

## QUESTION 1, ARTICLE 8

### Whether other creatures concur in that last end?

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**TEXT**

*Whether other creatures concur in that last end?*

**PARAPHRASE**

Do all other created things share that ultimate purpose with man – is it in some sense their aim too?

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Wouldn't all created things have the same ultimate aim? One might at first say "Yes," just because they were all made by the same God. On the other hand, one might at first say "No," on grounds that creatures without intellects have no aims. But as we saw previously, things do not have to know their purposes in order to have purposes; their purposes are built into their natures. Yet shouldn't it make *some* difference that certain things have intellects and others do not? What is the solution?

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**Objection 1.** [1] *It would seem that all other creatures concur in man's last end. For the end corresponds to the beginning.* [2] *But man's beginning—i.e. God—is also the beginning of all else. Therefore all other things concur in man's last end.*

**Objection 1.** Apparently all other things do share man's ultimate purpose. To see this, consider that the beginnings and ends of things – their origins and purposes – correspond. Therefore, since other things have the same beginning as man, God, they must also have the same final end as man.

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[1] In English, one tends to read this punning sentence as though it meant that the last moment of something corresponds to its first one. Actually, the sentence has nothing to do with first or last moments, with time or duration. By the beginning of a thing, St. Thomas means that which brings it into being – its efficient cause. By the end of a thing, he means its goal, purpose, or fulfillment –

its final cause. These two causes are related to each other because everything comes into being *for the sake* of its purpose. Here is how St. Thomas explains the relationship in his *Commentary on Aristotle's Metaphysics*:

[F]orm gives being, and matter receives it. Hence the efficient cause is the cause of the final cause, and the final cause is the cause of the efficient cause. The efficient cause is the cause of the final cause inasmuch as it makes the final cause be, because by causing motion the efficient cause brings about the final cause. But the final cause is the cause of the efficient cause, not in the sense that it makes it be, but inasmuch as it is the reason for the causality of the efficient cause. For an efficient cause is a cause inasmuch as it acts, and it acts only because of the final cause. Hence the efficient cause derives its causality from the final cause.

A bit later,

Moreover, it must be noted that, even though the end is the last thing to come into being in some cases, it is always prior in causality. Hence it is called the “cause of causes”, because it is the cause of the causality of all causes.<sup>1</sup>

The end is the cause of the efficient cause because if there were no purpose for a thing, it would never come into being in the first place. And yet in another way the efficient cause is the cause of the end, because if the thing never came into being, then its purpose would never be achieved. The efficient cause produces an effect; the end is still more fundamental because it explains why there is an efficient cause producing that effect. Notice that the term “end” is used here in two senses: As that *toward which* a thing is aimed, and as *the attainment* of the aim. St. Thomas returns to this distinction in the *respondeo*.

[2] The Objector's argument works like this.

1. Beginnings and ends correspond.
2. Therefore, if things have the same beginning, they have the same end.
3. But all things have the same beginning, for all are created by God.
4. Therefore all things have the same end.
5. Therefore things other than man have the same end that man does.

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**Objection 2.** [1] *Further, Dionysius says (Div. Nom. iv) that “God turns all things to Himself as to their last end.”* [2] *But He is also man's last end; because He alone is to be enjoyed by man,* [3] *as Augustine says (De Doctr. Christ. i, 5,22).* [4] *Therefore other things, too, concur in man's last end.*

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**Objection 2.** Moreover, we learn from Pseudo-Dionysius that God directs all things to Himself as their ultimate aim. Nor does man differ from these things, because as St. Augustine points out, God alone is man's fruit or reward. So it must be true that other things have the same final end as man.

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<sup>1</sup> Thomas Aquinas, *Commentary on Aristotle's Metaphysics*, trans. John P. Rowan (Chicago: Regnery, 1961), Book 5, Lesson 2 (corresponding in the *Metaphysics* itself to Book 5, Chapter 2), Sections 775 and 782, available at <http://dhspriority.org/thomas/Metaphysics.htm>.

[1] It may be obscure in what sense a thing “turns” (*convertit*) toward God. But all things seek their good, and God is the uncreated Good that all created goods reflect. Pseudo-Dionysius<sup>2</sup> begins by explaining that the Sacred Writers apply the name, “Good,” to God Himself:

calling the Supreme Divine Existence Itself “Goodness” (as it seems to me) in a sense that separates It from the whole creation, and meaning, by this term, to indicate that the Good, under the form of Good-Being, extends Its goodness by the very fact of Its existence unto all things.

