaning than of indeterminacy. Indeed their constant presence in moral action is the manifestation of a high degree of indeterminacy in the character of that action, on account of which moral judgment must retain a suppleness opposed to any thought of there always being just one perfectly right way to do this or that.[21]

It is notably not only in ethical activity that this distinction between principles and circumstances has a bearing, but also in

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20   It deserves noting here that a "higher principle" in this context means a more universal cause and principle which governs and limits the lower cause. It does not mean a principle that contradicts the lower one.

21   I am speaking here primarily but not exclusively of moral action on the natural level. The principles of moral action in the context of a life of faith have greater determination, and they also give to the circumstances greater and more determinate significance. But this is not opposed to the present claim.

the formation of ethical character. This is of course natural, since ethical character finds its fulfillment and completion in action. So it is, for example, that a person who respects truthfulness while living in the midst of others who do not is likely to develop a habit of truthfulness that is different in some significant ways from someone who not only respects truthfulness but also lives in the midst of others who likewise respect it. Both may acquire the perfection or virtue of truthfulness, and yet each may have it differently, by force of circumstance. There is thus a potential difference between the perfections of human virtues (or aspects of virtue) as considered absolutely in themselves, and as considered relatively, in relation to a certain kind of environment.

In this connection there are a couple more incidental distinctions worth noting as well. I have just used the word "force" in a somewhat loose fashion. What does it mean? It means especially, of course, that impediments as well as opportunities may arise, in the form of particular circumstances to the pursuit of the goods that are expressed by principles. Impediments are by definition not the result of natural ends or principles, but tend rather to stand in their way. As a result those principles, while still being followed, may have to be followed differently than they would otherwise. Thus there is also a particular kind of causality that we must attend to and recognize for what it really is: that, namely, referred to in traditional philosophy as the "removens prohibens"—the removing of an impediment. Though the placing or the removing of an impediment to some agency can look very much like an ordinary agent cause, it must be recognized as not identical with an agent cause in a stricter sense, but as rather only derivatively and secondarily—analogously—thus describable.

It is also possible, however, for the *removens prohibens* to become an agent cause in the more proper sense, when it becomes the instrument of a higher agency. Suppose someone

as sustained through the agency of reproduction. This latter is then the universal cause, an action towards the universal end of existence itself of a particular species. This is the cause of the particular variations that evolve, in the same way that a universal cause in human affairs is the cause of effects of a more particular order. In both cases circumstances particularize the effects of the universal cause, in a manner somewhat like, although not strictly identical with, subordinate causes.

In our ethical examples, we noted that a pursuit of virtue may in particular circumstances give rise not only to different ways of acting but also to different personal characters. These characters are always "essentially" the same thing in their relation to their universal generating and authoritative cause; that is, for example, truthfulness in these circumstances or those is always still the same virtue of truthfulness. It retains the same source and form of dignity, although that does not prevent it from appearing quite different in different circumstances.

A corollary to this, one which has no small bearing on our understanding of evolution, is that there is a distinction to make now between two kinds of perfection: one which is more or less absolute, and another that must be deemed "perfection" only relative to circumstances. Just as there are these two kinds of perfection relevant to the acquisition of human virtue, so also, analogously, to the evolution of biological traits. In the biological case every acquired perfection that confers an advantage but only relative to a particular environment will be relative; absolute will be that which has no essential derivation from the particular, circumstantial environment, but derives simply from the dignity of a principal cause.

On reflection, examples of relative perfection in biology must prove to be much more common than one is first inclined to suspect; that indeed is quite nearly the heart of what the Darwinian discovery was about. And this then becomes the key

to seeing the answer to the question raised at the beginning of this discussion, about what exactly the universal cause called "species generation" must really refer to: For if it is true that relative perfections abound, then, correlatively, absolute perfections must be less common than was before supposed. It is these latter, properly, that species generation is immediately and properly concerned with. I will try to spell this out in greater detail.

One of the most commonplace kinds of distinction made among animal species—perhaps the most common, even before formal science comes into play—is between forms of local motion. Birds fly, fish swim, and land animals walk. Why? A first and rather striking thing to observe is that these differences are geographical in principle, which is, as we noted before, the thing that initially struck Darwin. And this means that these differences are also circumstantial. But a second, complementary thing to observe is that these distinctions are really distinctions on the level of instruments of animal life. Wings and winged motion are the instruments for birds, legs and walking for land animals, and fins and swimming for fish. In all three cases, it is the same dignity, consisting in escape from confinement to a particular place (that confinement being a characteristic mark of plant life, as opposed to animal life), a dignity moreover commensurate with, and evidently deriving from, the power of sensation, which constitutes the end and originating source from which particular modes and instruments of self movement must derive. These particular modes and instruments themselves come into being not by virtue of distinct universal causes aligned to each particular mode, but by a single universal cause determined in its effect by the necessity of circumstance—just as we saw could happen in the acquisition of a particular form of a virtue in one set of circumstances or another in human life.

In the analogous ethical case, we noted that once instrumental developments, which are essentially adaptation to

circumstances, become habitual, they tend to become more or less identified with the primary dignity and agency of the person. The person who possesses the virtue of truthfulness in an environment where that virtue is not honored will seem quite different from a person who possesses what is essentially the same virtue but in a different environment. In either case the particular mode and presentation of the virtue will be seen as the virtue itself, and even be in some sort identified with the very person. The essential dignity of truthfulness in this example thus comes to be intimately bound up with a very particular and circumstanced configuration, and it is even intimately identified with what we are apt to describe as the kind of person we see.

The same must evidently happen with biological development. The dignity of the bird is to fly, of the fish to swim, and of the land animal to walk. That dignity has become the species or "look" of the animal itself. But despite that, the more fundamental dignity is to be unconfined to a particular place, in a manner conformed to the power of sensation, which is also unconfined and for the sake of which this physical unconfinement exists.[22]

If we would from a philosophical point of view see these things in a truly adequate way, we must see them not only in the context of particular biological facts and observations, but in a much larger physical and even cosmological context; it is in that context that the true power of the philosophical vision lies. Although we just used the commonplace example of birds, fish, and land animals to illustrate how a single universal cause gives

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22   It might be objected that sensation is for the sake of local motion, rather than the reverse. Both, however, are true in different ways, since the dignity in question here subsists in a relation of subject and object. In such cases it is always true that the good is ordered to and for the sake of the subject, but the subject is also understood as ordered to the objective good. The sensate being is thus ordered to local motion as to an object that fulfills it, but the object is also ordered to sensation, which latter is nearer to the subject, as to what is fulfilled in its interior dignity.

rise to particular biological forms in particular circumstances, doubts may still arise because of an insufficient appreciation of the degree of contingency, of indeterminacy, involved in the kinds of circumstantial environments that produce even these very universal organic variations. Darwin's discoveries were historically preceded, not long before, by discoveries in physics and chemistry that had an enormous impact on our understanding of the world as a whole, and in particular on how we see the relations in the world between what is determinate and what is indeterminate. The impact of these discoveries was largely away from the vision of the world in terms of exclusively eternal, unchanging forms, and towards a vision that recognized indeterminate contingency as far more of a rule than a mere exception.

Thus Antoine Lavoisier discovered that air is not an element but a mixture, a mixture indeed that is highly contingent upon environmental factors such as especially the gravitation of the earth, the particular vapor pressures of the (real, not imaginary) elements that happen to be present, the temperature of the earth, this latter itself being the result of a highly contingent orbit of the planet around the sun, and so forth. Water, Lavoisier realized, would not even exist in a liquid form were it not for an adequate pressure upon it from other gases that happen to be present. And so it cannot be that fish and birds are eternal species, considered just as such; they are highly contingent, temporal species, endowed with relative perfections that result from the contingencies in their environments. And if indeed this is true even of such universal distinctions as those between birds, fish, and walking animals, then *a fortiori* we must expect the same to be true of more particular distinctions between more particular kinds of species.

The upshot of what I am arguing is that the biological world is filled with highly indeterminate, contingent forms, but forms nevertheless subordinate in their existence and meaning

to causes that rise to higher levels of universal causality even on the natural level, quite before one comes to consider still more universal causes that altogether transcends the physical. But these things could not be discovered before it became sufficiently appreciated that the environments that give rise to these lower biological forms are themselves highly contingent, just as are the circumstances of human action.

It is here, perhaps, that we should review something fundamental about the meaning of the eternal. What exactly is the difference between an eternal species and one that is not eternal? The very meaning of what we call "science," whether ancient or modern, depends on how we answer this question.

Christian revelation tells us that "even the number of hairs on your head are numbered"—from all eternity. That is to say that even the most contingent things derive indirectly from eternal causes. But this implies that being derived from eternal causes is certainly not sufficient for any being or form to be called "eternal" in its own right; rather, the "eternal" in the proper sense must be that which has in its own most immediate and proper causes no essential reference to the temporal; it must be that which is in itself atemporal with respect to its intrinsic form. Ever since the evolutionary hypothesis was first proposed, this distinction seems to have been largely ignored by its opponents. They have conflated Providential order and natural order, not seeing that while the natural certainly must finally depend on eternal causes, this dependence is not the same as actually being eternal. Confusion about this on the part of Darwin's opponents has long been a problem, because it leads others to think that Christianity, or belief in God more generally, demands the impossible, namely, that manifestly non-eternal things must be eternal.

I must still, before turning to the third of the three aspects of the dynamic of causality that I proposed to discuss, briefly make three additional, closely related observations about this

second aspect that we have been discussing, having to do with circumstances versus proper causes. I have suggested already that the mark of a true agent cause, as opposed to a circumstantial cause, is a certain fundamental dignity. This is because while circumstantial causes are primarily either limiting or potentially instrumental factors, the primary causes are those which are mainly responsible for conferring fuller being on their effects. It is directly apparent, moreover, that the true causes in biological development are, just as elsewhere, indeed such as are apt to be described as certain kinds of dignity. The powers of sensation and reason are the most manifestly dignified powers in the biological world, and indeed the whole material world. To them we may also add the less obvious but at the same time the most fundamental and universal power: that of self-sustenance and generation, which is the characteristic power of all living things. What all of these fundamental powers have in common is that they are the three fundamental grades of a dignity by which life rises out of the confinement that is the result of materiality; they are three degrees of self-possession, bearing with them a connatural ability to enter into participation in the being of another without loss of this self-possession. Human beings, endowed with reason, are the most supreme and manifest instantiation of this in the material cosmos; yet the very order of biological development, according to which the rational presupposes the sensible, and the latter the nutritive-generative power, shows us that human rationality is not just inserted into the biological world as something extrinsic, but grows out of the latter by degrees.

It is in part by this dignity that we can finally identify the true universal, intrinsic causes of evolution, the causes that are at least nearer to being truly eternal, and distinguish these from circumstantial causes. It also, however, seems to follow from this that these fundamental powers cannot themselves be the immediate result of the evolutionary dynamic we are discussing, since

a cause cannot be its own effect, nor can it be less dignified or perfect than its effect.[23]

This, however, gives rise to an *aporia*, a significant problem that calls for resolution. For the fact that the more perfected powers seem to grow out of the less perfected ones, even in at least a relative way—the fact that there is this kind of order in biological life—certainly suggests that even these fundamental powers themselves must somehow develop, the higher out of the lower. And yet we have just said that this is not possible.

How can this be understood? Here just as before, an appeal to analogy with what we find in human activity offers us a key. In the acquisition of human virtue, we find that virtues must not only be practiced, but practiced in varying circumstances, so that the full power of the virtue can be exercised and thus completely acquired. There is no reason to think that the same should not happen in biological development, and evidence bears out the suspicion. The trial, if we may so speak, of a particular animate power—of sensation, for example—in very different circumstances and through many generations yields a variation of instruments of that power—various kinds of eyes, ears, limbs, digestive organs, and so forth—by which the potentialities of sensation itself are fully brought forth and revealed. The same thing can evidently be recognized in any other animate power as well, such as the power of local motion. Thus relative perfections, while distinguishable from absolute ones, can be seen as conducive towards the full expression of the absolute power itself.

If this is true, it can then be seen further how relative perfections might be the dispositive medium through which an acquisition of a new absolute perfection becomes possible.

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23   Darwin himself writes in the first paragraph of Ch. 7 of Origin, "I must premise, that I have nothing to do with the origin of the primary mental powers, any more than I have to do with that of life itself."

Animals, as we observe, have infinitely varying degrees of perfection on the sensible level, by which they become increasingly like the human; in particular, they become increasingly self-possessed, and increasingly aware of the world around them as other than themselves but also as *theirs*. This takes place through a gradually more and more sophisticated development of animate instruments. As material configurations they might themselves be described in relation to the fundamental powers as interior circumstantial developments; they are relative rather than absolute perfections, and yet perfections that gradually dispose towards an essential perfection and development.

Thus while the dignity of the human, for example, cannot be simply, entirely, and without qualification caused by the lower dignity of the sensate animate being, it remains that the latter might well rise to a perfection to which the human is the final completion, as the limit of a mathematical series is the external completion of the series. In this way the order of the natural world becomes truly intelligible, not as reductively turned in upon itself, but as rising towards the source of its dignity from a cause that does not "force" or arbitrarily impose but rather elicits.

This does, however, imply that some outside cause, transcending the natural order itself, must be at work as what finally enables a lower order to be led into a higher order—the order of sensation, for example, to the order of the fully rational. But this is hardly matter for surprise, since, after all, order itself implies a dignity to which the lower is always drawn but which the lower cannot elicit purely from itself.[24] If there is, within the natural order as a whole, a gradation from the inanimate to the

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24  The reductionist atheist evolutionist faces a choice: Does he really think that things evolve, or only that they change? Complexity all by itself does not constitute improvement. Every good engineer and designer knows in fact that the opposite is true: Complexity by itself is a decided disadvantage. It only becomes an advantage when it can be put to use by a higher cause, and even then it does not always constitute a net advantage.

animate to the rational, a gradation that lies at the very heart of the dynamic of natural order, then that fundamental gradation cannot itself be explained purely and entirely by the interior dynamic that depends on it. Yet we are no longer, in this account, resorting to the sort of Providentialism that amounts to a variety of occasionalism; for our account does not try to attribute exclusively to a higher order what lies within the innate potentiality of the lower order. Thus this account maintains a genuine and intelligible subordination and continuity of orders. Natural order and development is no longer pitted against Providence or creation but is recognizable as its genuine work.

## *Modal Degrees of Perfection*

The gradation of which we have been speaking, which is apparent in our observation of the natural world yet often rejected for want of an adequate way to describe it, brings us finally to the third of the three things that were proposed earlier to discuss: namely, what I described before as different modal degrees of perfection possible within proper causes.

What are these different modal degrees of presence in causality? If it is true that natural beings rise through a scale of perfection that involves, as we have noted, a gradation in self-possession and self-awareness, as well as awareness of the environment as other than self but also one's own, then there must be a parallel gradation among natural causes. A natural being can act towards an end just to the extent that it apprehends something to aim towards; but this involves precisely the awareness just referred to. In the highest beings, in which apprehension and knowledge itself is most perfected, actions can be directed towards ends most perfectly. In the lowest natural beings, in which the *logoi* are still present but more shrouded in matter, ends are likewise still present, but they are not capable of being present and of being

causes otherwise than under the temporal and spatial limitations that inherently result from material existence. This means in particular that lower beings will not act towards ends that are far off in an order of intentions, but rather towards ends more immediately contiguous to what is already actual.

Thus among animals, those endowed with no more than a sense of touch and the kind of interior imagination that corresponds thereto will be capable of acting towards an end, but it will be literally a contiguous one, incapable of much spatial or temporal separation from what is already present. Natural beings with higher senses and cognitive powers, on the other hand, become increasingly capable of what I shall refer to as "far-seeing" action—action, that is, towards something envisioned as lying at the terminus of a process extending far beyond the currently actual. Human reason will of course give rise to the most "far-seeing" acts towards ends, both temporally and spatially; for in fact, its ultimate aim is towards the eternal.

