

A HISTORY OF MAN'S CONCEPT OF THE
ORDER OF NATURE UP TO ST. THOMAS

by

John T. Ryan

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GENERAL OUTLINE

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Man's Concept of the Order of Nature

To the average individual the orderliness of nature is a fundamental fact of experience. Casually he notices the succession of day and night, the course of the seasons, the growth and decay in plant and animal life, and the gradation of natural being; he is convinced of an all pervading harmony. The belief of mankind in nature's order is evident from the way men daily stake their existence upon the conduct of the physical universe. Man realizes that these happenings in nature are beyond his control. In order to survive man has to accept things as they come, anticipating their recurrence as far as he can and adjusting his actions to their variations. The regularity of nature became by degrees the norm of man's self-regulation. Long before he had begun a systematic observation of natural events, and longer still before he had asked himself the meaning of order, man had taken the orderly process of nature for the pattern of his thought and the guide of his actions.

Order is so prevalent to experience that science has not been able to deny it. Science has leveled obstacle after obstacle in its conquest of nature. Science has not only discovered new proofs of regularity and order but the order and stability have furnished the only basis for science in its search for new worlds to conquer. Destroy or deny the idea of order in nature and science must surrender entirely.

St. Thomas looks upon nature as being thoroughly permeated with order. St. Thomas insists that the things of nature and all their properties are orderly when he repeats the phrase of Aristotle, that nature is the cause of order.¹ Anything that is disorderly is not according to nature.² The phrases, "order of nature", "the customary course of nature", "the certain order established by God in nature", occur again and again in the writings of St. Thomas.

Men have not merely believed in an order of nature, but they have striven likewise to account for it. In the early history of mankind, when the deeper problems of reality were solved only in terms of myth and religious concept, nature was either deified or made a tool which could be used at will by the gods. In the consideration of nature as a tool, the forces of nature were like puppets dangling from the hands of the gods. All the forces were believed to be guided with a certain order and regularity.

The first serious scientific study of nature began in Ionia and marks the beginning of philosophical speculation. Aristotle says that the earliest philosophy is, of all subjects, like one who lisps, since it is young and in its beginnings.³ However, he realized how essential the early philosopher's humble beginning was for him, who expanded and corrected the first teachings.

The early Ionian philosophers viewed nature in all its order and coordination.⁴ To them this was indicative of one

thing, an amalgamation reducible to one thing, material unity. In the language of Aristotle they were interested in the material cause or rather in the material principle of bodies only, accepting this as the sole key to nature and its processes.⁵ For Thales the original substratum is water; for Anaximander, the infinite; for Anaximenes, air.⁶ Later thinkers preferred a pluralistic material foundation of reality, a number of primary elements. Empedocles looked upon these as four-fire, air, earth, and water.⁷ Anaxagoras speaks of the principles as infinite in number. Mystic India contended and still contends, that the the world is made out of God, that God is not only the efficient cause of the world, but is continually producing it out of Himself as the material cause.⁸

It was among those thinkers who held a plurality of material principles that the question of the moving impulse which joined these primary elements into combinations was argued. This quest provided the impetus for the study of nature, for the problem was not satisfactorily solved with one principle and thus efficient causality was introduced. Empedocles and Anaxagoras receive commendation on this score. Empedocles spoke of love and strife as effecting various unions of the elements. Anaxagoras introduced the concept of mind and for that reason receives praise from Aristotle, who compares him to a sober man in contrast with the random talk of his predecessors.⁹

In the teachings of Empedocles and Anaxagoras a

teleological explanation is evident. Aristotle hints that a well-rounded final causality must rather be read into their thought than extracted from it. Aristotle says further that Anaxagoras appealed to the mind merely as the source of the initial impulse, of the primary motion given to things.

Aristotle accuses him of inserting the mind as an explanation of phenomena, only when unable to assign any other cause.¹⁰

With the introduction of the mind and emotions there is a hint of final causality, though not clearly distinct from efficient causality. Socrates, despite his apparent neglect of physical questions, further developed the notion of Anaxagoras' thought concerning an Intelligent Cause in the universe. It was Socrates who first spoke clearly of adaptation in nature, and used a teleological argument to demonstrate the existence of a Supreme Being.¹¹ Plato uses the same proof, and frequently stresses the role of God in the arrangement and government of the world.¹²

Another principle receives expression in the philosophy of the Pythagoreans. Since they were thoroughly grounded in mathematics the order of nature found explanation in their eyes only if number was posited as the essence and basis of all things. For them number was not merely the very substance of which things are formed, but also the pattern after which things are shaped. Numbers are odd, even, or a combination of both. In harmony with this the Pythagoreans developed a law or formula according to which the various elements which make up

the many objects are combined.

Formal causality received its fullest stress from Plato. The teaching of Heraclitus concerning the constant flux of things left its mark upon Plato. The Socratic emphasis upon the validity of the concept in the acquisition of true knowledge contributed its share.¹³ Plato was led to deny full reality to the world of our senses. Sense-perceptible objects are but copies, pictures, faint imitations of their prototypes, the ideas which dwell in a world apart, not perceptible to sense. The idea alone is real. For each material species there is an idea in which the objects of that species participate. If there is harmony in the physical universe, ultimately it is because order reigns in the world of ideas. These ideas are clustered together and participate in the central idea, the idea of Good, or God. To describe the participation of physical objects in their idea, Plato discovered that he must introduce an element of limitation which he calls matter, but whose nature he never represents.¹⁴

The efficient cause of phenomena is not the ideas. Again God is seen at that task, not as creating material objects, but as patterning them after ideas. At first all was chaos. Out of disorder the Creator brought harmony and order, the best possible world, because being wise and good He was moved to desire that all things should be like unto Himself. The ideas possess a teleological character. Becoming has its end and aim in a being. The idea is like the concept that an artist has which he tries to implant in matter. An idea is a moving force

causing an object in the visible world to be what it is. The ideas themselves have a final end, the idea of the Good, which is the final end of all reality.¹⁵

Aristotle is the philosopher of nature par excellence. He has given an account of the universe which is the climax and perfection of the efforts of the great thinkers who went before him. In the first part of his work on nature, Aristotle states that scientific knowledge about any object is reached only when one is acquainted with its first principles or elements. The task, therefore, which awaits the investigator of nature is a determination of nature's principles and that which pertains to them.¹⁶ The principles of nature he finds to be threefold, matter, form, and privation. Becoming permeates the entire range of being to the very threshold of the Unmoved Mover, who is pure act. Finite being is constantly surging toward that perfection or actuality which it can possess.