A little later, he explains that:

[Rational creatures] mount towards the Bounteous Origin of all things . . . and the same is true, if it must needs be said, concerning even the irrational souls, or living creatures, which cleave the air, or tread the earth, or crawl upon the ground, and those which live among the waters or possess an amphibious life, and all that live buried and covered in the earth – in a word all that possess a sensitive soul or life. All these are endowed with soul and life because the Good exists. And all plants derive from the Good that life which gives them nourishment and motion, and even whatsoever has no life or soul exists through the Good, and thus came into the estate of being.

Speaking of this Supreme Divine Existence, this Good, he says, in the passage that the Objector has in mind:

[U]nto the Good all things are turned (as unto the proper End of each) . . . after the Good all things do yearn – those that have mind and reason seeking It by knowledge, those that have perception seeking It by perception, those that have no perception seeking It by the natural movement of their vital instinct, and those that are without life and have mere existence seeking It by their aptitude for that bare participation whence this mere existence is theirs.<sup>3</sup>

Thus, the way in which God sets everything in motion is not that He performs a motion Himself; this would be impossible, because He is the first unmoved mover. Rather, He moves things by *drawing them to Himself*, by inspiring them to imitation. Of course they imitate Him only according to the capacity of their natures. At the bottom of the scale, the lowest things imitate Him only insofar as they exist; at the top of the scale, the highest things imitate Him by knowing Him.

[2] Although the translation “He alone is to be enjoyed by man” is technically correct, it is a little misleading. Following St. Augustine, the

<sup>2</sup> The writer is given this name because in St. Thomas’s time, his works were mistakenly attributed to Dionysius the Areopagite, a first-century Athenian who became a Christian – and, according to tradition, later the first bishop of Athens – after hearing the teaching of St. Paul at the Areopagus. The incident is described in Acts 17:15–33.

<sup>3</sup> Pseudo-Dionysius, *On the Divine Names*, Chapter 4, Sections 1, 2, and 4, in *Dionysius the Areopagite: On the Divine Names and the Mystical Theology*, trans. C.E. Rolt (public domain), available at <http://www.ccel.org/ccel/rold/dionysius.i.html>.

term the Objector uses for enjoyment is *fruendum*, a word related to *fructus*. It means the kind of enjoyment that a gardener has in his fruit, a farmer has in his crop or produce, a businessman has in his profit, or a good man has in his reward. The vision of God is our “crop”; the sight of His face is the fruit or reward of a life in His grace. Thus, the statement does not mean that we should *not rejoice* in God's blessings, such as laughter, knowledge, friendship, love, and children, but that we should not rejoice in them *as though they themselves were the ultimate fruit of aspiration*. We should rejoice in them for the sake of God.

By the way, St. Thomas is not claiming that He has already proven that our happiness lies in God. Rather he is anticipating something he will show later. Not until Question 2, Article 8, does he demonstrate that our happiness cannot lie in any created thing; not until Question 3, Article 8, does he show that it must lie in the vision of God, in contemplating Him in His very being. Although sometimes St. Thomas anticipates points that he will not demonstrate until later, he never begs the question.

[3] Here is what St. Augustine says:

The true objects of enjoyment, then [*res igitur quibus fruendum est*], are the Father and the Son and the Holy Spirit, who are at the same time the Trinity, one Being, supreme above all, and common to all who enjoy Him, if He is an object, and not rather the cause of all objects, or indeed even if He is the cause of all. For it is not easy to find a name that will suitably express so great excellence.

As he explains a little later:

[N]o one ought to love even himself for his own sake, but for the sake of Him who is the true object of enjoyment. For a man is never in so good a state as when his whole life is a journey towards the unchangeable life, and his affections are entirely fixed upon that. If, however, he loves himself for his own sake, he does not look at himself in relation to God, but turns his mind in upon himself, and so is not occupied with anything that is unchangeable. And thus he does not enjoy himself at his best, because he is better when his mind is fully fixed upon, and his affections wrapped up in, the unchangeable good, than when he turns from that to enjoy even himself. Wherefore if you ought not to love even yourself for your own sake, but for His in whom your love finds its most worthy object, no other man has a right to be angry if you love him too for God's sake.<sup>4</sup>

[4] The Objector reasons that if God turns or directs all things to Himself – and if man is no exception, for his ultimate fruition is in God – then all things have the same end as man.

<sup>4</sup> St. Augustine of Hippo, *On Christian Doctrine* (public domain), Book 1, Chapters 5 and 22, available online at <http://www.newadvent.org/fathers>.