We may also describe this in terms of agents as giving something to their effects. It is commonly understood that agents give something to what they act on; but they can do so only to the extent that they possess something that they are able to give. As we have said before, however, there can be no genuine final causes, no genuine natural ends or τέλη, which are not essentially, intrinsically, intertwined with the agent causes to which they are correlative. This means, in the first place, that when an agent cause "gives" something to its effect, we are speaking in more than purely metaphorical terms. In their fullest expression, acts of giving are intentional in the highest degree; they aim not only materially, but formally at the good of the recipient. Acts of giving of this most perfect kind also have the greatest capacity for being "far-seeing," involving ends that are not immediately or contiguously present but anticipated across space and time. But this evidently becomes possible only and precisely to the

extent that the agent itself has a higher, more complete modality of self-possession and awareness. Thus, for example, infants and very young children are not capable of giving gifts in a formal sense, and scarcely indeed in a material sense; but they become capable in the measure in which their self-possession and awareness matures.

But my claim is that the variation in this modality applies not only to humans, nor even only to animals, but also to the natural world as a whole—as we should indeed expect if human existence is the summit of the natural world, its highest production. The higher an animate being is, the more capable it becomes of both giving and receiving not only materially, but formally. Although this capacity only culminates in the human, it remains true that agent causality at lower levels is already essentially a kind of giving, and hence it already has gradations tending towards this culmination even at the subhuman level, and indeed even at the inanimate level.

The charge of anthropomorphism is perhaps once again lurking at the door. To respond to it, I shall simply agree: We must not confuse the summit of causality with causality itself; for lower causes, though they are not what I am calling "far-seeing," are not for that to be deemed as utterly lacking in the inherent nature of causality, which involves an intrinsic end. The ends by which lower causes act are not modally present *as ends* as perfectly as they are in the higher. As an agent becomes more completely immersed in matter, so its causality is restricted with respect to its perfection.

Clarity about this requires that we say here explicitly what we have said implicitly already: The claim that there are "mechanical" causes—that is, causes that involve no action towards an end at all but only "force"—is unfounded, it being a result of the confusion about what mechanism really is. That there is such a thing as natural mechanism is plain enough; but it

consists in any of the infinite possibilities for instrumental quantitative arrangements of parts in material things. This implies a potential indeterminacy in the forms of material things that extends even into what would be called accidental, if it were not capable of being instrumentalized both efficiently and formally. "Force" understood as a natural agency that is correlative to no end whatsoever has nothing to do with this indeterminacy; our intellectual culture's longstanding acceptance of this idea is simply the result of mistaken attempts at correlation between various agencies and ends. In truth, in the conception of "mechanism" as the essential consequence of force, there is no real account possible for any process at all in the natural world; for process is ultimately not conceivable without the ordering of one thing to another. A sign of this is that attempts to probe to the bottom of the alternate conception of the world, based on the idea of "force," tend frequently if not invariably towards the conclusion that process, and along with it, time, is simply an illusion—a strange illusion, it must be noted, since we know what it is that we claim does not exist.

## Darwin's Implicit Natural Teleology

In the long historical debate over evolution, advocates and opponents of the theory have both alike often assumed that to act for an end must mean acting towards what is temporally and spatially noncontiguous or non-continuous with what is already present. This identification of action for an end with "far seeing" agency has often been the fundamental unjustified assumption shared on nearly all sides of the debate. Darwin himself, on the other hand, is really one of the rarer exceptions; for his theory turns out in retrospect to be, in regard to this very question, more in conformity with the real concrete character of natural

teleology than what either his supporters or most of his opponents recognized.

We can see this better if we observe a problem that Darwin found himself preoccupied by for some time. He devotes substantial space in his *Origin of Species* to the question as to whether all the perfections we see in the biological world can really be the result of more or less infinitesimal gradual steps, for he recognizes that his theory demands this. He knows as well as anyone that there are cases where one might doubt at first that this is possible. One might well doubt, for example, that the mammalian or human eye could ever acquire by very gradual degrees all the intricate mechanisms it requires in order to function in its final evolved state. Yet in every case Darwin finally concludes that it is indeed at least reasonable to suppose, given all the available evidence, that each of these cases could indeed have come about by gradual degrees.

Philosophically speaking, this conclusion amounts to the strong suspicion on Darwin's part that no ultimately perfected "far-seeing" agency—and no corresponding final ends of that sort—is necessary within the interior order of natural causes for explaining biological developments. But while Darwin's concern is primarily to find the scientific evidence either for or against his hypothesis, we should note that it is not just on scientific grounds that his suspicion is plausible. It is also plausible on philosophical grounds. For to hold that some kind of rational perfected "far-seeing" agency is necessary to explain the organization of natural things amounts, as we have already noted, to replacing natural order with Providential order in a quasi-occasionalist account, rather than seeing the natural order as a real order in its own right, albeit one that must exist in subordination to supernatural and ultimately Providential order.

The opposition to Darwin's claim has in more recent times been stated in terms of what is called "irreducible complexity."

In many organs, such as the eye as already noted, there appears to be an irreducible complexity—that is, a complexity in which parts are present that can serve no purpose before the whole is complete. A contemporary biologist has compared this to what we can see with a mouse trap: It seems apparent that no evolutionary process could make a mouse trap, since many of the parts of a mouse trap would be useless before the whole has been completed.[25] This of course amounts to claiming that "far-seeing" agency is alone sufficient to explain the developments in question. But since the organization of the eye, for example, is clearly a mechanical and thus contingent organization, not immediately derived from any "essence," this view immediately amounts to the Providentialism just described; that is, it amounts to saying that there is an order in the natural world for which, in principle, no natural account is possible, but only a disproportionate, unmediated, Providential one. Yet this inherently problematic claim is exactly what Darwin's theory provides a probable alternative to: His theory shows how universal natural causes can in fact make what would otherwise be pure contingency come to be instrumentally ordered not only to Providential ends, but to natural ones.

Still, one may legitimately ask how this seemingly "irreducible complexity" can really come about and be intelligible as anything other than an exclusively Providential arrangement. We may see how if we compare it with the reading of a book or the learning of a mathematical proposition. Since ordinarily books and propositions are laid out in a certain order, the final stage of perfection in understanding a book or proposition is ordinarily demonstrated by one's being able to follow the book or proposition in just the order in which it is laid out. Yet experience teaches us that this is often or perhaps even usually not

25   See Michael Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* (The Free Press, 2006).

the best way to learn or read the proposition at the beginning. Rather, the better way is to see, perhaps peruse, the whole first so as to grasp it in a general way, and then discover the parts later in light of that whole. This is in accordance with the ancient philosophical maxim that says that in order to learn, we must go (at least at first) not so much from a perfectly determinate beginning to a determinate end, but from a general, often quite vague first grasp to a very distinct grasp later in which all of the parts become fully articulated.[26] Thus, for example, when one learns a geometrical proposition, it is often best not to try to see the articulation of the fine points immediately from the outset, but instead to see the general strategy; our knowledge is afterwards perfected by seeing, in light of the first general grasp, the need for further refinements.

As experience of all the sciences teaches that this is the best way of learning (the neglect of which by teachers destroys a sense of wonder in students), so also experience shows an analogous process universally in the arts, both the fine and the useful, and in both implementation and design. When anything is first invented and designed—a house, say, or a car—its first conception is relatively simple, perhaps even crude. But with time it becomes more refined, with more and more parts involved in a more and more intricate process. In the final degrees of refinement, it is often true that a defect or absence of even a relatively minor part can impede the whole order. Thus it is apparent that if one were to assume that the order of evolution must always follow the ordering of the parts in the final product, one would be led to think that the resulting irreducible complexity would indeed make an evolutionary process of development absolutely impossible. But the assumption is gratuitous.

Generally speaking, the sort of contiguous, as opposed to "far-seeing" causality we are speaking of here does not assemble

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26  See Aristotle, *Physics* 1.1.

so much as it refines. And it is apparent as well that this is what one should expect of any developmental account of the natural world, if there is to be any developmental account at all. Thus not only particular scientific facts, but more general philosophical principles both conduce towards the same conclusion.

## Darwin and Material Causality

In the preceding I have discussed how formal, final, and agent causality as traditionally understood lend themselves to an *a priori* plausible judgment in favor of Darwin's basic hypothesis. Before concluding these reflections, I will add some brief observations about how Darwin's idea also comports with the idea of material causality as traditionally articulated. Even though Darwin never speaks explicitly of material causality in the way that traditional philosophy does, his account of evolution by natural selection includes observational verifications of the theory that involve just what one should expect according to the dynamic of material causality. This is indeed all the more striking since neither Darwin nor his opponents ever allude to it explicitly. One is left with the impression that Darwin simply has a natural intuitive sense for this as for similar things, even without any formal philosophical language in which to describe it, while most of his more traditionally minded opponents fail even so much as to notice it.

In the fifth chapter of *The Origin of Species*, Darwin outlines what he calls the "laws of variation" of species. Among several laws that Darwin observes according to which species seem to vary, there are two that stand out from the fact that they do not appear to be the result of any kind of selection or intention; they appear rather to operate independently of, and perhaps one might say even in spite of, natural selection. One of these Darwin refers to as "reversions to long lost characters," and the other as

"correlation of growth."[27] In the remainder of the work, Darwin occasionally refers back to the former of these two phenomena in connection with particular examples. The latter, however, he refers to quite often.

Both of these appear to be the sorts of phenomena that lend themselves to a description in terms of "laws" as commonly conceived—that is, as having some kind of necessity in them that involves no reference to any end or *telos*, but is simply "absolute." But some brief reflection readily brings to light the reason for this. Every law must derive from some sort of cause, and conversely every kind of natural cause gives rise to a characteristic kind of law. But the kind of law that characterizes material causes is unique, because as a cause matter produces no teleological law, no law deriving from a *telos* from which some hypothetical necessity would derive; rather, it mainly produces constraints that have more the character of absolute necessity than of hypothetical necessity.

There is thus a certain inevitability that arises from material causes, because of this character of being more a constraint than a primary end. Thus, for example, every organism, being in some measure a complex arrangement of materials, is subject to corruption; hence living things die, obviously not because that is

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27   Darwin summarizes the former law by saying that "a variety of one species often . . . reverts to some of the characters of an early progenitor," and the latter law by saying "that the whole organisation [of an organism] is so tied together during its growth and development, that when slight variations in any one part occur, and are accumulated through natural selection, other parts become modified. This is a very important subject, most imperfectly understood. The most obvious case is, that modifications accumulated solely for the good of the young or larva, will, it may safely be concluded, affect the structure of the adult; in the same manner as any malconformation affecting the early embryo, seriously affects the whole organisation of the adult."

something to aim for, but more just because it is inevitable. This sort of inevitability characterizes material causes in general.[28]

What is striking in Darwin's account of natural evolutionary development is that he makes appropriate room for just this sort of thing, under the form of the two aforesaid laws, that of reversion and that of correlation. Indeed it can be said that without these two laws being recognized, something critical would have been missing from his account. Philosophically speaking, we should expect to find just what Darwin observes that we do find in evolutionary development: signs, namely, of material conditions that are not inherently and of themselves for an end, but yet still present. Darwin confesses that he (and we) are ignorant of the detailed conditions that give rise to such signs. That is of course no more than could have been expected, at first at least, since such material conditions have somewhat the character of the accidental rather than of the essential—not that they are absolutely and finally to be relegated to that category—but precisely as material this is to be expected.

There is also, however, another characteristic of material causes, one that is indeed rather remarkable: namely, that they can be sources of beauty. The reason why this is remarkable is because beauty is often and rightly referred more to form than to matter, as is indicated linguistically by words such as "formosa,"

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28  Because both natural and artificial things ordinarily contain a complex interweaving of intermediate forms, what in one respect is formal is often in another respect material. This is no doubt one reason why it is rare to find a clear account of how material causality works in the natural world, it being often supposed that any "matter" can act as an agent, and that this is just what constitutes being a material cause. But we must remember that causes are always called causes in relation to their effects, so that to be a material cause refers to having a particular kind of relation to an effect: that, namely, of the formable, rather than of the forming, the latter being what characterizes not material causes but formal or agent causes. Confusion about this no doubt also contributes to frequent presumption that all natural "laws" might just as well be understood as having in every case the same sort of necessity.

shapely, and so on. And it is form more than matter that seems moreover to be what is desired or sought; matter is said to be for the sake of form, more than the reverse. But something beyond this is still observable in human life and the human arts.

In the architectural design and building of houses, a subordinate but certainly not negligible consideration in the determination of what a house should look like is the available materials from which it is made, and also the material circumstances in which it is made. Hence although materials exist primarily for the sake of form, materials still do in some measure determine the form rather than vice versa. Thus, in the Pacific Northwest it is perhaps not out of the question to find buildings made from adobe and having the corresponding form, but it is much less common than timber buildings. For similar reasons, adobe buildings are far more likely in the Southwest. But what is more remarkable is that these necessities, which first may appear as mere constraints, do contribute significantly to what we recognize as beautiful. One would find it not only inconvenient, but unseemly to build with adobe in the Northwest. Why is this? There seem to be two related reasons. One is that in the interweaving of the material and formal elements of both natural and artificial things, a more material element does often have its own formal aspects, which it often even requires as a prerequisite for the ultimate form to which it will contribute. Thus an architectural column must, for example, be well formed before it can serve as a suitable column.

But while this appears at first as only an accidental reason for matter as contributing to beauty, it combines with something else that is more subtle and profound: namely, that matter bespeaks origins. This is why we may commonly observe in human life and art that a tendency to let form have total domination over matter is unattractive. Such a disposition yields forms that we cannot see as attractive, because they appear as if from

nowhere and for nothing. Perhaps it can be said that the eternal condescension of the Divine towards all that lies below ceases to be revealed in such instances of pure domination. Instead of beauty, they yield ugliness. But the contrary case, where form adapts itself to matter in both the elements and circumstances of making something, is what we are able to find to be the most beautiful.

A teleological account of the natural world cannot be plausible if it fails to notice that some, or more likely indeed many, of the beauties of the natural world derive from just this sort of thing. No teleological account can be plausible if it tries to uniformly regard every beauty and every order as if it derived from form and *telos* purely and exclusively. Why, for example, are the wings of a Tiger Swallowtail or a Monarch butterfly so beautiful in their semi-geometric color patterns? Or why are the petal shapes and arrangements of flowers often so beautiful? To surmise that they are as they are because the beauty was desired immediately "by nature," as if a Tiger Swallowtail had to have the pattern it does so that it could achieve its ends, is simply not plausible. Rather, what is plausible is that on a more elementary, material level, geometric patterns are generated and then incorporated into the whole organism, as the natural shapes of timber are incorporated into a timber house, and those of adobe into an adobe house. And this, as we observe, is beautiful; not only because the shapes by themselves are beautiful, but also because their incorporation is beautiful. It is the possibility of this sort of thing that Darwin implicitly acknowledges in his recognition of laws that must derive from materials more immediately than from form. A failure to recognize any distinction between these two fundamentally different kinds of laws would naturally end by concluding that some sort of "mechanical" law was at work; whatever finality and perfection we can observe would then

have to be relegated to the order of pure Providence, uncomplemented by any natural causes.[29]

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The history of evolutionary theory has been saddled with tension between those who embraced what they saw as a "mechanical" account (in the customary sense of that term) of biological development and those who resisted such an account. The unfortunate truth is that neither side seems to have been well prepared to offer a viable alternative, since both sides tended to accept the premise that Darwin's own theory was indeed "mechanical." Yet Darwin himself seems to have understood that this was not what he himself was proposing. We must incline to agree with him when he says that his own position does more credit to the Creator than what his opponents suggested. In light of the distinctions we have made, we now have the framework necessary to see that there is a realm of vast possibility between the extremes of the "mechanists" and the "creationists." The true dignity of animal and plant life is deeply intelligible in terms of the dynamic of causality, provided that this is not confused with a crude sort of Providentialism that prefers to do away with natural causes. This true dignity becomes more visible still when

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29   St. Georges de Mivart seems to do just this in his elaborate criticisms of Darwin. He suggests that the "laws" of development of natural organisms might be better explained by an analogy with crystals than by Darwin's hypothesis of selection. Later developments in biology, in particular the discovery of DNA, suggests that Mivart was not altogether wrong, since the molecular structure of DNA is semi-crystalline. But Mivart is one of those who is apparently willing to make laws do the work of causes. He makes no attempt—as if it were not even a question—to see how biological laws derive from causes, nor does he make any attempt to examine what sort of cause one would be looking at if it is true that something like a crystalline structure affects the form of a whole organism. The net effect is to propose, implicitly if not explicitly, a vague "mechanical" account as if that were a better alternative.

we acknowledge that the natural causes include much of what is indeterminate and contingent; for that too can be subsumed under the order that derives from first, and ultimately eternal causes. More material circumstantial causes, recognizable by their intimate connection with accidental circumstances of geography and history, and more generally causes deriving from physically indeterminate quantitative configuration, can contribute a great deal to understanding the biological world. Such causes must often, to be sure, be recognized as instrumental causes. They are not the first formal principles of biological existence, and to judge them as such is what finally reduces biology to the so-called "mechanical" account. Semi-occasionalist fictions offered as the alternative have been a great impediment to true understanding as well; they have in fact been often a stumbling block to those more attuned to the real weight of scientific observation, but less to things that it belongs to philosophy or faith to discern.

# ON THE DEFINITION OF THE ASSUMPTION[1]

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[*Editor's Note:* The first of November, 2025, marked the seventy-fifth anniversary of the promulgation of the papal bull *Munifentissimus Deus*, declaring and defining the doctrine of the Assumption of the Blessed Virgin Mary. We here include a translation of four brief essays by Charles De Koninck in defense of the doctrine, two written before (1947 and 1949), two after (1950 and 1954) Pope Pius XII's dogmatic statement. We hope not only that they give the reader a glimpse of De Koninck's less widely known Mariology but, more importantly, that they provoke greater contemplation of this dogma.]

## "Quaestiuncula: The Definability of the Assumption"[2]

*We are asked for an opinion on the definability of the Assumption of the Most Holy Virgin.*

Since the beginning, the Church has invoked and honored Mary as the Mother of God. Now, the body is essential to the

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1 [*Translator's Note:* All bracketed notes in the following pages are my own. All English translations of St. Thomas Aquinas's works are taken from "Aquinas Online" of The Aquinas Institute (Aquinas.cc), except for some minor changes. Although De Koninck variously gives Scripture quotations in French or from the Vulgate, here all quotations are taken from the RSV-CE with minor alterations when needed; likewise I have supplied citations when De Koninck omits them. While some changes have naturally been required in the process of translation, I have tried to retain De Koninck's style and sentence flow. I would also like to thank Matthew McKenna for his suggestions in the revisionary stage of these translations, as well as Benoît Duhamel for "In Signum, Cui Contradicetur."]

2 ["*Quaestiunculae* II. La définibilité de l'Assomption," *Laval théologique et philosophique* 3 (1947): 303–04. *Translator's Note*: This *quaestiuncula* has no author listed by *Laval théologique et philosophique* and seems to be an editorial note. However, Armand Gagné's bibliography in *Mélanges à La Mémoire de Charles De Koninck* (Les Presses de l'Université Laval, 1968) includes it as having been authored by De Koninck. It is included as an introduction to the immediately following article by De Koninck, since he references it in the footnote at the beginning of that article.]

being of a mother considered as mother. If Mary was only a separated soul, she would not currently be the Mother of God, of her risen Son, except in reference to the state of union of soul and body, which would now be of the past. So, strictly speaking, we could not say that Mary is the Mother of God: Strictly, we would have to mean that she was the Mother of God—and she would only be restored to her true maternity at the resurrection of the dead at the end of time. And yet this is manifestly contrary to the thought and intention of the faithful who, in saying "Mother of God," Mother of the glorious Christ, do not doubt that she is, presently and properly, the Mother of God; they would abhor the idea that the one who gave birth to Christ, now resurrected, is not currently a person. In fact, as St. Thomas says: "The soul, since it is part of man's body, is not an entire man, and my soul is not I; hence, although the soul obtains salvation in another life, nevertheless I do not, nor does any man."[1] This would also be contrary to the speech of the Savior from the top of the cross: "Behold, your mother" (Jn 19:27). If the Blessed Virgin were only a separated soul, not only would Christ not currently have a mother, but the spiritual maternity of Mary towards us, inseparable from her physical maternity towards Christ, would have no truth in the present.

It is true that we also invoke and honor other saints as mothers: St. Anne, for example, the mother of the Virgin Mary. However, in these cases, we do not suppose in the least that they

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1  *In I ad Corinthios*, c. 15, lec. 2, n. 924: "[A]nima autem cum sit pars corporis hominis, non est totus homo, et anima mea non est ego; unde licet anima consequatur salutem in alia vita, non tamen ego vel quilibet homo." See also *ST* I, q. 75, a. 4, ad 2: "Not every particular substance is a hypostasis or a person, but that which has the complete nature of its species. Hence a hand or a foot is not called a hypostasis or a person; nor, likewise, is the soul alone so called, since it is a part of the human species." ("[N]on quaelibet substantia particularis est hypostasis vel persona, sed quae habet completam naturam speciei. Unde manus vel pes non potest dici hypostasis vel persona. Et similiter nec anima, cum sit pars speciei humanae.")

would currently have the complete being of a mother considered as such. We mean that St. Anne *was* the mother of Mary.

In short, since on the one hand, the union of the soul and the body is essential to maternity, and on the other hand, the Church has understood since the beginning that the Virgin Mary is, *presently*,[2] "properly and truly Mother of our Lord God Christ,"[3] it seems that the truth of the Assumption may be recognized as a formally revealed fact and that it does not depend upon discursive reasoning properly so called.

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## "*The Person of Mary in the Worship of the Church and the Definability of the Assumption*"[1]

We know the role that the notion of *suppositio* plays in the Treatise on the Trinity [in the *Summa theologiae*]. The doctrine of the Assumption of Mary also gives rise to an application of this notion. I would like to take up, in particular, the difference between the proposition: "Mary is the Mother of God," and this other one: "St. Peter is an apostle of Christ." While in this latter proposition, the substance of the name of Peter is only an

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2  On the importance of time for the assent of faith, see St. Thomas, *De ver.*, q. 14, a. 12.

3  [De Koninck here quotes Pope John II's letter *Olim quidem* to the senators of Constantinople in March 534; see Heinrich Denzinger, Peter Hünermann, et al., eds., *Compendium of Creeds, Definitions, and Declarations on Matters of Faith and Morals*, 43rd ed. (Ignatius Press, 2012), DH 401.]

1  ["La personne de Marie dans le culte de l'Église et la définibilité de l'Assomption," *Laval théologique et philosophique* 5 (1949): 25–32. This is a paper presented at the *Journées de la Société canadienne des Études mariales*, in Ottawa on February 19, 1949. It is also the development of "*Quaestiuncula*: The Definability of the Assumption."]

intentional object, in the former, the substance of the name of Mary is none other than the physical person of the Virgin. Perhaps this distinction will help orientate the problem of the definability of the Assumption: Does not the constant faith of the Church—such as that expressed in worship—have for its object the *present* maternity of Mary by way of the *present* filiation of Jesus? Indeed, if since the beginning, the Church has invoked the Mother of God in her person not simply by allusion to her personal existence in the past or in the future, not only because we know her better by the names which she carried here below, but because she [i.e., the Church] means that the person of the Virgin *exists*, then this could be the answer to the problem of silence in the first centuries of the Christian era.

In his *Peri hermeneias*, Aristotle remarks that from the proposition "Homer is a poet," we cannot go on to the affirmation "Homer exists." Indeed, in the proposition "Homer is a poet," the "is" is not said of Homer in himself, but only by accident; this affirmation of "is" only expresses that Homer is a poet and not that he is, that he exists, in the absolute sense.[2]

Homer does not exist. He had existed. Consequently, in the proposition in question, the name "Homer" is not able to signify the person Homer without contradiction: Regarding the copula "is," this person does not exist in reality. Nevertheless, for the proposition "Homer is a poet" to be true, it is necessary that the name "Homer" come from a subject whose name (*l'acception de ce nom*) can be verified—it must be a *suppositio*. And yet, the Homer for whom we substitute the name of "Homer" in the proposition "Homer is a poet" cannot be the Homer who had existed in reality but who does not exist anymore, since this one does not correspond to the tense of the copula "is." So who is this Homer? Where is the one who can verify the meaning of the name "Homer" in this proposition? Who is the one on

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2  Aristotle, *Peri hermeneias* 11, 20b20.

whom we impose this name? What is the substance of the name of "Homer" in the proposition "Homer is a poet"? Perhaps we would prefer to solve the question by immediately granting that "Homer *was* a poet!" The compromise would be too easy. Besides the fact that there are propositions of this sort, the end we set out demands their analysis. Indeed, when we say, "Mary is the Mother of God," to whom is the name of "Mary" given? Is this case in all points similar to that of Homer?

We return to the example of Aristotle. What is the substance of the name "Homer"? This expression, "substance of the name," is from St. Thomas:

> In every name there are two things to consider: what the name is imposed from, which is called the "quality of the name," and what it is imposed on, which is called the "substance of the name." And properly speaking, a name is said to *signify* the form or quality that the name is imposed from, but it is said to *suppose* for what it is imposed on.[3]

So who is the one to whom we give the name "Homer" in the proposition "Homer is a poet"? It is Cajetan who answers the question, in his commentary on the *Peri hermeneias*, at the place cited:

> To do this Aristotle introduces that genus of enunciation in which one part of the conjunction is something

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3  St. Thomas, *In III Sent.*, d. 6, q. 1, a. 3: "in quolibet nomine est duo considerare: scilicet id a quo imponitur nomen, quod dicitur '*qualitas* nominis'; et id *cui* imponitur, quod dicitur '*substantia* nominis.' Et nomen, proprie loquendo, dicitur *significare* formam sive qualitatem, a qua imponitur nomen; dicitur vero *supponere* pro eo cui imponitur."

pertaining to an act of the mind (for we are speaking only
of Homer living in his poems in the minds of men).[4]

In other words, the substance of the name "Homer"—that is
to say, the being to whom we give the name in the proposition
"Homer is a poet"—only has an intentional existence: The intellect makes present in an intentional manner a subject that currently only has the existence of an object. Entitatively, Homer
does not exist, because his person no longer exists. Without the
fiction, without this existence of Homer "in the minds of men,"
the proposition "Homer is a poet" would be purely and simply
false—there would be no *suppositio*. And that is because we are
not able to pass from intentional existence to real existence such
that from the proposition "Homer is a poet" we cannot conclude: "Homer exists."

There is no doubt that this intentional existence has a
foundation in reality, but this reality belongs to the past. It is
true to say "Homer is a poet," because Homer had existed, and
he was a poet. It is precisely the substance of the name "Homer"
in the proposition "Homer *was* a poet" that is the foundation of
the substance of the same name in "Homer *is* a poet."

One might be able to object that it is not altogether true
to say that "Homer does not exist," because at least the principal part of the poet still exists, namely, his immortal soul, which
subsists through itself. It remains, however, that the soul of
Homer is not Homer. "Homer" is the name of the person, while
the soul is not the person. No attribute of the person, who is the
complete whole, can be proper to what is only a part—even if

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4   Cajetan, *In II Peri hermeneias*, lect. 7 (ed. Leon), n. 7: "Aristoteles [adducit]
illud genus enunciationum, in quo altera pars conjuncti est *aliquid pertinens
ad actum animae*. Loquimur enim modo de Homero vivente in poematibus
suis *in mentibus* hominum." [The translation here is taken from *Aristotle: On
Interpretation. Commentary by St. Thomas and Cajetan*, trans. Jean T. Oesterle
(Marquette University Press, 1962).]

this same part were the principal one and could subsist through itself. Although the soul is immortal, it does not then follow that the man is immortal. Just because the *soul* of Homer exists, it does not follow that *Homer* exists. "The soul, since it is part of man's body, is not an entire man, and my soul is not I; hence, although the soul obtains salvation in another life, nevertheless I do not, nor does any man."⁵ Although the rational soul can subsist by itself, it is only

> in a certain respect [that it] can be called a particular thing. . . . And the composite substance *is this particular thing*; for that is said to be *a particular thing* which is something demonstrated, complete in existence and species; . . . but because [the rational soul] does not have a complete species, but is more part of a species, being *a particular thing* does not altogether belong to it.⁶

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5  St. Thomas, *In I ad Corinthios*, c. 15, lec. 2, n. 924; see note 3 of the *Quaestiuncula*.

6  St. Thomas, *In II De anima,* lec. l (ed. Pirotta), n. 215: "quantum ad aliquid [quod] potest dici *hoc aliquid* . . . substantia vero composita est quae est *hoc aliquid*. Dicitur enim esse *hoc aliquid* aliquid demonstratum quod est completum in esse et specie, . . . sed quia non habet speciem completam sed magis est pars speciei, non omnino competit ei quod sit *hoc aliquid*." See also *ST* I, q. 75, a. 2, ad 1: "*This particular thing* can be taken in two senses. First, for anything subsistent; second, for that which subsists and is complete in a specific nature. The former sense excludes the inherence of an accident or of a material form; the latter excludes also the imperfection of a part, so that a hand can be called *this particular thing* in the first sense, but not in the second. Therefore, as the human soul is a part of human nature, it can indeed be called *this particular thing* in the first sense, as being something subsistent, but not in the second, for in this sense, what is composed of body and soul is said to be *this particular thing*." ("*[H]oc aliquid* potest accipi dupliciter, uno modo, pro quocumque subsistente, alio modo, pro subsistente completo in natura alicuius speciei. Primo modo, excludit inhaerentiam accidentis et formae materialis, secundo modo, excludit etiam imperfectionem partis. Unde manus posset dici *hoc aliquid* primo modo, sed non secundo modo. Sic igitur, cum anima humana sit pars speciei humanae, potest dici *hoc aliquid* primo modo, quasi subsistens, sed non secundo modo, sic enim compositum ex anima et corpore dicitur *hoc aliquid*.")

Also, as "person" is only said of the complete nature, the soul is not the person:

> Not every particular substance is a hypostasis or a person, but one that has the complete nature of its species. Hence a hand or a foot is not called a hypostasis or a person; nor, likewise, is the soul alone so called, since it is a part of the human species.[7]

Since only the soul of Homer exists, we are not able to speak about his subject: neither of first substance (*hic homo*), nor of second substance (*homo*); nor of *living*, nor of *this* living thing. "The soul lives, but it is neither an animal, nor a living thing, nor a body, nor a substance."[8] These terms, indeed, signify the whole

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7  *ST* I, q. 75, a. 4, ad 2: See note 3 of the *Quaestiuncula* for the Latin. In addition, see: *In III Sent.*, d. 5, q. 3, a. 2: "Since the notion of a part is contrary to the notion of a person, . . . for this reason the separated soul cannot be called a person. For although when it is separated it is not a part in act, nevertheless, it does have the nature of being a part." ("Et quia ratio partis contrariatur rationi personae, ut dictum est, ideo anima separata non potest dici persona); quia quamvis separata non sit pars actu, tamen habet naturam ut sit pars."); *De pot.*, q. 9, a. 2, ad 8: "'Person' signifies some subject, as first substance does, and not merely as subsisting, as a subsistence." ("[P]ersona dicit aliquid subiectum, sicut substantia prima, et non solum sicut subsistens ut subsistentia."); and *ST* I, q. 29, a. 4, c.: "For *person* in general signifies the individual substance of a rational nature. The individual in itself is undivided but is distinct from others. Therefore *person* in any nature signifies what is distinct in that nature; thus in human nature it signifies this flesh, these bones, and this soul, which are the individuating principles of a man, and which, though not belonging to the signification of *person*, nevertheless do belong to the signification of *human person*." ("Persona enim in communi significat substantiam individuam rationalis naturae, ut dictum est. Individuum autem est quod est in se indistinctum, ab aliis vero distinctum. Persona igitur, in quacumque natura, significat id quod est distinctum in natura illa sicut in humana natura significat has carnes et haec ossa et hanc animam, quae sunt principia individuantia hominem; quae quidem, licet non sint de significatione personae, sunt tamen de significatione personae humanae.")