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**Objection 3.** [1] *Further, man's last end is the object of the will.*  
[2] *But the object of the will is the universal good, which is the end of all. Therefore other things, too, concur in man's last end.*

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**Objection 3.** Besides, the ultimate end of man is the object of his will. But his will is directed toward whatever is good *as such* – the *universal* good – which is the ultimate purpose of all things. So for this reason too, we conclude that other things share with man in the same final end.

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[1] Man is not blindly directed toward his ultimate aim, as though he were pulled by strings. His will collaborates with his end and directs him to it.

[2] As we saw in Article 2, man's will seeks what is good *as such*; not just this good, which is good in this respect, or that good, which is good in that respect, but *what is good*. The Objector, reflecting that all things seek the good, seems to assume that they all seek the good *in this very way*. If so, then it would appear that their ultimate aim is the same as man's.

We will go more deeply into the matter of universal good in Question 2, Article 7.

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**On the contrary,** [1] *man's last end is happiness; which all men desire, as Augustine says (De Trin. xiii, 3,4).* [2] *But "happiness is not possible for animals bereft of reason," as Augustine says (Questions 83, qu. 5).* [3] *Therefore other things do not concur in man's last end.*

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**On the other hand,** Augustine maintains that beatitude or supreme happiness does not come to animals devoid of reason. So *not* all other things share in man's final end.

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[1] As St. Augustine explains in a passage from *On the Trinity*, which we discussed in the previous Article, we humans cannot help but desire our consummate fulfillment.

[2] Yet as St. Augustine argues in his work *Eighty-Three Different Questions*, animals cannot experience that fulfillment. "An animal which lacks reason lacks knowledge," he says, "But no animal which lacks knowledge can be happy. It therefore does not belong to animals lacking reason to be happy."<sup>5</sup>

Augustine does not mean that such creatures are miserable. However, consummate fulfillment requires the fulfillment of all our powers, including the highest, which is rationality. Rational fulfillment utterly surpasses the satisfaction of the desires of the animals that lack rationality; it is further beyond them than flying is beyond earthworms. To be sure, in casual speech

<sup>5</sup> St. Augustine of Hippo, *Eighty-Three Different Questions*, trans. David L. Mosher (Washington, DC: Catholic University of America Press, 2002, orig. 1982), Question 5, "Can an Animal Without Reason Be Happy?," p. 39.

we do distinguish between “happy” and “unhappy” beasts. If a dog that has recovered from an illness begins to romp, we say, “he’s a happy pup again,” and we are right to be pleased. At best, however, the dog is “happy” only in a loose and analogical sense, for all we really mean is that the dog is free of pain, free of discomfort, and able to find pleasure in playing. Fulfillment in the sense possible for a rational being is just not in the picture. So a beast can be satisfied or unsatisfied, but in the strict sense, only a rational being can be happy or unhappy. If its *subrational* powers are fulfilled, perhaps one could say that it is happy in an *analogical* sense, but it cannot be happy in the strict sense.

[3] The argument of the *sed contra* works like this:

1. The ultimate aim of human beings is the fulfillment of all their powers, including their highest, which are rational powers.
2. Creatures devoid of reason cannot attain this.
3. Therefore creatures devoid of reason must be directed to a different ultimate aim.

St. Thomas now proceeds to consider whether this is, in fact, the case.

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*I answer that, [1] As the Philosopher says (Phys. ii, 2), the end is twofold—the end “for which” and the end “by which”; viz. the thing itself in which is found the aspect of good, and the use or acquisition of that thing. [2] Thus we say that the end of the movement of a weighty body is either a lower place as “thing,” or to be in a lower place, as “use”; [3] and the end of the miser is money as “thing,” or possession of money as “use.” [4] If, therefore, we speak of man’s last end as of the thing which is the end, thus all other things concur in man’s last end, since God is the last end of man and of all other things. [5] If, however, we speak of man’s last end, as of the acquisition of the end, then irrational creatures do not concur with man in this end. For man and other rational creatures attain to their last end by knowing and loving God: [6] this is not possible to other*

**Here is my response.** As Aristotle explains in both his *Physics* and his *Metaphysics*, The expression “end” may refer either to the very thing in which an entity’s good lies, or to its attainment and enjoyment of that thing. For example, when we speak of the aim of a heavy falling body, we may mean either a lower place, or its repose in that place, and when we speak of the aim of a miserly man, we may mean either money itself, or the hoarding of it, which for him is its use.