8  [De Koninck does not seem to be quoting any single text here. The original sentence is: "Anima vivit, sed non est animal, neque vivens, neque corpus,

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[i.e., the complete nature, the person].⁹  It is thanks to a fiction that, in a proposition where the verb is in the present tense, we are able to speak of a person whose soul alone exists: The person who is the substance of the name is able to have only an intentional existence.

We will recall the difficulty that St. Thomas formulated in II-II, question 83, article 11, where we ask, "Whether the saints in heaven pray for us." The fifth objection reads as follows:

> [T]he soul of Peter is not Peter. If, therefore, the souls of the saints pray for us while they are separated from their bodies, we ought not to call upon St. Peter, but on his soul, to pray for us; yet the Church does the contrary. The saints therefore do not pray for us, at least before the resurrection.¹⁰

The soul of Peter is not Peter: Peter does not exist—neither in heaven nor on earth. It is the *soul* of the apostle that prays for

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neque substantia."]

9  See *ST* III, q. 50, a. 4, c.: "It is said in the Synodal epistle of Cyril: 'If any man does not acknowledge that the Word of God suffered in the flesh and was crucified in the flesh and tasted death in the flesh, let him be anathema.' Now, it belongs to the truth of the death of man or animal that by death the subject ceases to be man or animal; because the death of the man or animal results from the separation of the soul, which is the formal complement of the man or animal. Consequently, to say that Christ was a man during the three days of his death, simply and without qualification, is erroneous." ("[I]n epistola synodali Cyrilli dicitur, *si quis non confitetur Dei verbum passum carne, et crucifixum carne, et quod mortem gustavit carne, anathema sit*. Pertinet autem ad veritatem mortis hominis vel animalis quod per mortem desinat esse homo vel animal, mors enim hominis vel animalis provenit ex separatione animae, quae complet rationem animalis vel hominis. Et ideo dicere Christum in triduo mortis hominem fuisse, simpliciter et absolute loquendo, erroneum est.")

10  *ST* II-II, q. 83, a. 11, obj. 5: "[A]nima Petri non est Petrus. Si ergo animae sanctorum pro nobis orarent quandiu sunt a corpore separatae, non deberemus interpellare sanctum Petrum ad orandum pro nobis, sed animam eius. Cuius contrarium Ecclesia facit. Non ergo sancti, ad minus ante resurrectionem, pro nobis orant."

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us. We will readily admit this, since Peter has not yet been res-urrected. Does it follow that we should not call upon the apostle to pray for us, but upon his soul? Certainly not, for the good reason that the Church does the opposite. And the response of St. Thomas will consist in showing why the Church invokes the person of Peter and not his soul, although only the latter exists:

> It is because *the saints while living merited* to pray for us that we invoke them under the names by which they were known in this life, and by which *they are better known to us*; and also in order to indicate *our belief in the resur-rection*, according to the saying of Exodus 3:6, "I am the God of Abraham," and so on. [11]

These are the reasons that make us understand the custom of the Church, and each of these reasons are worthy in themselves.

We notice, however, that in the proposition "Peter *is* in heaven," the substance of the name "Peter" is not the person of Peter who existed; as in the case of "Homer is a poet," the sub-stance of the name is an intentional being founded on the person of Peter who existed in the past and who, while he had been a "liv-ing saint," had merited the power to pray for us. At the same time, since the proper object of the human intellect is nothing other than the "quiddity or nature existing in corporeal matter,"[12] the blessed are also better proportioned to us when we are able to call them by the name of their person. But once again, just as in the example "Peter is in heaven," the substance of this name is only an intentional being. And it is the same when we employ their name in order to allude to the future resurrection: The resurrected

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11   *ST* II-II, q. 83, a. 11, ad 5: "[Q]uia *sancti viventes meruerunt* ut pro nobis orarent, ideo eos invocamus nominibus quibus hic vocabantur, quibus etiam *nobis magis innotescunt*. Et iterum propter *fidem resurrectionis* insinuandam, sicut legitur Exod. III, 'ego sum Deus Abraham,' etc."

12   *ST* I, q. 84, a. 7, c.: "quidditas sive natura in materia corporali existens."

person is only a distant foundation of the substance of this name. The resurrected person of Peter does not exist.

These are the reasons we are able to give those who demand why we invoke the saints in their person when in truth this person does not exist. And yet, if the categorical proposition "St. Peter does not exist" is upsetting at first and demands some precision, the faithful will easily accept the explanation. Indeed, we do not want to say that St. Peter did not exist, nor that he will not exist, but that, in the present, only his soul exists. The proposition "St. Peter is an apostle of Christ" is true. But because the name "Peter" only holds the place of an intentional existence, and not that of the person of Peter himself, we cannot go on to the affirmation "Peter exists."

Is it the same in the case of the proposition "Mary is the Mother of God"? Certainly not. In fact, the affirmation "Mary exists" is also true. But unlike the first assertion, this one is true because Mary exists *in the present* according to her complete substance. The latter truth is distinguished from the former because it affirms the actual, present, *physical existence* of the person as person. Consequently, even in the first proposition, where we affirm that "Mary is the Mother of God," there is no need of justifying the *suppositio* of the name "Mary" by "something pertaining to an act of the mind,"[13] as if her person only had the existence of an object in the present. In other words, when we speak of the Blessed Virgin, we speak of a person who exists; in invoking the Mother of Christ, we are addressing a person who *is*, presently, the genetrix of God, and not only the soul of a person who *was* the Mother of God—the soul of a person who could not be said to exist.[14]

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13  [See note 4 of the present article.]

14  During the discussion that followed the reading of this paper, R.P. Joseph-Marie Parent, O.P., had quoted, in support, the oration of the mass of Blessed Virgin during Advent: "O God, whose will it was that thy Word should

If the soul of the Blessed Virgin were not currently united to her body, we would, in the propositions where the verb "is" is affirmed in itself and not by accident, have to restrict ourselves to the attributes of the separated soul; we would not be able to attribute to her any personal predicates. If the person had not been resurrected, it would be wrong to say that "the Mother of God exists," "the Mother of God exists in heaven," that "she" is with Christ, and that "she" intercedes for us. In order that the substance of the name might remain in these propositions as an entitative subject, it would be necessary to say: "The soul of the one who was, is in heaven"; "the soul of the one who was the Mother of God is with the one who was her Son"; "the soul of the one who was the Blessed Virgin intercedes for us"; and "the soul of the one who was co-redemptrix, exists."

The soul of Mary, addressing Christ for us, would not be able to say: "My Son." We would not be able to say that our Mother, Our Lady, our Queen, exists in heaven. In praying, "Hail Mary," the substance of this name "Mary" would not be the person of the Virgin herself. While we beg her to pray for us at the hour of our death, death would not yet have been defeated by her.

If only the separated soul of Mary existed, not only would her beatitude be incomplete, but she would no longer be a truly universal principle, since she herself would not have in act the perfection towards which she must lead us. Her soul would be blessed, but the Virgin, the Mother of God, would not be blessed. The *suppositio* of the names of her person would not be different than that which must be understood in the case of other saints.

take flesh, at the message of the angel, in the womb of the Blessed Virgin Mary, grant to us thy supplicants that we who believe her to be truly the mother of God may be assisted by her intercession with thee." [*Translator's Note:* This text is taken from the Masses of the Blessed Virgin Mary on Saturday during Advent. The English translation is found in *The Roman Missal in Latin and English: According to the Latest Roman Edition*, 2nd ed., ed. Dom F. Cabrol (P.J. Kenedy and Sons, 1921), 1173.]

We would invoke the Blessed Virgin by the name of her person because, during her life, she had merited to be able to pray for us; and because under the names that had been hers on earth, "she is made better known to us"[15]; and again, to allude to the future resurrection.

We said that if the Mother of God did not exist in the present, if only her beatified soul existed, she would not be able to call Christ, "My Son." In fact, the person of Christ is only the Son of Mary because of his temporal filiation, the term of which is nothing other than the person of the Mother. Consequently, if the Mother did not exist, this filiation would no longer be true in the present. It is true that in Christ the relation of temporal filiation is only a relation of reason.[16] However, the present truth of this relation nevertheless supposes the actual existence of its term and of the real relation of maternity in the person of the Virgin. The divine person who—by reason of his real birth and the real nature that he received from his Mother—is really the Son of the Virgin,[17] would not be such in the present. It would be false to say, "The Son of Mary exists," or "The Son of man exists," because at the death of the Virgin, the filiation is suppressed.

An objection formulated with a view of affirming the reality of the temporal filiation of Christ contains this hypothesis: "Supposing that the Blessed Virgin had died before the death of Christ, the sonship *by which he was called the Son of his mother*

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15 [See note 11 of the present article.]

16 See *ST* III, q. 35, a. 5, c.

17 *Quodl.* I, q. 2, a. 1 [a. 2], c.: "For just as God really is Lord on account of the real power by which he sustains a creature, so he is really the son of the Virgin on account of the real nature that he received from his mother." ("Sicut enim Deus est realiter Dominus propter realem potentiam qua continet creaturam, sic realiter est filius Virginis propter realem naturam quam accepit a matre") See also *Quodl.* IX, q. 2, a. 3 [a. 4], ad 1: "Christ is called really the Son of the Virgin on account of his real nativity." ("Dicitur Christus realiter filius Virginis propter realem nativitatem.")

would have been corrupted."¹⁸ To this difficulty, St. Thomas responds:

> [T]he reference of a relation [*respectus relationis*] depends on the thing to which something is related, and for this reason, *when the thing is destroyed, the reference is removed*. But nevertheless real sonship to the Father remains in Christ, even supposing the death of his mother.¹⁹

Consequently, if the Mother of God—the term of the relation of filiation—had not been resurrected, the filiation by reason of which Christ is named her Son would not be true in the present; the substance of the name in the proposition "Christ is the Son of Mary" would not be the person of Christ himself.

As for the real relations to the complete nature of the Virgin, and which have as their subject not the person but the human nature of Christ, it is clear that they would not exist if their term was not a given fact in the present. Also, the relation of "origination" in the body of Christ to the Virgin Mary would not exist.²⁰ We would not be able to say, "The relation of likeness

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18    *Quodl.* IX, q. 1, a. 3 [a. 4], obj. 2: "[S]upposito quod Beata Virgo ante Christi mortem mortua fuisset, corrupta esset filiatio *qua filius matris dicebatur*."

19    *Quodl.* IX, q. 1, a. 3 [a. 4], ad 2: "[R]espectus relationis dependet ex termino ad quem aliquid refertur, et ideo, *destructo termino, respectus aufertur*; sed tamen filiatio realis ad Patrem remanet in Christo, etiam supposita morte matris."

20    After having shown that the temporal filiation of Christ is only a relation of reason, St. Thomas adds: "Nevertheless, nothing prohibits there being other real relations in Christ to the Virgin, just as when we say, 'the body of Christ is originated out of the Virgin.'" *Quodl.* IX, q. 2, a. 3 [a. 4], c.: "Nihil tamen prohibet aliquas reales relationes inesse Christo ad Virginem, sicut cum dicimus: 'corpus Christi est originatum ex Virgine.'" Cajetan, in his commentary on *ST* III, q. 35, a. 5, where St. Thomas exhibits the same doctrine, adds, "Nevertheless with these, hold that Christ is referred to the mother by a real relation of the caused to its cause, and of like to its like; and similarly for other real relations that are not immediately in the supposit as subject." (Ed. Leon., n. 20: "Cum quibus tamen tene quod Christus refertur ad matrem reali relatione causati ad causam;

of Christ to his Mother exists." It is also from the Virgin Mary, and only from her, that Christ has his "likeness of species."[21] In short, in none of the cases where naming presupposes the existence of the subject and the term of the relation would we be able to affirm the existence of the "relative" as such. From the moment that it is a question of real relations, we would need to say that there are, currently, in Christ true privations regarding his Mother while he is in perfect glory. None of the names that can belong to Christ only because of his connection to the Virgin could have as their substance the glorified Christ, who is established "above every name that is named, not only in this age but also in that which is to come" (Eph 1:21). "Therefore God has highly exalted him and bestowed on him the name which is above every name" (Phil 2:9).

Would Jesus now be glorified and his name exalted above all names if the concrete names, whose present truth depends on the existence of relations to the person or complete nature of his Mother, could only befit him through the intervention of a fiction? That is, if the substance of these names was not the person or the exalted human nature of Christ? Would the piety of the Son be now perfectly exercised up to the unique temporal principle of his Incarnation—the principle with which he is the

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et similis ad simile; et sic de aliis relationibus realibus quae non immediate sunt in supposito subjective.") [*Translator's Note*: I would like to thank William Horstmann for his advice in translating this last passage from Cardinal Cajetan.]

21   See *ST* III, q. 32, a. 3, ad 1: "Christ was conceived of the Virgin Mary, who supplied the matter of his conception unto likeness of species. For this reason he is called her Son. But as man he was conceived of the Holy Spirit as the active principle of his conception, but not unto likeness of species, as a man is born of his father. Therefore Christ is not called the Son of the Holy Spirit." ("Christus conceptus est de Maria virgine materiam ministrare in similitudinem speciei. Et ideo dicitur filius eius. Christus autem, secundum quod homo, conceptus est de spiritu sancto sicut de activo principio, non tamen secundum similitudinem speciei, sicut homo nascitur de patre suo. Et ideo Christus non dicitur filius spiritus sancti.")

Wisdom ordained from the beginning and First Predestined—if this principle did not exist in the present according to her very being as Mother?[22] For generation pertains to the vegetative power, which is inseparable from corporeality.

Manifestly it is not for us to affirm that the *suppositio* of these names of the Son and of the Mother, which we come across in the Holy Scriptures and in the worship of the faithful, is determined in such a way. But we are at least able to pose the question and thus indicate a subject-matter where there may be found a point of support for a declaration by the supreme Magisterium of the Church. This would, at the same time, answer the problem of the apparent silence of the first centuries of the Christian era on the Assumption of the Virgin.

One could object that we make too much of a subtlety of language that gives to the differences of time (past, present, future) such an important role; the essential thing, it seems, is to believe that all of these things will be verified in the future—namely, at the end of time. But this seems to us to be contrary to the thought and the intention of the faithful who, in saying "Mother of God" and "Mother of the glorious Christ," do not doubt that this mother is a person who *exists* in the present. They would abhor the idea that the one who gave birth to the resurrected Christ is not currently a person and a mother. [In such a case,] the Son of man would not have given us his Mother for, and in, our present life. The spiritual motherhood of Mary

22   The Assumption itself would be diminished if it had not been preceded by death. We can say in this respect that the Blessed Virgin died so that the Assumption might be more perfect and universal. In effect, having died, her Assumption reaches her in her restored person—a renovation consequently more profound. Although the person is the same, she is nevertheless a restored person, and the renovation can be said of the person herself. And in this way is established the "New City" in a more universal manner, and for the same reason it belongs more radically to the order of reparation. See, on this subject, Joseph-Marie Parent, O.P., "La Sainte Vierge est-elle morte?" in *Vers le dogme de l'Assomption* (Fides, 1948), 277–92.

toward us, inseparable from her physical motherhood toward Christ, would not be true in the present.

This would profoundly upset the sense of the faithful. If we cannot say that this belief is an explicit act of theological faith, we must at least recognize that the act of faith is not indifferent to time: The past, the present, and the future are not reduced to accidental differences. As St. Thomas says about the Resurrection of Christ, the act of faith does not concern the Resurrection in abstraction from present, past, and future. In an article that asks, "Is there one faith for moderns and ancients?" we read:

> For they say that it belongs intrinsically to faith to believe in the resurrection of Christ, but only accidentally to faith to believe that it is or was. But this is obviously false, for since belief is called "assent," it can only be about a composition in which truth or falsity is found. Thus, when I say, "I believe in the resurrection," I must understand some composition [of subject and predicate]. And I must do this with reference to some time that the soul always adds in affirmative and negative propositions, as is said in *On the Soul*. Accordingly, the sense of "I believe in the resurrection" is this: "I believe that the resurrection is, was, or will be."[23]

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23    *De ver.,* q. 14, a. 12, c.: "Dicunt enim, quod hoc per se convenit fidei ut credat resurrectionem Christi; sed hoc est quasi accidentale, ut credat eam esse vel fuisse. Sed hoc etiam falsum apparet: quia credere, cum dicat assensum, non potest esse nisi de compositione, in qua verum et falsum invenitur. Unde, cum dico, credo resurrectionem, oportet intelligi aliquam compositionem; et hoc secundum aliquod tempus, quod anima semper adiungit in dividendo et componendo, ut dicitur in III *De anima*; ut scilicet sensus sit, credo resurrectionem, id est credo resurrectionem esse, vel fuisse, vel futuram esse." And this is the rest of the text: "Therefore, we must say that the object of faith can be considered in two ways. First, we have the object in itself as it exists outside the soul. And it is properly in this sense that it has the character of object and is the reason why habits are one or many. Second, we have the object as it exists

Thus, if I have not believed that Christ *is* resurrected, if I refuse my acceptance of the distinction of time, I would not believe in the Resurrection as an object of faith.

This distinction seems to us to be of paramount importance for the question about the Assumption. That the faithful believe the Blessed Virgin, the Mother of God, exists, that she existed, or that she will exist is not inconsequential to the point of view of the faith. Now, is it not true that not only has the Church confessed the divine maternity of the Virgin, but that the worship of the faithful extends as far as the present life of the Mother of God as a person?

This is why we believe that the wish of believers for a solemn confirmation of the Assumption as a dogma of the faith is well founded. Once again, it belongs to the Magisterium of the Church to declare what is the substance of the names of Christ in his relations with the Virgin, and what was the substance of the names of Mary in the tradition. It is then that we would know, by a divine certainty, that the Assumption was definable as a dogma of faith.

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in the knower as participated by him. Accordingly, we have to say that if we take as the object of faith the thing believed as it exists outside the soul, it is in this way that each thing is related to us and to the ancients. And faith gets its unity from the oneness of the object. However, if we consider faith as it is in our perception of it, it is multiplied according to different propositions. But faith is not differentiated by this diversity. From this it is evident that the faith is one in every way." ("Et ideo dicendum est, quod obiectum fidei dupliciter potest considerari. Vel secundum se, prout est extra animam; et sic proprie habet rationem obiecti, et ab eo accipit habitus multitudinem vel unitatem. Vel secundum quod est participatum in cognoscente. Dicendum est igitur, quod si accipiatur id quod est obiectum fidei, scilicet res credita, prout est extra animam, sic est una quae refertur ad nos et antiquos: et ideo ex eius unitate fides unitatem recipit. Si autem consideretur secundum quod est in acceptione nostra, sic plurificatur per diversa enuntiabilia; sed ab hac diversitate non diversificatur fides. Unde patet quod fides omnibus modis est una.")

But already we say with a very great confidence and a perfect rigor: Not only is the Blessed Virgin the Mother of the Son of God, but the Mother of the Son of God *exists*.

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## "*The Certainty of the Assumption: Before and After the Definition*"[1]

Why do we have this proclamation of the Assumption as a dogma of the faith? Indeed, every Catholic believed in it already. Are we to understand that before the recent solemn definition, the Assumption was not certain? Not in the least. We already believed in it with at least the certainty of the infallible faith of the Church. We must distinguish, in fact, four degrees of radically different certainty:

a) For us there is first *natural* certainty, like the certainty of the impossibility of being and of not being at the same time and under the same respect. This is the certainty that I have of existing. This is the certainty that is the principle of all natural science. For us, it has its immediate foundation in created things, of which we are a part.

b) In second place, there is the certainty of *theological faith*: This is the certainty of the truths that God himself has told us, such as the Most Holy Trinity, the Incarnation of the Word, the Divine Maternity of the Virgin, her Immaculate Conception, and so on. This certainty has its immediate foundation in God, who is uncreated truth. To the question, "Why do we believe these truths?" the Church responds, "For it has seemed [good] to the Holy Spirit and us"—that is, this is a truth

1 ["La certitude de l'Assomption, avant et après la définition," *Laval théologique et philosophique* 6 (1950): 368–69.]

that the Holy Spirit has revealed, and We have the authority to propose it as such (Acts 15:28). "But even if we, or an angel from heaven, should preach to you a gospel contrary to that which we preached to you, let him be anathema" (Gal 1:8). This is the greatest of certainties.

c) And yet, these formally revealed truths may serve as principles from which we can infer conclusions in which certain truths virtually contained in strictly divine truths are manifested. This is the certainty of *theology*. The certainty of these theological conclusions is very great, but, in comparison to the certainty of theological faith, it is diminished. Indeed, the theologian is certain of these conclusions not because they are from truths that God himself has told us, but because from these Divine truths the theologian has properly deduced his conclusions in correctly applying the rules of logic. Although [the certainty of these theological conclusions] is diminished by the mediation of this created truth, it can nevertheless be affirmed that [this certainty] remains supernatural by reason of its principle being formally revealed.

d) Finally, there is the certainty of the *faith of the Church*, which we sometimes call *ecclesiastical*. The certainty of this faith is founded on the promises of Christ who remains with his Church until the end: "He who hears you hears me" (Lk 10:16). As soon as the common good of the Church is involved, its teaching in matter of faith and morals and of everything that is tied up with them is infallible—even when its teaching is not about truths proposed as formally revealed. This is true of encyclicals, of theological doctrines approved and proposed by the ordinary magisterium, like "the method, the doctrine, and the principles"[2] of St. Thomas. As for the Assumption, it was cer-

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2 [See *Codex Iuris Canonici: Pii X Pontificis Maximi Iussa Digestus, Benedicti Papae XV Auctoritate Promulgatus* (Typis Polyglottis Vaticanis, 1917), can. 1366, §2: "Philosophiae rationalis ac theologiae studia et alumnorum in his

tain, *at least* by ecclesiastical faith, even before the definition of November 1, 1950. The same thing could be said about the universal Mediation of Mary, which also is already certain, at least by ecclesiastical faith.

Thanks to the promulgation of the dogma, we now know that the Assumption of the Virgin Mary is a properly divine truth, a truth formally revealed, a truth that is certain, therefore, by theological faith: We know from now on in a very explicit way that it is a truth that God himself has told us. The only doubt that could have been a question, before the definition, was knowing whether this truth is formally revealed, or whether we hold it only by the very great and infallible certainty of the faith of the Church. The difference is infinite.

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### *"In Signum, Cui Contradicetur"*[1]

[*Translator's Note:* Due to the cryptic nature of De Koninck's arguments in this article, it seems expedient to give a short summary of the work.

De Koninck originally wrote this response to the *Church of England Newspaper* in the magazine *Semaine Religieuse de Québec* in Canada. This Anglican newspaper, among other things, accused the Catholic clergy of having an inordinate attachment to the Blessed Virgin Mary due to their celibate religious lifestyle. In other words, since the Catholic hierarchy do not have their own wives, their psychological need for female companionship draws them to Mary—and through this perverse need, Marian devotion is spread to the Church.

This accusation is what De Koninck defends against in this article, though in a rhetorically difficult fashion. De Koninck, after having shown what the Anglican newspaper's accusation was, points out that this

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disciplinis institutionem professores omnino pertractent ad Angelici Doctoris rationem, doctrinam et principia, eaque sancte teneant."]

1  [Originally published in French under the same title: "In Signum, Cui Contradicetur," *Laval théologique et philosophique* 10 (1954): 104–06; prior to that it was published in *Semaine Religieuse*, under the title: *Un père de famille dans l'embarras.*]

theological-psychological hermeneutic presented by the *Church of England Newspaper* is an example of the "wisdom of the world" that Christ condemns in the Gospel of John, while cautioning Catholics against becoming inordinately enraged by these Anglicans' words. He then turns to his "personal embarrassment" stemming from this Anglican accusation of perversion, putting to the side the greater theological issue of whether this newspaper should be limiting the Holy Spirit's power to dispense grace and actions in the Incarnation of the Word as the natural born Son of Mary. But De Koninck's embarrassment is this: If it were true that devotion to the Blessed Virgin Mary is a perversion of celibate clerics because they cannot marry, how should we understand the devotion that lay husbands and fathers have to the Blessed Mother? They who have wives and families seem to share the disorders of the celibate clerics—except that the very ground of this supposed disorder does not exist for these laymen. At core, the universal devotion to Mary in the Church has been called into question by De Koninck's Anglican interlocuter.

Having pointed out this comic inconsistency, De Koninck ends his article trusting that the reader will see the errors of the *Church of England Newspaper*'s article and that readers will have connected the dots between his "personal embarrassment" and the Anglicans' accusations.]

> "For my thoughts are not your thoughts,
> neither are your ways my ways, says the Lord."
> Isaiah 55:8

Certain Anglican clergy in the United Kingdom are redoubling their attacks against the doctrine and the practice of the Church regarding this young girl of Palestine of whom, thanks be to God, his Vicar often speaks to us. This clergy had already cried out against the bull *Munificentissimus Deus*, where the supreme Magisterium defined the Assumption as a dogma of the faith. As was to be expected, the encyclical *Fulgens Corona* does not suit them any better. But the prayer composed by Pius XII for the Marian year exasperated them to the point that they have bluntly accused the Supreme Pontiff of "rank heresy."² The Holy See is reproached for having substituted Mary for the Holy Spirit

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2   [For this prayer, see Pius XII, "Preghiera di sua santità Pio XII alla Vergine Immacolata da recitarsi nell'Anno Mariano," *The Holy See*, accessed November

after, it is said, having exalted her to the point of making her occupy the rightful place of the Second Person of the most holy Trinity. No one would be left except the eternal Father—and for how much longer? The *Church of England Newspaper*, from London, told us all just before Christmas,

> This prayer [for the Marian year] transfers faith from Christ to the Virgin Mary. What remains for the Holy Spirit? . . . Just as well, how would one expect something else from a Church dominated by a celibate hierarchy? The normal development of their [i.e., the hierarchy's] personality through family life is forbidden to them; of course they will search for a substitute to occupy the place that a wife should have in their imagination.[3]

This accusation of "rank heresy," however just our indignation may be, should not inordinately upset us, neither to diminish charity—quite the contrary—nor make us lose sight of the fact that not all Anglicans speak in this way. On the other hand, we

4, 2024, https://www.vatican.va/content/piusxii/it/prayers/documents/hf_p-xii_19531121_prayer-immacolata.html.]

3 Passage cited out of *Time Magazine* (December 28, 1953), in the following context: "The *Church of England Newspaper* last week looked hard at Pope Pius XII's prayer to the Virgin Mary, composed for the opening of the Marian Year, and found in it implications of 'rank heresy.'—What specially roused the Anglican weekly were such words of invocation as: 'Enraptured by the splendor of your heavenly beauty . . . we cast ourselves into your arms. . . . Convert the wicked, dry the tears of the afflicted and oppressed, comfort the poor and humble, . . . protect the Holy Church.'—Said the *Church of England Newspaper*: 'This prayer transplants faith from Christ to the Virgin Mary. . . . And what, we may legitimately ask, is left for the Holy Spirit? The Virgin Mary, apparently, displaces the Third Person of the Trinity as well as the Second.' Such 'extravagant devotion' to Mary, the paper said, 'is what might be expected of a church under the domination of a celibate hierarchy. The normal development of their personality through family life is forbidden them: They must perforce find a substitute to occupy the place a wife should have in their imagination.'" [*Translator's Note:* The bracketed texts in the quotation above are De Koninck's own parentheticals clarifying the lines from the *Church of England Newspaper*.]

cannot forget that in times past things worse than this were said. There was a time when men, gnashing teeth against him, accused the Son of Mary, the Incarnate Word, to his own face— repeating for quite some time—of being *possessed* by some other father, the very prince of heresy, and of *being mad* (Jn 10:20).[4] And thank God that something of this divine madness [of the Son of Mary] has been left in his Church—things never cease to amaze. Nevertheless, one cannot expect that the wisdom of this world would be able to measure up or be allied to the wisdom of God! This, at least, [namely, the wisdom of this world,] is one thing that should be despaired of (*faut désespérer*)—"I am not praying for the world" (Jn 17:9)[5]—without, however, losing hope (*perdre l'espoir*) of defeating this wisdom that comes from below and of freeing our neighbor [from it], without neglecting that dose [of worldly wisdom] that may have survived in ourselves.

In leaving to the clergy the defense of the hierarchy against such a specious attack, I ask their permission to express the personal—domestic even—embarrassment into which the

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4 [De Koninck references the exchange between Christ and certain Jews in the Gospel of John. Christ refers to his Father, the First Person of the Trinity, and says that he receives power and authority from his Father. These Jews, however, deny that Christ is genuinely the Son of the Father and assert that he is actually possessed by a demon. Given this substitution of a supposed demon for the Father, De Koninck sees this as an accusation that Christ's true Father is actually a demon, i.e., a prince of heresy. The passage to which De Koninck is referring to runs as follows: "'I am the good shepherd; I know my own and my own know me, as the Father knows me and I know the Father; and I lay down my life for the sheep. . . . For this reason the Father loves me, because I lay down my life, that I may take it again. . . . [T]his charge I have received from my Father.' There was again a division among the Jews because of these words. Many of them said, 'He has a demon, and he is mad; why listen to him?'" (Jn 10:14–20).]

5 [De Koninck is here quoting the middle of this verse. The whole is Christ's prayer to the Father on behalf of his disciples and the Church: "I am praying for them; I am not praying for the world but for those whom thou hast given me, for they are mine" (Jn 17:9).]

[*Church of England Newspaper's*] theory joined to this statement immerses me.

Indeed, my concern about this reproach to our "extravagant devotion to Mary" is not only the fact that the accusers themselves want to dictate to the Holy Spirit the course to take, ordering him, in a way, in which direction he may blow, if they permit him to do so. Again, though at a much lower level than this last [concern], there is in this theory (which is incidentally not very original) something that touches me in a more personal way. (Of course, the Holy Spirit—and hopefully this is so in more than one sense—is infinitely more internal and closer to us than we ourselves are to our proper persons. I now understand this adjective "personal" in the sense that my ears are personal, and also my pipe—even though I do not smoke anymore—or even my office, which is mine at least *ad usum*.) What also puts me—in addition to those who have rightly grasped the truth of "He who is able to receive this, let him receive it" (Mt 19:12)—into a kind of embarrassing situation is again this same cause assigned, in the reproach cited, to the place occupied by Our Lady in the heart of the Church—a place that the faithful very well know is entirely subordinate, though nonetheless immediately to the right hand of, her Son; and they also know well that only her Son is at the right hand of the Father.

Well! You will understand that this interpretation makes even the situation of the fathers of Christian families ambiguous, who with the celibate gentlemen of the clergy are unanimous in praising the boundless Mercy—"the most powerful amongst the most powerful"—for having demonstrated in this young Lady (this "little girl," as St. Louis de Montfort says), how God can do such great things with so little.

Now, if this common devotion must be attributed to some frustration, and if, on the other hand, my wife, with whom, without frustrating either nature or will—at least that is what we have

believed until today—I have begotten a certain number of con-substantial images of our nature (including even some allergies—or at least their predispositions, present however since birth), if my wife, I say, hears talk of this theory and takes it seriously, how am I going to face her from now on? Should she not look at me as a frustrated husband? And, on this account, is it therefore to our good nuns that we are indebted for Christmas, when already there is so much to thank them for? So what place is left to me in the imagination of the mother of my children when she applies herself to teaching them about the one whose birth among us we celebrate during this time,[6] and who is named the Son of David?