Therefore, if we speak of man’s ultimate end in the sense of *that which is* the end, then all other things *do* share it with man, for all things are directed to God, not just man. But if we speak of man’s ultimate end in the sense of the *attainment* of that end, then subrational creatures do *not* share it with man. For man and other rational creatures win to their ultimate end by knowing and loving God – something other creatures cannot do. Although these others

creatures, [7] which acquire their last end, in so far as they share in the Divine likeness, inasmuch as they are, or live, or even know.

also participate in God's likeness, they do so merely by being or by living (or even in some cases by knowing, but not in the sense that man knows).

[1] In the *Physics*, Aristotle simply says, “‘That for the sake of which’ has two senses . . . The arts, therefore, which govern the matter and have knowledge are [also] two, namely the art which uses the product and the art which directs the production of it.” So in one sense, the end of building is the house, but in another sense, the end of building is the enjoyment of the householder in dwelling in it. (The Blackfriars translation loses St. Thomas's second reference, to Aristotle's *Metaphysics*, Book 5, which we have discussed above.)<sup>6</sup>

[2] Suppose an air conditioner falls from the roof of a building to the street. Using the language of today's physics, we might say that the air conditioner tends to the point of lowest potential energy and there reaches equilibrium. St. Thomas speaks in much the same way. In one sense, the “end” of the air conditioner's fall is the place to which it tends, but in another sense, the “end” of its fall is its equilibrium or repose in that place. Perhaps some physicists today would be uncomfortable with this teleological language. St. Thomas, however, might suggest that their language is equally teleological, equally and unavoidably about “tendency.” We return to this point in the first section of the Discussion.

[3] Similarly, if we asked an *avari* or avaricious man what he seeks, he might answer “money,” but if we ask him why he seeks money, he might answer “just to have it – why else?” Since the Latin term *usus* is employed a little differently than its English cognate “use,” in English we would be more inclined to say that in hoarding his money he is *not* using it. But if his “use” of it is his enjoyment of it, and his enjoyment of it lies simply in heaping it up, then for him its “use” – to be sure, an improper use – is to be hoarded.

[4] Applying the same distinction, we may say that in one sense man's ultimate aim is God. As he has in several previous other places, St. Thomas is anticipating a conclusion that he does not fully justify until later in this *Treatise*. On the other hand, he has anticipated it briefly in the First Part of the *Summa*. At one point, for example, one of the Objectors had argued,

<sup>6</sup> Aristotle, *Physics*, Book 2, Chapter 2. I am taking Aristotle's wording from the translation of the first two books of St. Thomas's *Commentary on Aristotle's Physics* by Richard J. Blackwell, Richard J. Spath, and W. Edmund Thirlkel (New Haven, CT: Yale University Press, 1963), available online at <http://www.dhspriory.org/thomas/Physics.htm>. In the *Commentary* itself, St. Thomas discusses the passage in Book 2, Lecture 4.

Further, the good is what all things desire. But all things do not desire God, because all things do not know Him; and nothing is desired unless it is known. Therefore to be good does not belong to God.

But St. Thomas had replied,

All things, by desiring their own perfection, desire God Himself, inasmuch as the perfections of all things are so many similitudes of the divine being; as appears from what is said above. And so of those things which desire God, some know Him as He is Himself, and this is proper to the rational creature; others know some participation of His goodness, and this belongs also to sensible knowledge; others have a natural desire without knowledge, as being directed to their ends by a higher intelligence.<sup>7</sup>

In saying that the rational creature knows God “as He is in Himself,” St. Thomas does not mean that he knows God as He is in Himself *in this life*; that is a privilege granted to the redeemed souls in the next, when they are lifted by grace beyond what they could otherwise attain. Why then does he say that such knowledge is “proper to” the rational creature? Because it is the rational creature’s fulfillment, the highest activity of his highest power, that for which he was made. The potentiality for the vision of God is a true potentiality of the rational creature, in that it can come about; however, it is an “obediential” potentiality, in the sense that it requires supernatural assistance.<sup>8</sup>

[5] Just as in one sense man’s ultimate aim is God, so in another sense his ultimate aim is the enjoyment of God. This consummate enjoyment is to be supernaturally lifted up to the vision of God: To “see” Him, not with the eyes of the body but with the eyes of the mind, and to love Him, with the will, which is rational desire.<sup>9</sup>

[6] Since the aim to which the rational creature is ultimately directed is to know God with his *mind*, this beatific vision cannot be attained by a subrational creature. Someone might suppose that since not even the rational creature can behold the Divine essence unless his natural powers are uplifted by God, a lower creature too could be uplifted to see God. Not so, for although man has a rational mind to be uplifted, the lower creatures are devoid of rationality. Consequently, a human being can be supernaturally raised to the beatific vision *and remain a human being*. But for a cat, say, to be raised to the beatific vision, it would first have to acquire a rational nature, and in this case it would not be the *cat* that was uplifted, for the cat would have ceased to exist, and a non-cat would have taken its place. There is no use in saying, “But God can do

<sup>7</sup> I, Q. 6, Art. 1, Obj. 2 and ad 2. See also I, Q. 4, Art. 3.

<sup>8</sup> On the obediential potentiality, see I, Q. 11, Art. 1; see also Supp., Q. 93, Art. 1, ad 3.

<sup>9</sup> St. Thomas returns to these points later in the *Treatise on Happiness and Ultimate Purpose*, esp. in Q. 3, Art. 8. See also I, Q. 12, “How God is known by us”; I, Q. 93, “The end or term of the production of man”; and Supp., Q. 92, “The vision of the divine essence in reference to the blessed.”



anything,” for omnipotence does not include bringing about logical incompatibilities, such as a cat, which is an irrational nature, having a rational nature.<sup>10</sup>

[7] Man “partakes of the Divine nature”<sup>11</sup> by knowing and loving knowing God. Subrational beings resemble the Divine nature in a much less excellent way, merely by *being* (for God is the First Being), by *living* (for God lives), or by *knowing* (for God knows all). It may at first seem that St. Thomas is contradicting himself, for if these lower creatures too can “know,” then why can’t they too know God? The answer is that the sort of knowledge of which a creature like man is capable is profoundly different from the sort of which the lower creatures are capable (a fact that I have incorporated in the paraphrase). As St. Thomas explains later in the *Summa*:

Now the created rational nature alone is immediately subordinate to God, since other creatures do not attain to the universal, but only to something particular, while they partake of the Divine goodness either in “being” only, as inanimate things, or also in “living,” and in “knowing singulars,” as plants and animals; whereas the rational nature, in as much as it apprehends the universal notion of good and being, is immediately related to the universal principle of being.<sup>12</sup>

Beasts do not have rational knowledge, but only what is called “estimative” knowledge. Although such a creature may know that something is good to eat, unlike us it does not grasp the idea of the good *as such*. For that matter, although it knows that it is eating something, it does not grasp the idea of *thing* or the idea of *eat*. It is therefore incapable of knowing God in the way that a rational being (with God’s help) can know God.

This point is elaborated in the second section of the Discussion. We also return to it in Question 3, Article 8.

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*Reply to Objections 1, 2, and 3. Hence it is evident how the objections are solved: since happiness means the acquisition of the last end.*

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**Reply to the Objections.** On the basis of the considerations just presented, it should be obvious how to reply to the Objections.

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<sup>10</sup> In his discussion of God’s omnipotence, St. Thomas explains that “God is called omnipotent because He can do all things that are *possible absolutely* . . . For a thing is said to be . . . absolutely impossible when the predicate is altogether incompatible with the subject, as, for instance, that a man is a donkey.” I, Q. 25, Art. 3.

<sup>11</sup> “He has granted to us his precious and very great promises, that through these you may escape from the corruption that is in the world because of passion, and become partakers of the divine nature.” 2 Peter 1:4 (RSV-CE). St. Thomas discusses this passage in a number of places, including I, Q. 13, Art. 9, Obj. 1 and ad 1; I-II, Q. 50, Art. 2, Q. 62, Art. 1, and Q. 110, Art. 3; and III, Q. 7, Art. 1, Obj. 1 and ad 1, and Q. 62, Art. 1.

<sup>12</sup> II-II, Q. 2, Art. 3.

St. Thomas says only that from what he has already said it is plain how to respond to the Objections (*et per hoc patet responsio ad obiecta*). The explanation, “since happiness means the acquisition of the last end,” is an interpolation of the translators. However, it is exactly correct. The expression “end” may mean either the thing, or the enjoyment of the thing. All things do have the same final purpose as man in the sense of being directed to the same thing – to God, the Divine source of good. But they do not have the same final purpose as man in the sense of enjoying Him, for the happiness of knowing and loving God is possible only to rational beings. This point is sufficient to dispel all three Objections.

We note in passing that although in one sense St. Thomas accepts the proposition that the beginnings and ends of things correspond – for things do come into being for the sake of their purposes – at various points in the *Treatise* the Objectors interpret the proposition in other ways as well, some of which are more questionable. We will deal with the problems as they arise.<sup>13</sup>

## DISCUSSION

### Teleology in Contemporary Science

Thomas Aquinas's query – whether other things have the same last end as man – supposes that things other than man *do in fact have ends*. Is this true? Are there purposes in nature?