In short, these gentlemen of the *Church of England Newspaper* do not seem to have realized that they have launched this rather scabrous slander. Have they taken so seriously *The Essence of Christianity* by Ludwig Feuerbach? Perhaps they vaguely fear being themselves inscribed in the diary (*l'agenda*) of Our Lady.

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6 [The date stamp in this essay indicates that it was originally published on the feast of the Epiphany in 1954.]

# BOOK REVIEW

*The Lion and the Ass: Reading Genesis after Babylon.* By ROBERT SACKS. Green Lion Press, 2019. Pp. 448. $34.95 (paperback). ISBN: 978-1888009521.

When I first read this excellent book, I was immediately charmed by the new connections and fascinating details that the late Robert Sacks had opened up. When I re-read it, I noticed he had a kind of thesis about something called the "new way," but I was still so interested in his investigation into the characters and events in the book of Genesis (with delightful side-trips to Exodus and Kings, discussion of prophecy, comparison of David's two generals Abner and Joab, and the exploration of genealogical lists and the meaning of place names) that I paid little attention to it.

Finally, I looked again at the title and noticed that he says early in the book that the "major subject" of the book was the development of this "new way" (10). I think I have figured out how he thinks a Jew can read Genesis, the story of God's original promises to Abraham and his descendants, even when it seems all has been destroyed in the exile to Babylon. But I could not get a grip on the "new way," and I was beginning to feel it was not entirely correct.

This essay is largely an account of my efforts to clarify his idea of a "new way," so it may seem to be more of a critique than a review. But this is a very valuable book for so many reasons. When Sacks himself wrote this he was an old man, but he had been studying these things for a long time. He taught at St. John's College, Annapolis, beginning in 1960 (he was teaching at the Santa Fe campus when I was at St. John's). We in the Thomas Aquinas community will appreciate first of all the way he lets the text "speak for itself." You will enjoy reading this book if you are at all drawn to a deeper look into the "Old Testament," as we Christians name it.

And thinking about naming things, there is another unfamiliar term Sacks uses besides the "new way." The whole Jewish scriptures—the Law (*Torah*), Prophets (*Nevi'im*), and Writings (*K'tuvim*)—is together referred to by an acronym: the *Tanakh*. Sacks wants to look at the books of what we might call history, from Genesis to Second Kings, which he sees as a unified story. Since the prophets are classed as either Early (*Rishonim*) or later (*Acharonin*), and Second Kings is counted among the early prophets, he has found a new acronym to name that portion: the *Tanar*.

BOOK REVIEW

## The End in the Beginning

The numbers forty and four hundred appear frequently in the books from Genesis to Second Kings. Sacks calls such a period "a time of waiting in which nothing happens, and a time without which nothing could happen" (211). For example,

- 40 days of rain at the time of Noah. (Gn 7:12)
- Isaac was born in the 392nd year (≈ the 400th year) after the flood, when Abraham was 100. (Gn 21:4)
- 40 days that Moses was with God on Mt. Sinai. (Ex 32:28)
- 40 days spent spying out the land. (Nu 13:25)
- 40 years in the wilderness. (Dt 29:5)
- 40 years of being sustained by manna. (Ex 16:35)
- 40 years before Isaac marries. (Gn 25:20)
- 400 years in Egypt, a period which is foretold to Abraham. (Gn 15:13)
- 400 shekels paid by Abraham for the cave of Machpelah. (Gn 23:16)

Sacks adds that forty weeks is the length of pregnancy, a time of waiting and nurturing the seed. So too the children of Israel will spend four hundred years in Egypt. We do not have any stories from that period; it is like a time of suspended animation. The family of Israel grows greatly in numbers, even though they grow less in the esteem of the Egyptians. Their shared sufferings will turn them from a family into a nation. Those four hundred years had a purpose beyond themselves: They were a preparation for the giving of the Law and the occupation of the Promised Land.

And the length of the Davidic kingdom is also about 400 years. It is easy to read the story that stretches from Genesis to Second Kings, which Sacks calls the *Tanar*, expecting that the Davidic kingdom will be the fulfillment of God's promises, the goal towards which God had been leading his people all along. If we read it this way, the fall of Jerusalem and destruction of the Temple seem like a final catastrophe, one that the people brought on themselves by their failure to remain faithful to YHWH. Hence the difficulty of reading Genesis after Babylon.

But what if it was a 400-year period of waiting for something to come to fruition, which is how most students regard the 400 years in Egypt? Sacks himself poses the question, "Is what we might regard as the *height of Israel's glory* merely another waiting period?" (332) That would fit with the way the

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end of the story of the kingdom is implied from the beginning, which we will soon explore. And it would help to make clear that the temple and kingdom in the Promised Land was never the final goal.

## The Prophecy of the "Man of God"

The title of Sacks's book refers to an incident that spans the history of the kingdom of Israel from David to Josiah, at the time when the kingdom was first divided and Jeroboam has just established his kingdom of ten tribes in the north and set up a "temple" outside Jerusalem, in Beth-El. Then there arrives from Judah a "man of God." Unnamed, and appearing out of the blue, the man of God addresses the altar at Beth-El: "O Altar!" (1 Kgs 13:2) He condemns the altar and prophesies its destruction and desecration by a future king named Josiah. He does not say, probably because he does not know, that this prophecy will not be fulfilled for almost 400 years. King Jeroboam reaches out and tells his servants to lay hold of the man, and his own hand "dried up" (13:4) so he could not draw it back. Humbly, the king entreats the "man of God" to "entreat the favor of the Lord your God" (13:6) that his hand might be restored. Without comment, the "man of God" complies, and the king's hand is as it was before. King Jeroboam is intrigued (or threatened?) by this mysterious man, and invites him to stay to eat and receive a reward. But the "man of God" refuses because, he says, his divine instructions forbid it. Then he leaves.

Just after he sets out he meets an "old prophet in Beth-El" (13:11), who has already heard of what happened from his sons, and leaps up to follow him on his ass. When he catches up with the "man of God" he, like Jeroboam, invites him to come and eat. Again the man refuses. Then the old prophet says that he also is a prophet, and that he has received a divine message to invite the "man of God" back with him to eat and drink. The "man of God" is persuaded. He stops and eats. They seem to get along well, as when the "man of God" leaves, he is riding his new friend's ass. But while they were still at table, the old prophet gets a corrective prophecy, and cries that the "man of God" will not be buried with his fathers. Sure enough, he has not traveled far before he is attacked and killed by a lion.

The old prophet is told and goes to find the dead body. The lion that killed him, along with the unharmed ass that carried him, are placidly, mysteriously, still standing by it. The man of God's body has not been mauled, and the ass has not been attacked by the lion. The old prophet buries the man of

God with reverence, and requests that he himself be buried in the same tomb when he dies. Hundreds of years later, when Josiah is king, the prophecy is fulfilled by the destruction and desecration of the altar. And, remarkably, the tomb of the man of God and the old prophet is rediscovered: The local people remember enough of the incident to know who had been buried there centuries before (1 Kgs 13:3–32).

Sacks sees in this story from Kings an account that connects the beginning and the end of the kingdom. The man of God's dramatic prophecy, occurring so long before the event, seems to have been pointless, as it is not information that either Jeroboam or the people who heard it could use. But it only seems pointless because we do not see the reason it is there. Not because God wanted to warn Jeroboam—we are told that "After this thing Jeroboam did not turn from his evil way" (1 Kgs 13:33)—but to be a message to those not yet born who, having survived the fall of Jerusalem, will fear that that tragedy and their own exile mean that God's providence has failed and his promises to Abraham and the patriarchs have been broken. But now, look, it was meant to be from the beginning!

And now we can see why the prophecy was so oddly addressed to the altar and not to Jeroboam or the people. And the image of the dead prophet, the lion, and the ass is planted in the events of history, as a mystery that will be remembered. It is vivid and odd enough to attract the attention of a future reader, and if that reader is a deep reader, he will receive the message.

> The lion is the spirit of the founders and re-founders who "overturn in order to preserve": figures like Abraham, Jacob, Moses, David, and Josiah. In contrast, Isaac and the many other in-between generations, like that constant and resolute beast of burden, the ass, carry the ponderous inheritance called tradition on their backs. Together they guard the promise of the man of God. (170)

But what is that promise? Sacks allows us to conclude here that it is the coming of the pious King Josiah, the king who will reunite Israel, recapturing the area that was the Northern Kingdom, and enact a thorough religious reform, including the desecration of the heretical altar of Jeroboam.

> The Davidic kingdom proper will last 400 years—but is that like all the 40's and 400's . . . a time of resting and waiting for something to happen?

*170*

Is what we might regard as *the height of Israel's glory* merely another waiting period? (332)

It is also during Josiah's reign that a book of the Torah is rediscovered. I suspect that the good news hidden here for the reader studying the text "after Babylon" is that the fall of Jerusalem and the destruction of the Temple were always part of God's plan, much as the four hundred years in Egypt were part of that plan. The worldly kingdom of David and his descendants is a preparation for a gift from God that can only be received by those in exile in Babylon. Something of inestimable value.

It would seem that what the exiles did was study the Torah and the other sacred writings, notably the prophets and the psalms. It may have been the first time serious study was expended on these books, many of which had not been written down before the exile, including most of the prophets and psalms, but had been kept by memory and tradition. They searched, no doubt, to find an answer to their predicament. But they found great treasures in all they read and discussed, and they wrote down all they remembered. Now, *Sacks never pronounces this as his main conclusion,* so perhaps I am wrong. Or perhaps he wants his readers to do some of the work themselves.

### *Examples of the End in the Beginning*
### *(or, Messages to Future Readers)*

One perspective that Sacks uses to find deeper meanings in the Scripture I think of as "finding the end in the beginning." He uses far separated passages to reveal difficult to see, or even intentionally hidden, interpretations that are fascinating and useful in enriching one's understanding. I agree with him that in Scripture, every remembered name, or place name, or even a turn of speech, when repeated somewhere else can be a clue, a prompt that the reader should look for a connection between the two things. Because the world and the things in it are in fact connected, and if understood rightly, can teach us.

The following are a few illustrations of this pattern that Sacks gives:

- Terah, the father of Abram, was from "Ur of the Chaldeans" (Gn 11:28), which makes little sense, because the Chaldeans were not in Ur when Abram was born, though they were at other times. The reason for fudging a bit to call Abram's birthplace "Ur of the Chaldeans" can be seen

when we read 2 Kings 25:5–6. We have not heard the name "Chaldeans" through all the years from Abram to now, and here, at the end of the story, Israel's last king will be pursued and captured by the Chaldeans.

- The name of Babylon appears in Genesis 11:9. It is much, much later when we next hear of Babylon, now fighting under Shalmaneser, king of Assyria, coming to conquer the Northern Kingdom (2 Kgs 17). And Sacks points out (108) that the third time we hear of Babylon after Genesis 11:9 is the last, because that is when Nebuchadnezzar comes with the army of Babylon and destroys Judah (2 Kgs 25).

- In the war of the kings in Genesis 14, Abram's allies include the Amorites. He will not keep any of the spoils for himself "lest you should say, I have made Abram rich" (Gn 14:23). It is essential that he not be obligated to future enemies.

- The story of the nation of Israel began in Exodus with the flight from Egypt. In 2 Kings 24:7, we will read that "the king of Egypt came no more out of his land." But this is not the good news it seems to be. After the reformer-king Josiah dies in battle with Pharaoh Neco of Egypt, his son Jehoahaz becomes king, but reigns for only three years in Jerusalem. This is because Pharaoh Neco has imprisoned him and made his brother Eliakim king as part of his plan to extract a large tribute from Judah. This puppet king (renamed "Jehoiakim" by the Pharaoh) taxed the people heavily to pay the tribute, and, despite the example of his righteous father, "he did what was evil in the sight of the Lord" (2 Kgs 23:37). It is after Jehoiakim's death that we read about Egypt coming no more (2 Kgs 24:7). But, as Sacks notes (330–31), the verse continues, "for the king of Babylon had taken over all that belonged to the king of Egypt."

- Israel's first victory in Canaan is that at *Jericho*, accompanied by the Jubilee trumpets (Jo 6). Israel's last defeat could be said to be the capture of King Zedekiah, in the *plains of Jericho* (2 Kgs 25:5).

- The land of Shinar (Gn 14) held the beginnings of Babylon because it was the home of the hero Nimrod (Gn 10:8–10), and a king of Shinar was among the kings in the battle of the kings in Abraham's day. When we next hear the name Shinar, it is in the book of Joshua, when Achan of Judah was so tempted by "a beautiful mantle from Shinar" (Jo 7:21) among the spoils from Jericho that he took it, although it was among the things "devoted to God," which it was forbidden to preserve. This comes

out when the Israelites are defeated in their next attack. When the identity of the miscreant is found, he and his family are stoned (Jo 7:25).

Sacks finds significance not only in names but even in things. For example, chariots appear in the beginning of the conquest of the Promised Land as fearsome war machines that their enemies have but the Israelites do not (Jo 17:16: Jgs 1:19). But with God's help the Israelites are able to face them and conquer those who employ them, and when they do, they burn the chariots and hamstring the horses (Jo 11:9). Joshua assures Ephraim and Manasseh that they can win even against iron chariots (Jo 17:16). In Judges 1, the tribes of Judah and Simeon are unable to overcome the chariots on the plain. As Sacks notes (353), chariots will play a role in the loss of individual freedom and the rise of kingship. The kings of Israel will acquire horses and chariots of their own, despite the prohibition against "the king multiplying horses to himself" (Dt 17:16). When Josiah comes to rule, one of his reforms is to burn "the chariots of the sun," a golden statue that had been set up by Judah's kings as a gift to the sun god (2 Kgs 23:11). But before the children of Israel ever come to the Promised Land, here is Joseph, in his splendid Egyptian robes with a gold chain about his neck, driving the Pharaoh's second chariot (Gn 41:42–43). Sacks remarks, "It is almost as though Joseph were riding in the very chariots which Josiah will tear down" (354).

## The Perfect vs. the Best Possible

Even before presenting the central theme of the "new way," Sacks brings forward the idea of the opposition between the perfect and the best possible (7). He points out that at creation, even the earth cannot obey perfectly, for when God tells the earth to (literally translated) "grass grass," the earth merely "sends forth" grass (Gn 1:12). God tells the earth to "send forth" living things, but it seems the earth is incapable of doing this, so several verses later God himself "makes" the living things (Gn 2:9). God is always ready to amend his plans according to the way things work out. Sack summarizes this by saying, "God begins by requiring the *highest*, simply. The story as a whole, then, is a turn from the good that cannot be; and it becomes a long search for the highest *possible* good" (7).

The pattern continues: God makes a man who is simple and complete, but then he has to find a helper/partner for him (29). Initially, Adam and Eve

have a garden to tend, but later they require an earth that requires hard work to farm. In preparing a great flood, God decides to begin again with a clean slate, but when he sees righteousness in Noah, he saves him. First there was a vegetarian world, with animals subject to man, but now there will be carnivores, with animals in dread of man. The Philistines will never be dislodged, although geographically Israel would be more whole if they were. Thus, there will always be giants and Philistines and chaos (113). The descendants of Lot (Moab and Amon) and those of Esau (Edom) were established in lands around the "Promised Land" with the intention that they be friendly to the young nation chosen by God to bring a blessing to all nations, but none of them recognized Israel as a brother.

In his commentary on Genesis 1, Sacks looks at the repeated phrase "and it was so." It cannot mean "and it was in fact as God had said," he argues, because sometimes the phrase *precedes* the being of the object. For example, in Sacks's translation:

> Gn 1:14–16: "Let there be lights in the spread of the sky to divide day from night. . . And it was so. God made the two great lights—the greater light to rule the day and the lesser light to rule the night—and the stars."

He then proposes that when the text says, "and it was so":

> God has not yet established the existence of the thing but merely the direct path in which it is to go. . . Humans, however, will not be said to be "so," for reasons that are related to what medieval theology will call "freedom of will." (7)

Because of man's "openness"—Sacks does not seem to like the term "free will—God is constantly adjusting his plan to find a way that will work, the best possible way.

Although the creation is a compromise, it is still good: "God saw all that he had made, and behold it was very good" (Gn 1:31). Sacks speculates:

> The whole is said to be "very good" in spite of the fact that it is never specifically mentioned that humankind itself is good. Perhaps it is implied that a whole in which there is one being whose way is open, and to that extent unknown, is better than a world in which all the inhabitants are known to be good. (18)

Then why does God blot it out in the great flood? Perhaps it is necessary for mankind to experience this failure so that they will understand their restrictions? But this cannot be Sacks's reading, since he will later say that the world before the flood must be forgotten. For in noting that God says (Gn 6:7) he regretted making man, he comments:

> *Regretting* is another facet of the problem that first arose when the earth brought forth grass. Genesis, and for that matter much of the rest of Tanakh as well, is a series of attempts to find the best way for humankind. This search necessarily means taking into account both *the best that might have been* and *humankind as it is*. But perhaps the notion of such a compromise is meaningless; or perhaps a world of nothingness would be superior to a world of compromise. Such is the point of view . . . in light of which God may be said to have "regretted." (61)

This is a difficulty. Is a world built on such compromise a world worth making? It would be easier to understand if Sacks had said more about what is gained by giving man free will.

Along with such compromises is the problem of mixed things. Near the very beginning of the book, on page 4, Sacks comments on the division of Day from Night being immediately followed by the unexpected appearance of evening and morning, which seem not to have been created, but just to happen in the meeting of Day and Night.

> The unavailability of clear and sharp distinctions is a fundamental problem in Tanar. In a word, this lack of clarity makes both necessary and possible compromises or re-evaluations in the relationship between God and humankind. (235)

It is these compromises and reevaluations that will require a "new way."

## The "New Way"

What is the "new way"? I will try to manifest it by gathering together some of the characteristics that Sacks says mark this "new way."

*First characteristic.* It will be a law imposed from outside.

> One need only follow the story of the garden of Eden to see that law imposed from the outside was not part of God's original plan. The

development of an alternative plan will form the major subject of the present commentary; I will refer to that plan as the "new way." (10)

I think Sacks is wrong when he says that "law imposed from the outside" was not part of the original plan. Because the original plan included the Tree of Knowledge of Good and Bad.

Sacks discusses what "good and bad" mean on pages 32 to 35. He points out that the word often translated "evil" here, but which he translates as "bad," does not always, or even usually, refer to human activities, but to things. When used so it means that they are malignant or disagreeable, as poison or illness is "bad" but not "evil." It is not a phrase often used in the Tanar, and he looks at the instances where it occurs:

- It is used when God warns Laban to say nothing, "either good or bad," to Jacob (Gn 24:50, 31:24). Laban seems to understand this to mean he should do no harm to Jacob (Gn 31:29).
- The Israelites who left Egypt as children are said not to know "good and bad" (Dt 1:39). Forty years later, in Deuteronomy 30:15, they will have to choose between "good and bad."
- In Second Samuel, after the rebellion of David's son Absalom, Joab sends a woman to persuade David to stop punishing his son. In the course of her appeal she says, "the lord my king is like an angel of God to discern good and bad" (2 Sm 14:17).
- And in First Kings 3:9, Solomon asks God for "an understanding heart, that I may discern between good and bad" when he judges his people.

Sacks sees in these examples evidence that knowledge of good and bad is needed especially for the political life. In Laban's case it implies power, in Deuteronomy it has to do with making free choices, and in David's and Solomon's cases, it is understood as the knowledge appropriate to a king.

Sacks often speaks of God adjusting his plans, as we saw in the discussion of the perfect versus the best possible. However, God made Eden for man, and he planted in it beautiful and fruit-bearing trees. Then he planted the Tree of the knowledge of Good and Bad. I would say that that tree is part of the original plan, that it is there by God's providence. And by that providence, when man disobeys and eats the apple, he gains, along with the doom of mortality,

the very thing he needs to live outside the garden, the knowledge needed to live a political life.

Now, what Sacks calls God's "alternate plan" is going to include "a law imposed from outside"; presumably, that would be the Torah. But I don't think that by the "new way" Sacks means *simply* the Mosaic law. Sacks seems to hint that the Torah is not to be God's last word, when he declares that the book of Judges serves to explore "a world which might have been preferable" (10). Living in the Promised Land with God as their only king leads to a story in which a town gang-rapes a woman to death, and a man cuts his dead concubine into pieces, and the rest of the tribes of Israel come close to slaughtering the whole tribe of Benjamin, and then to rectify this, steal enough virgins from another town to provide wives for them (Jgs 19–21). This makes clear that there is need for a king and a law. *But by the time of the Judges, the Israelites already have the Law.* I conclude that there is more to the "new way" than the giving of the Law on Mt. Sinai.

*Second characteristic.* The "new way" will establish a system of justice that can persist through generations.

> Is it possible for justice to be formalized in such a way that it can be passed down through generations, without relying on the innate character of the sons? The central problem is not the problem of the just man, but the problem of the just founder. (68)

*Third characteristic.* The family unit is essential. When God establishes his covenant with Noah, Sacks says that "a new order in the relationship between humans and God is proposed, . . . a 'new way.'" (67) And he points out that although it was the individual, Noah, who was judged to be righteous, his whole family is saved with him. Family bonds are essential, for the new way will depend on tradition. Even the beasts, who entered the ark "according to their kind" in Genesis 7:14, go out of the ark "by families" in Genesis 8:19.

> The "new way" will not be given to the whole human race at once, but will depend on family relationships. If it is to be preserved at all, the role of the family as the preserver of tradition must replace the notion of kinds. (75)

*Fourth characteristic.* The "new way" will be given to a single people before it can be offered to the whole world.

The "new way," the way of the Law, requires the singling out of a particular people. Because of the division and scattering of mankind [at Babel], any law or custom must begin as the specific law of a specific people. (98)

*Fifth characteristic.* Fathers in the chosen line of Abraham must be willing to devote their seed to the "new way." The "new way" must be passed down through generations within the family. Abraham learns that God does not intend his servant Eliezar to be the child of the inheritance (Gn 15:2–4)—he cannot pass on the new way through mere adoption. Abraham alone, even though worthy to be a founder, cannot pass on the "new way" through his virtuous example alone. And it will not be passed on through Ishmael, his son by his wife's Egyptian concubine. The "new way" is a divine gift that has been entrusted to a single family; it is "non-transferable." Sacks explains:

God and Abraham had made a covenant: God would give Abraham a son and make his name great if Abraham were willing to devote that seed to the establishment of the "new way." (183)

This does not seem to be quite right. Did God say that? He asked Abraham to "stroll before him and be complete" (Gn 17:1), and said, "As for you, you will keep my covenant, you and your offspring after you throughout their generations. . . . [E]very male among you shall be circumcised" (Gn 17:9–10). Circumcision *could* mean "you must be willing to devote your seed to the establishment of the new way," but it is not obvious that it has that meaning.

*Sixth characteristic.* This "new way" relies on other nations assenting that Israel is chosen:

The legitimacy of the "new way" seems to rely upon the blessings of such men [as Balaam and Mechi-zedek], that is, upon nations assenting that Israel is the first to receive the divine law—which constitutes Israel's chosenness. . . . (115)

Genesis 14 as a whole—the battle of the kings, wherein Abram rescues several kings from the depredations of another and receives their gratitude—"seems to affirm that the virtue of the 'new way' is visible to those who look with purely human understanding" (115, 116). Sacks's assertion is a tough one, though it is true that most Christians would readily assent.

*Seventh characteristic.* Abraham's life experience and travels gives him understanding of God's plans and the "new way." Sacks says:

> As founder of the "new way," Abraham must go through the whole from the beginning in order to see where it is going. . . Only after he has a clear notion of where the whole is going will he beget a son. (103)

Abraham does go through, *travels* through, the places of future importance in the life of the Jewish people, but he could not have understood that he was doing that. It seems to be one of those "end in the beginning" things, meant to be meaningful only long afterwards. So how can Sacks say that Abraham has a clear notion of where the whole is going?

Although Sacks does not explain exactly what he means, I would like to digress briefly in support of his claim. There *is* one thing that happens in Abraham's life that gives him a notion of where the whole is going, although Sacks does not include it in his list. When Abram questions the covenant in Genesis 15, he asks God, "What will you give me, for I go childless?" God's answer is to repeat that Abram's seed will be as numerous as the stars (Gn 15:2–7). But Abram, although he believes God, is not satisfied and persists: "How am I to know that I shall possess it?" (Gn 15:8). God does not rebuke the questioner; he also does not give him a simple answer. Instead, God has Abram prepare a sacrifice, a sacrifice in a form of ritual known to have been used in that period for making solemn covenants between men, sometimes called "the covenant between the parts." In this ritual the symbolism of the bodies of the animals being cut in two is a way of saying, "Let me be treated as these animals have been if I do not keep my side of the covenant." Abram and God become the two presumed "men" that are making the covenant, as though they were of equal standing. On the other occasions when God proclaims a covenant with man, he dictates both sides of the promise. Here, it seems to be essential that both sides know just what they are agreeing to. So God tells Abram of things that have previously gone unmentioned: the future suffering of his children through years of slavery under a foreign power, the ten generations that will pass before any of his descendants possess the land, that the Promised Land will not be unoccupied when the line of Abraham finally comes to claim it, and that his descendants will have to fight the Amorites (Gn 15:13–16).

*Eighth characteristic.* The "new way" rejects child sacrifice. Or, the "new way" will include suffering and sacrifice. Sacks explains the binding of Isaac in relation to the "new way" as follows:

> It had to be made clear that the lack of human sacrifice which charac-
> terizes the "new way" does not signal a lack of willingness; rather, the
> God of Abraham does not wish such sacrifice to take place. (190)

This does *not* seem to me to be an adequate reason to require such radical obedience, the willingness to kill his own son. Sacks points out that God *asks* Abraham, using the Hebrew article equivalent to "please," which is an indication to me that what he needs from Abraham is not mere obedience, but acquiescence.

Let us return to the "covenant between the parts." The new revelations are delivered to Abram in a "trance" and a "horror of great darkness" (Gn 15:12), a presage of the suffering the Israelites will pass through. The dreadfulness of accepting this covenant may also be an allusion to the deaths of the innocent first-born of Egypt, and thereby to the binding of Isaac on Mt. Moriah and the anguish that Abram will endure because of it. The chapter continues: "When the sun had gone down and it was dark, a smoking fire-pot and a flaming torch passed between the pieces" (Gn 15:17). These apparitions surely prefigure the God who will appear to his people in Egypt as a column of smoke and a column of fire.

But now, for the ceremony to be complete, Abram should also pass between the pieces. It seems he does not. Perhaps he is not yet ready to accept so much sacrifice and suffering. And perhaps that is why God has to "test" him later, after Abram has proved his faith many times. Just a few verses earlier the text says, "he believed YHVH; and he counted him as righteous" (Gn 15:6). But in chapter 22 God will ask him to make a concrete and more difficult sacrifice: "Please take your son, your only son, whom you love, even Isaac . . ." (Gn 22:2). And Abraham finally does prove that he will accept a covenant that includes sacrifice and suffering. But the implications of this momentous event extend much further than that, and beyond the scope of Sacks' book. I will speak of that in the epilogue.

*Ninth characteristic.* The "new way" is passed on to Isaac and Jacob. Now back to Abraham devoting his seed to the establishment of the "new way." Sacks claims that at the time when Abraham sends his servant to get a wife

for Isaac, he "had already passed the 'new way' on to younger hands" (216). How has Abraham has done this, especially if, as Sacks strikingly maintains, Abraham never sees Isaac again after the binding on Mt. Moriah (194)? Isaac's life gives no indication that he knows anything about the "new way." This, in Sacks's view, is the proof of the possibility that the "new way" can be passed on through a generation that never even understands it.

In regard to Jacob, Sacks says of his oath after the dream-vision of the ladder to heaven, "if he is enabled [by God] to return to the Promised Land, then his oath is to continue the 'new way' of his fathers" (258). Yet what Jacob actually says is: "then YHWH will be my God. This stone, which I have set for a pillar, will be God's house" (Gn 28:22). And when he adds that "and of all that you will give me I will surely give a tenth to you," Sacks explains that

> In expressing his willingness to give tithes, Jacob was in fact express-
> ing for himself and his children the willingness to accept the burden
> which such an ecclesiastical hierarchy would entail. (259)

The act of giving away a tenth of one's gains to a superior was performed before by Abraham. He thought it was right, after winning the battle by which he recovered his brother Lot, to give a tithe to Melchizedek, king of Salem. Jacob could have thought this was the right way to act toward God, now that he has begun to trust in him, without thinking in even a vague way of an established system of worship with an ecclesiastical hierarchy, although I would agree that it foreshadows such a development. And there is no evidence that Jacob thought of his fathers' faith as a "new way" in the sense Sacks wants us to understand that phrase, nor that he regards preserving the "new way" so that it can be passed on to future generations as his job.

Upon Jacob's death, Sacks suggests that "the sons of Jacob carrying ('lifting') his body are carrying the responsibility for the new way" (423). Perhaps this is a fair reading. If so, it would make sense that they would have done their best to ensure that the things they had learned from Abraham, Isaac, and Jacob would continue to be remembered, that their descendants would understand what kind of people they were by this wisdom about the "new way." But this is a little hard to imagine.

How could the Jewish people have had traditions from before the Egyptian captivity? If tradition is essential for Abraham, Isaac, and Jacob to preserve the new way, would not the 400 years in Egypt have broken that

tradition? Of course, they were not enslaved for the whole period; perhaps their slavery was limited to the last hundred years. That could have given them a better opportunity to raise children in a way that would teach them about their origins and the covenant God made with Abraham. Still . . . did the Israelites build altars to YHWH in Goshen? They had not yet adopted any annual religious feasts when they went into Egypt, no regularly performed or public sacrifices, and no priesthood, all of which would seem to be necessary supports for passing on religious tradition. Did they remember the lessons Abraham learned from his sojourn in Egypt? From his parting with Lot? From his encounter with Melchizedek? From the destruction of Sodom and Gomorrah? From the "covenant between the parts"? From the binding of Isaac? Sacks speaks of the difficulty of maintaining a continuous tradition, especially in the case of a son who has not fully understood the "new way," such as Isaac. But surely those difficulties would be increased ten-fold during the 400 years as aliens and then slaves.

In Sacks's defense, God did tell Jacob he would go to Egypt with them (Gn 46:3–4). Sacks could also point to the community's memory that there is a God "of Abraham, Isaac, and Jacob," as evidenced by God's expectation that they will understand Moses if he describes the God he has encountered in the burning bush in that way (Ex 3:13–15). And to the fact that God hears them when they "cry out" *to God* in their distress (Ex 3:7). And, of course, to the fact that those memories were eventually written down in the book of Genesis. But Moses himself doubts that they will understand his role as a messenger from God; that is why he asks God to tell him his name.

*Tenth characteristic.* The "new way" sets human desires within bounds and makes them noble. Near the end of the book Sacks speaks of events that occur at the very end of Genesis. After Jacob's death in Egypt, when the other sons ask Joseph anew for forgiveness, Joseph replies that, though they meant it for evil, God meant it for good. Sacks comments:

> This understanding of divine providence is perhaps the clearest way of stating the "new way," within which the lowest human desires are set within proper bounds and endowed with nobility of purpose. The "new way" must be distinguished from pagan practices, which presuppose that the chaotic waters within the human soul can be used for the benefit of mankind in their natural state. Therefore pagans do not practice circumcision, nor do they understand the rise of art to be painful. (424)

How are the lowest human desires "set within proper bounds and endowed with nobility of purpose"? Maybe, for example, insofar as the appetite for food is bounded by table manners and generosity to guests, or it is sanctified because most sacrifices to God will end in a feast? The "clearest way" of stating the "new way" is, to me, still somewhat murky.

### The Establishment of the New Way

Let us now try a different approach to what Sacks is up to. When exactly does Sacks think that the "new way" is established?