Certainly purposes do not exist in nature in precisely the same sense that they exist in minds. Nobody, including St. Thomas, holds the “mentalist” view that the planets in their orbits know what they are doing, or that falling bodies are *consciously* trying to get somewhere. He views the purposes in nature and purposes in minds as analogical, not univocal. But he does think both are real. Not only do minds behave purposefully, seeking goods or goals – but in their own way, so do physical processes.

By contrast, many modern thinkers deny that purposes exist in nature, and insist that modern science has no use for such “teleological” explanations. Surprisingly, this statement expresses more a wish than a fact. For although it is true that these thinkers view teleological explanations with great suspicion, scientists have not actually been able to dispense with them. They are obviously prevalent in biology and psychology – the former because it explains the behavior of organic systems in terms of their functions (functions being purposes in non-mental nature), the latter because it attempts to explain the actions of human agents in terms of their intentions (intentions being purposes in minds). As the biologist J.B.S. Haldane remarked, “Teleology is like a mistress to a biologist: He cannot live without her but he's unwilling to be

<sup>13</sup> See e.g. Question 5, Articles 4 and 5.

seen with her in public.”<sup>14</sup> Not only are psychologists unable to live without her, but they are even willing to be seen with her in public.

And that is not all, for we are not speaking only of biology and psychology. From optics to quantum mechanics, even physics makes use of teleology. This is especially clear in its extensive use of variational principles, such as the Principle of Least Action. A variational principle is one that proposes that physical systems always tend to behave in such a way as to minimize, maximize, or hold constant some quantity, for example, the “optical length” of the path taken by a beam of light.<sup>15</sup> Always remembering that we are not supposing such systems to have minds, these extrema (*not* the terminal points of the paths followed) may be considered the ends or goals to which they are directed.<sup>16</sup>

In many cases, perhaps all cases, physical processes that can be explained in terms of variational principles can also be explained mechanically, that is, by motive forces. Consider that beam of light. The mechanical explanation states that when it crosses the boundary between air and glass, the difference in the index of refraction *makes* the beam of light bend by a certain angle. But according to the variational principle proposed by the great French mathematician Pierre de Fermat, the beam bends because the bent path is the one it can travel in the least time (taking into account that light travels at different speeds in air and glass).<sup>17</sup> St. Thomas, who writes that “the end corresponds to the beginning,” would not have been surprised that such processes can be explained in two ways; he views final causes and efficient causes as complementary, not mutually exclusive.

Confronted with the pervasiveness of variational principles, some skeptical philosophers concede that there might be heuristic value in teleological explanations – that is, that such explanations might be useful in the process of discovery – but they continue to insist that mechanical explanations are somehow more real or fundamental. This seems arbitrary. How is it more fundamental to say that the difference in the index of refraction “makes” the

<sup>14</sup> Attributed to J.B.S. Haldane, in a letter from Colin Pittendrigh quoted in Ernst Mayr, *Toward a New Philosophy of Biology* (Cambridge, MA: Harvard University Press, 1988), p. 63.

<sup>15</sup> The optical length is the physical length multiplied by the index of refraction of the material through which the beam passes.

<sup>16</sup> It might be said that such variational explanations imply absolute determinism – for example, that the light beam cannot minimize the optical distance unless it “knows” not only its starting point but also its endpoint. But this is not true. Given a starting point and an initial direction of path, the light beam will “choose” an endpoint so as to minimize the optical length. Unfortunately, discussion is confused by the tendency of some scientific writers to improperly use the expressions “teleology” and “determinism” as synonyms. They mistakenly assert that the apparent teleology of a physical system can be resolved, when what they really mean is that the apparent determinism of the system can be resolved.

<sup>17</sup> The form in which Fermat himself proposed his principle is not completely general. According to the general formulation, the beam of light always prefers the path of *stationary* optical length with respect to small variations. But this is still teleological.

light beam bend, than to say that the beam of light “seeks” the path of minimum optical length? Why should we insist on translating variational into mechanical explanations, but not on translating mechanical into variational explanations? If variational explanations are suspect, then shouldn't mechanical explanations be suspect too? Conversely, if mechanical explanations are not suspect, why should variational principles be? In fact, couldn't it be suggested that teleological explanations aren't less fundamental than mechanical ones, but more? For don't we have to ask *why the difference in the index of refraction does “make” the light beam bend?*

Just because resistance to teleological explanations does seem so arbitrary, it may be worthwhile to review the reasons that resisters give for it. A good summary has been offered by Jeffrey K. McDonough,<sup>18</sup> who does not entirely reject teleology – he allows it in speaking about minds – but who opposes using teleological explanations outside of psychology. McDonough offers four objections – two to incorporating references to the *good* in physical explanations, and two more to incorporating references to *intentions*. Let us consider these objections one at a time.

1. McDonough objects that “building the concept of the good into the concept of a legitimate teleological explanation would force us to count as non-teleological many things that are generally considered to be teleological. So, to take just one example, it is widely assumed that the behavior of heat-seeking missiles is teleological, even though it is difficult to see – especially given that they explode on impact – how in finding their targets they act for their own good.”<sup>19</sup>

This objection misunderstands the sense in which the term “good” is employed in classical teleology. A good is simply a natural goal – something to which a thing is naturally inclined. Of course a heat-seeking missile has no natural inclinations, because it is not a nature but an artifact. However, it does have whatever inclinations were imparted by the engineer, in this case to seek proximity to heat. This is the missile's goal, and, in an analogical sense, this is its “good.”

Perhaps, when McDonough says that a heat-seeking missile could not be acting “for its own good,” he is thinking of natural beings. It would certainly be contrary to a bird's good if it blew up upon reaching its nest, because it has a natural inclination to its own preservation. If the missile had been designed with an inclination to its own preservation, then in the analogous sense, blowing up really would be contrary to its “good.” As we know, however, the missile was not designed like that. Since the only inclination the engineer imparted to it is to seek proximity to heat, this is its only goal or “good,” and it is not acting contrary to its “good” by blowing up.

<sup>18</sup> Jeffrey K. McDonough, “Leibniz on Natural Teleology and the Laws of Optics,” *Philosophy and Phenomenological Research* 78:3 (2009), pp. 505–544.

<sup>19</sup> *Ibid.*, p. 528.

2. McDonough's next objection is that insofar as references to the good are evaluative, they are "no more testable, or falsifiable, than the pronouncements of moralists." Although McDonough does tolerate language about the "good of the organism," he does so only because it can be "reduced to ultimately non-evaluative terms such as 'increases caloric intake' or 'is likely to lead to positively differential gene survival' and thus shown not to be essentially evaluative at all."<sup>20</sup>

Just as in the previous objection, however, McDonough seems to misunderstand the sense in which the term "good" is used in classical teleology. In the first place, he may be confusing goods in general with specifically moral goods. To say that the bear swats at the beehive for the sake of the good of eating honey is simply to say that the bear, in swatting at the beehive and thereby obtaining honey, is acting according to a natural inclination. Classical teleology does not suggest by acting in this way, the bear is fulfilling a *moral obligation* or doing something *morally* good, for the concept of the moral good has no place until we reach the level of *rational* creatures, such as ourselves. And the bear's inclination to seek honey is certainly testable.

Yet even if we were to consider moral goods, it still seems untrue to consider them untestable. Certainly we cannot measure the mass of murder, or take the temperature of intemperance. But in *those* sorts of ways, we cannot test McDonough's claims either; we cannot measure the viscosity of explanation, or take the temperature of testability. Claims about the moral good, like claims about testability itself, are tested by arguments; they stand or fall according to the cogency of the reasons offered for and against them. The reason children should honor their mothers and fathers, for example, is that they owe a return for their parents' love, care, and nurture. This is a cogent reason; we do not need a reading on a dial.

3. McDonough protests that "One might think that intentionality is a more complex, less well understood concept than teleology itself, so that leaning on the concept of intentionality would be a step backwards in providing an analysis of teleology."<sup>21</sup>

Indeed, one "might" think this way. But should one? We use the term "intention" mostly for purposes in minds, and of course it would be silly to suppose that an amoeba, reaching out toward a morsel of food, is thinking, "My, that looks tasty." However, classical teleology does not suppose that the amoeba is thinking such a thing. As explained previously, purposes in things and purposes in minds (and for that matter, purposes in the mind of God) are not all purposes in the same sense; the relation among them is not identical, but analogical.<sup>22</sup> So although classical, "thick" teleology speaks of ends or purposes in nature; it does not suppose that they are the same as what is found in minds.

<sup>20</sup> Ibid, pp. 528–529. <sup>21</sup> Ibid, pp. 529–530.

<sup>22</sup> Insofar as a mind can purposefully impart a purpose to a thing, or purposefully set some process in action, it is also causal.

4. Finally, McDonough complains that rather than using intentionality to speak about teleology, we ought to use *teleology* to speak about *intentionality*: “One might also think that our best strategy for giving an illuminating – and naturalistic – account of intentionality is in terms of complex teleological behavior.”