*The new law is established in a people who are slaves.* That would fit with the giving of the Law establishing the "new way." Sacks seems to speak of its beginning when he says:

> [W]ithout law there can be no people, and without a people there can be no law. The only solution to this paradox is itself a paradox: a people that is not a people; only *slaves* are empty enough to receive the "new way." (387)

But in what sense did the newly liberated slaves "receive" the Law? Although they witnessed the sound and fury at Mt. Sinai, the slaves that left Egypt refused to conquer Canaan at their first arrival. And all of these ex-slaves died during the forty years in the wilderness. When we look for the Law in the book of Judges, we see no evidence that the settlers of the Promised Land had ever tried to practice the Law after Joshua's death.

The event that will make it possible for them to at last receive it, and come to love it, is yet to come, but we may find that it also will be given to "a people who are not a people."

*Jethro understood the "new way" in its highest form.* Again, this seems to point to Mt. Sinai as the place where the "new way" was established. Sacks asserts that

> It is Jethro who suggests to Moses that laws be provided for the people, so that the right way of action might be clear both to them and to their judges. This "new way," the way of written law, is not initiated by God but is prompted by a need clearly visible to human understanding. (121)

Here as in other places it seems that the "new way" may simply be the Law. So why make a new name for it? Perhaps because it can now be seen as a reasonable response to human needs, it differs from "law imposed from

outside"? However, giving Jethro so much credit for the giving of the Law, and saying it was not initiated by God, is very odd.

Later Sacks amplifies this claim:

> The meeting between Jethro and his son-in-law shows in many ways that Jethro has understood the "new way" in its highest form. . . . [T]he whole notion of a law for Israel is due to the insight of Jethro. (227)

Yet this is puzzling, since what Jethro contributed was simply the idea of a hierarchy of courts and judges. He had nothing to do with the content of the law.

*The "new way" takes root when the old way has been firmly eradicated.* Commenting on Moses and the Levites killing 3,000 people after the apostasy of the golden calf, Sacks says, "Moses sees that the 'new way' cannot take root unless the old way is firmly eradicated" (409). Is that true at the foot of Mount Sinai? Although Moses and his brother Levites eradicate a great many people, those who survive are quick to give in to temptation and begin worshipping "Baal of Pe-or" when they first come from the wilderness into settled areas (Nu 25:1–5). It looks like the old way was not eradicated firmly enough.

*The "new way" is incompatible with the way of warriors and cannot be established until wars are over.* Sacks notes that "Nathan, at God's behest, informs David that he is still part of an 'old way.' Too much blood is on his hands" (205). As regards that monarchy, Sacks seems to claim here that the "new way" cannot be walked in by warriors: This is plausible insofar as Jewish culture has historically had less idealization of the warrior than most. But David is also called the man after God's heart (1 Sm 13:14), and he is referred to throughout both books of Kings as a model of one who follows God's commandments (1 Kgs 14:8, 15:3–5, 2 Kgs 14:3, 16:2, 18:3, 22:2). It's difficult to believe that David is not part of the "new way."

When David's son Adonijah tries to seize the throne, with the support of Joab, David's general, Sacks interprets the symbolism by saying:

> Adonijah's revolution is an "old" revolution. Joab, Joab's wisdom, and Joab's violence all belong to an "old way." . . . When Joab is finally killed, clinging to the horns of the altar, could that be an image of the sacrifice of an *old and outmoded wisdom* on the altar of God? (206)

So the "new way" has still not yet been established.

*Solomon's prayer.* Perhaps Sacks is thinking that the prayer of Solomon at the dedication of the Temple is the establishment of the "new way"?

> [Solomon's] great prayer, to be delivered at the opening of the Temple, contains the *new wisdom*, which will outlast both his Temple and the pagan shrines. Although the prayer is followed by a sacrifice and a feast, in his description of the Temple's purpose the word "sacrifice" never appears. . . . Fourteen times the word *t'filah*, prayer, appears in the chapter, and in it, prayer silently replaces animal sacrifice. What causes this change in the "new way"? . . . The first promise has been fulfilled. . . . The wars . . . are over; and YHWH has given rest to his people. . . . [N]ow the people have only themselves to face, and that will be the hardest. (206–7)

*The "new way" is the riddle of the whole Tanar.* In connection with Samson and the judges that Moses had set up, Sacks notes that

> At his wedding feast, Samson will propose to the Philistines this riddle: "Out of the eater came the edible, and out of the strong came forth sweetness." Samson's riddle is the riddle of the Tanar as a whole. *How can the sweet come from the strong?* That question has been plaguing us throughout: how can justice come to be out of mere power? (411)

The riddle is still unanswered, fifteen pages from the end of Sacks's book. And the "new way," though it started with the patriarchs, is not yet *established* even at the time of the Judges. And the wars that seemed to have ended with the reign of David have never ceased.

Sacks began this book by talking of the "new way" being a way of justice that would be self-perpetuating: "Is it possible for justice to be formalized in such a way that it can be passed down through generations, without relying on the innate character of the sons?" (62). In Judges, when "every man did what was right in his eyes" (Jgs 17:6; 21:25), it will seem to the people that what is required is the stability that can be provided by a hereditary monarchy and an established priesthood. The books of Kings will prove that those things are as corruptible as men are. But Sacks does not say: *Justice cannot come from power, until it is wedded to mercy.* Or, as in Psalm 85:10: "Mercy and truth have met each other; justice and peace have kissed." That Psalm will not be understood until David's kingdom has fallen. And not fully understood until hundreds of years after that. The "new way" will be a way of peace, of living faithfully under the law, but without the sacrifices. When it is established, it will outlast the

Temple. But at the end of the book of Kings, at the end of the Tanar, it has yet to be established.

The "man of God" who appears in First Kings is the prophet of the "new way." And now we should remember the conclusion of the analysis of the story of the "man of God," when it turned out that the prophecy made the whole time of the kings another four-hundred-year period of gestation, until the Law could be re-encountered in the Exile. Although Sacks is cagey about it, what he calls the "new way" is apparently something that is only established as a result of the Exile.

## The "New Way" in the Story of the Tanar

So let's review the story in the Tanar as Sacks presents it. Early on Sacks states that "The divine plan has always been a fruitful world and people spreading throughout it, partaking of its abundance" (93). Eden shows that the original and presumably best (but not best possible) plan was not to have any law imposed from outside. After the expulsion from the Garden, this pre-legal world shows an attempt to live with the need of strenuous work but still no external law (Gn 1–11).

> The ante-diluvian world was marked by its pre-legal character. . . . There was no external law. God's statement to Cain, "If you do well . . ." presupposed that within humans there was a faculty capable of judging. . . . [T]he only law that existed was that of individual conscience. But when God says, "My spirit will not always judge from within the human" (Gn 6:3), he recognizes that the human ability to judge from within is not sufficient for human needs. (60)

Men did not experience death from old age until hundreds of years later, when Adam died at the age of 930 (Gn 5:5). All his named descendants were still living, except those killed by violence. Perhaps it was then, when they witnessed their mortality, that they began to strive for immortality through fame. The long lifespans at the beginning, Sacks proposes, were to build up the population more quickly, to see whether they could form a social order that would allow them to live in harmony. But it may have had a secondary effect of encouraging ambition and dulling the voice of conscience within them. The world becomes filled with violence, and God decides to blot it out by means of a great flood.

What Noah's father had predicted about his son was fulfilled: Noah would bring "relief from our work and from the toil of our hands" (Gn 5:28–29). Life does become less difficult, thanks in part to God's new allowance that they eat animals (Gn 9:3). God begins a new relationship with mankind (and not with Noah alone). It begins with the law against murder and the obligation to respect life by not eating the blood of any animal (Gn 9:5–6). Men are now supposed to judge and condemn murderers themselves.

The Noahide covenant is the *true* beginning, not the antediluvian period, which has been erased. It depends on promise and remembrance. The temporal, antediluvian beginning allowed that covenants can be broken; it looked only to what *essentially is* for its foundation. As Sacks puts it, "Paganism, therefore, returns to the *temporal* beginnings as the true foundations, since those beginnings do not depend upon memory and goodwill" (80).

Now God takes the next step in his plan: In this world he selects one man to be the founder of a "new way." He calls him to leave his father's land and go to a land which God will give him. He promises that he will have many descendants, and they will be kings in this new land. And Abram is to found not just a new nation, but a "new way." That founding is carried on by his son Isaac and his grandson Jacob, who comes to be called "Israel." And Jacob's family, with God's encouragement, descends into Egypt. There they are forced into slavery; when they emerge, they are a great multitude, a potential nation. This is the first significant four-hundred-year period of gestation. It is to this nation that God will give the Law.

When, after forty years in the wilderness, they reach the land God promises them, and after it has been (largely) conquered under the leadership of Joshua, they fall into a kind of anarchic civic life that ends with horrible violence. The book of Judges culminates in the story of the raped concubine and the near destruction of an entire tribe. This way of living without human leadership—and, though the text indicates it only by its silence, without reference to the Law—is not the solution. "In those days every man did what he thought was right, for there was no king in Israel" (Jgs 21:25). The Israelites are not able to live in what would seem to be the best way, with just God as their king.

So, after about four hundred years under the Judges (perhaps it is another four-hundred-year gestation period?) they seek stability and order by establishing a king. When the man after God's heart, David, becomes king and unites the kingdom in Jerusalem, it seems that all the promises are being fulfilled. But David's son Solomon, their crowning glory and builder of the

glorious Temple, is also the last king of a united kingdom. The Jews have lost the "new way," and they fail to be faithful to God, just as Moses and then Joshua had predicted. The southern kingdom continues to perform the prescribed temple sacrifices, and the northern kingdom continues sacrificing at the temples with the image of a golden calf made by their first king, Jeroboam. There are also "hill shrines," and pillars, and worship of Baal. Eventually Israel and Judah are destroyed as nations and sent into exile. Jerusalem and the Holy Temple are no more.

## The Exile

But if one tries to see "the end in the beginning," Sacks could see in the period of the kings, the 407 years mentioned earlier, another four-hundred-year period of gestation. God *is* still with them, and they will find him in Babylon, in the books of the Law.

Sacks does not speak about what happened during the seventy years spent in Babylon. But surely the exiles, all the most educated and skilled men among the Israelites, would have tried to understand: Had God cast them off? Was the Covenant over and done? What should, what could, they do now? How can they understand Genesis after Babylon?

Separated from the Promised Land and bereft of the ability to offer sacrifice to God at his Temple, the exiles look back at their history. A "book of the law" had been discovered by Josiah about 25 years before the fall of Jerusalem and the exile. They not only have this to study, but it seems likely they also undertook to write down for the first time a great part of their oral traditions. Some of the books of the "Later Prophets" are thought to have been written at this time. The Psalms also are recovered or put in written form; perhaps psalms are added. For the first time they *study* the Law, and so they learn to love the Law and to be spiritually fed by it. The prophets have been telling them that the temple system had become so corrupted that it was no longer pleasing to God; that it had in fact become hateful to him. Now they can begin to work on loving the Lord "with all their heart, with all their soul, and with all their strength" (Dt 6:5). This long-delayed *internal* reception of the law and the holy books is the gift, the rebirth, that had been gestating in the four hundred years of the kingdom, while the words of God were lying unread in a dusty place. Surely *this* was the purpose of the exile in the divine plan.

And yet it seems to fall short of the promises God has made to his people, the promises of return to their land, of preeminence among the nations, and of teaching the whole world the truth about God and man. Perhaps the "new way" is still developing.

## *Epilogue*

That conclusion may satisfy some, but to my mind it falls far short of the full promises of God.

> Then he said to me,
> "Son of man, these bones are the whole house of Israel.
> Behold, they say, 'Our bones are dried up and our hope is lost;
> We are clean cut off.'
> Therefore prophesy and say to them,
> Thus says the Lord GOD:
> Behold, I will open your graves,
> And raise you from your graves, O my people.
> And I will put my Spirit within you, and you shall live,
> and I will place you in your own land;
> then you shall know that I, the LORD, have spoken,
> and I have done it, says the LORD." (Ez 37:11–14, RSV)

> For I will take you from the nations,
> and gather you from all the countries,
> and bring you into your own land.
> I will sprinkle clean water upon you,
> and you shall be clean from all your uncleannesses,
> and from all your idols I will cleanse you.
> A new heart I will give you, and a new spirit I will put within you;
> and I will take out of your flesh the heart of stone and give you a heart
> of flesh. (Ez 36:24–26)

> [F]or my house shall be called a house of prayer for all peoples.
> Thus says the Lord GOD, who gathers the outcasts of Israel,
> I will gather yet others to him besides those already gathered. (Is 56:7–8)

> It shall come to pass in the latter days,
> That the mountain of the house of the LORD

Shall be established as the highest of the mountains,
And shall be raised up above the hills;
And peoples shall flow to it,
And many nations shall come, and say:
"Come, let us go up to the mountain of the LORD,
To the house of the God of Jacob;
That he may teach us his ways,
And we may walk in his paths."
For out of Zion shall go forth the law,
and the word of the LORD from Jerusalem. (Mi 4:1–2)

What if the time of "the scribes and pharisees," is another period of gestation? The Sanhedrin has been corrupted, their "Jewish" king Herod is not believed to be a Jew. This period could be the final preparation for the coming of the messiah (a figure Sacks does not mention).

The pagan gods of Rome are losing their power and terror, as emperors are apotheosized willy-nilly, and foreign gods are casually added to the Pantheon. Plutarch records in "The Obsolescence of Oracles" (*Moralia* 5:17):

During the reign of Tiberius, a sailor named Thamus was sailing to Italy. As he passed the Greek islands, a great voice called him by name, saying "The great god Pan is dead!"

There are no more prophets among the Jews. Malachi, writing in about 425 B.C., after the return to Israel and the building of the Second Temple, is declared by the Jews to be the last of the prophets. Here is the short, last chapter of his book:

For behold, the day comes, burning like an oven,
when all the arrogant and the evil-doers will be stubble;
the day that is coming shall burn them up, says the Lord of hosts,
so that it will leave them neither root nor branch.
But for you who fear my name the sun of righteousness shall rise,
with healing in its wings.
You shall go forth leaping like calves from the stall.
And you shall tread down the wicked,
for they will be ashes under the soles of your feet,
on the day when I act, says the LORD of hosts.
Remember the law of my servant Moses,

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the statutes and ordinances that I commanded him at Horeb for all Israel.
Behold, I will send you Elijah the prophet
before the great and terrible day of the LORD comes.
And he will turn the hearts of fathers to their children
and the hearts of children to their fathers,
lest I come and smite the land with a curse. (Mal 4:1–6)

It sure sounds like we're not through here yet. In Israel, the Pharisees have become alienated from the people, and the Sanhedrin has become corrupt.

Thus says the LORD concerning
The prophets who lead my people astray . . .
Therefore it shall be night to you, without vision,
And darkness to you, without divination.
The sun shall go down upon the prophets,
And the day shall be black over them;
The seers shall be disgraced,
And the diviners put to shame;
They shall all cover their lips,
For there is no answer from God. (Mi 3:5–7)

I believe that the sacrifice of Isaac, innocent, an only son, and beloved of his father, foreshadowed the sacrifice of Christ. That the power of the story of Abraham and Isaac lies in this hidden meaning, and that by Christ's sacrifice our sins have been taken away.

He was despised and rejected by men;
A man of sorrows, and acquainted with grief; . . .
Surely he has borne our griefs, and carried our sorrows . . .
But he was wounded for our transgressions,
He was bruised for our iniquities;
Upon him was the chastisement that made us whole,
and with his stripes we are healed.
All we like sheep have gone astray;
We have turned every one to his own way;
And the LORD has laid on him the iniquity of us all. (Is 53:3–6)

I believe that the church founded by Christ has become the light to the nations spoken of by Isaiah:

> [The LORD] says:
> "It is too light a thing that you should be my servant
> To raise up the tribes of Jacob
> And to restore the preserved of Israel;
> I will give you as a light to the nations,
> That my salvation may reach to the end of the earth." (Is 49:6)

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