But it is hard to see against what feature of classical teleological explanations this objection is directed. To act teleologically *simply* is to act for a purpose. A mind does this in the way we call intentional; a non-mental thing does it in a way we do *not* normally call intentional.

It seems then that although classical teleology, like St. Thomas's, is “thicker” than the minds-only teleology that a skeptical thinker like McDonough might accept, McDonough's objections to it do not hold water. Moreover, thick teleology is open to levels of explanation to which McDonough's thin teleology is closed, for it is not afraid of questions about how the purposes in the human and Divine minds may be *responsible* for the purposes implanted in artifacts and natures.

### Not Only the Image but the Likeness of God

As we saw, St. Thomas says at the very end of the *respondeo* that man and other rational creatures enjoy God by knowing and loving Him, but that subrational creatures share in the Divine likeness in a lesser manner. We have already explored the difference between our knowledge, which is rational, and the merely “estimative” knowledge of beasts. However, the words of the *respondeo* deepen the distinction between the rational and subrational orders of being in another way as well, to which we now turn.

In the book of Genesis, God is said to have made man in His image *and* in His likeness (*ad imaginem et similitudinem*).<sup>23</sup> The words “image” and “likeness” are not a mere poetic repetition of the same thought, for image and likeness have traditionally been distinguished. Though St. Thomas says here that lower creatures share in the *likeness* of God, he does not say that they share in the *image* of God, and this phrasing is deliberate.

We may recall his previous discussion of the teaching of St. John of Damascus that man is said to be made in God's image in the sense that he is an intellectual being who can choose freely, and whose very nature is endowed with the power of deliberative action. Although plants and beasts have their place in Creation, they have no share in this image, for they are neither intellectual nor deliberative.<sup>24</sup>

<sup>23</sup> Genesis 1:26.

<sup>24</sup> See St. Thomas's General Prologue to the *Treatise on Happiness and Ultimate Purpose*, which we have discussed previously. St. Thomas returns to the view of John of Damascus in I, Q. 93, Art. 9, “Whether ‘likeness’ is properly distinguished from ‘image’?” In that passage he distinguishes two senses in which the term “likeness” may be used, because although some writers speak of a likeness as a *preamble* to an image, that is, something more general than an image that exists in things, others speak of a likeness as a *perfection* of an image. Here we are using the term “likeness” in the former sense.

St. Thomas explores the difference between image and likeness in several other places, but for our purposes, the most important is First Part, Question 93, Article 2, where he explains that “Not every likeness, not even what is copied from something else, is sufficient to make an image.” For example, I cannot call a board that I have painted the same color as a flower the image of the flower. What an image requires is a similarity in *essential* characteristics. To be sure, even though we reflect God in some ways, there remains an infinite gulf between our nature and His: “specific likeness follows the ultimate difference.” Even so, St. Thomas approves the words of St. Augustine of Hippo that creatures capable of rational understanding “approach so near to God in likeness, that among all creatures nothing comes nearer to Him.” Clearly, then, the Angelic Doctor concludes, “intellectual creatures alone, properly speaking, are made to God’s image.”

One of the ways in which the image of God is evident in man is that man alone can be led from the recognition of how even lower creatures reflect God in some way to the knowledge of God Himself. This is illustrated in a lovely passage that we will read in greater length later on,<sup>25</sup> where Augustine is explaining St. Paul’s remark<sup>26</sup> that ever since the creation of the world, the invisible attributes of God have been “clearly seen” from the visible things God has made. After exhorting us to “question” all the beautiful things in the world, he asks, “Who made these beautiful transitory things unless it be the unchanging Beauty?”<sup>27</sup> Their beauty, he says, is like a testimony.

The tragedy is that many who have come to the knowledge of God through the things He had made have not glorified God or given Him thanks. This is not the loving knowledge suitable to wayfarers in this life; still less is it the vision of God in His essence enjoyed by the blessed in heaven, in which lies supreme happiness.<sup>28</sup>

<sup>25</sup> In the commentary on Question 3, Article 7.   <sup>26</sup> Romans 1:19–21.

<sup>27</sup> St. Augustine of Hippo, Sermon 241, Section 2, from *Writings of Saint Augustine*, Vol. 38, trans. Mary Sarah Muldowney, R.S.M. (New York: Fathers of the Church, Inc., 1947), p. 255–264.

<sup>28</sup> See esp. I-II, Q. 93, Art. 2; II-II, Q. 34, Art. 1; and II-II, Q. 45, Art. 4, Obj. 2 and ad 2. Compare II-II, Q. 27, Art. 3, Obj. 2 and ad 2, and II-II, Q. 175, Art. 1, ad 1.