Each individual is a substance or nature. Knowledge of it is possible only by mastering the ingredients which enter into its becoming, the four causes. The key to nature as a whole in Aristotle's mind is these causes. And since the dominant or governing cause is the final, the ultimate interpretation of nature is primarily teleological.¹⁷ Nature does nothing without a purpose; it strives always toward the best. Throughout the entire universe each object has a definite end to attain, toward which it reaches with its whole being.¹⁸ This tendency is not conscious or deliberate in objects which are

devoid of reason. It is simply intrinsic in their being.^{19.} Whatever occurs regularly cannot be ascribed to chance, but must be attributed to an all-pervading purposeful activity.^{20.} Aristotle advances many arguments in favor of his teleological view.^{21.}

The various objects of the universe do not merely strive for their own particular ends, but they are so arranged that their activities interlock. Together they reach out toward a universal end. As a result nature is not a mere string of episodes after the fashion of a bad tragic drama.^{22.} Throughout its realm a marvelous harmony and order reigns, causing it to resemble an army, coordinated and subordinated as a whole to its leader. Or again, it is like a household which is well ordered.^{23.} That which accomplishes this as principle and end is the Unmoved Mover, the absolute good.^{24.}

Aristotle teaches that nature is the cause of order;^{25.} like intelligent action, nature labors for an end;^{26.} this is really due to the attraction of the ultimate good.^{27.} It seems that Aristotle leans towards conscious designing upon the part of the world's First Cause. Order and intelligence, he says, are inseparable; wherever there is order there is necessarily reason.^{28.} More explicitly Aristotle states: "God and nature produce nothing that has not its use."^{29.} And again: "God, therefore, adopted the remaining alternative, and fulfilled the perfection of the universe by making coming to ^{be} uninterrupted."^{30.} Finally when Aristotle perceives a double order in the universe

like unto that which pervades an army, the leader of the latter is acclaimed to be the source of its harmony, it might be said that from the analogy God must be recognized as the ultimate designer and cause of the harmony which is seen in the universe³¹.

The teleology of Aristotle is not anthropomorphic nor anthropocentric; nor is it grounded in the designing of the world's Prime Mover. Aristotle goes no farther than what is immanent in nature. An equally great thinker protected by Christian revelation was many years later to scale to loftier heights to give a complete account of the harmony in the universe. Though it was Aristotle's picture with which he began, he increased its beauty and raised its worth so much that rightly it can be called a new picture.

St. Thomas' analysis of nature and of the order of nature is that of a metaphysician, just as Aristotle's analysis. The testimony of experience or observation offered by St. Thomas is of minor importance to the deeper analysis of the objects of the physical world in terms of being. St. Thomas criticises the philosophers of ancient Greece for their inability to see being as being. Since the ancients were narrow in their vision in the philosophical sense, they saw objects only in the particular shapes which they had assumed.³² A complete explanation of things is possible only if the philosopher by abstraction arrives at the root or basis of the problem, namely being.

Following in the footsteps of Aristotle, St. Thomas built his metaphysical system on the solid and deep foundation of the

doctrine of potency and act. Potency and act are the fundamental principles of being in its metaphysical determinations, reach^{ed} and made necessary by an analysis of the actuality and change in the world of our experience. God alone is pure actuality, infinite, self-sufficient. He is Being and the fulness of being. Anything else that has existence in any way whatsoever can merely participate in His Being. The essence of a creature will not be its existence, but it will be stamped with potentiality, with limitation and hence subject to becoming and change. God alone is pure actuality. He cannot become, but must necessarily be. The universe is a descending stream of perfection. Just opposite to pure actuality there is sheer potentiality which of itself cannot exist but awaits an actuating principle. Proceeding upward from this potentiality we ascend the ladder of perfection approaching toward pure actuality, but there is a chasm that can never be filled between creation and its Creator. From this we see that being is properly predicated of God and only analogously of creation.

Since God is infinitely perfect no individual finite object can adequately reflect His goodness and perfection. Goodness diffuses itself and God the supreme good and the perfect architect has made a vast multitude of forms so that they might reflect His infinite splendor. Thus does St. Thomas account for the vast number of species that are in the universe.³³ Elsewhere he gives an explanation of the multiplicity which exists in most species. The higher the form, the more perfectly is the

perfection of the pure Being copied, the less potentiality is possessed, and the object is less subject to becoming and change. The repetition of forms within a class is permitted and achieved through a joining with matter, so that the lower species, which mirror the divine perfection less, may grow more bright, and that these lower species may not be extinguished.³⁴

God as pure actuality is necessarily the efficient cause of the universe. He is also necessarily the final cause of the universe. The two causes go hand in hand; they are inseparable. It is especially in becoming that this finality is expressed. The finite pays the penalty of becoming because of its lack of actuality. The finite expresses its longing for actuality of which it is capable by surging ever onward. The finite must continue its progress toward further actualization, since pure Being alone is wholly self-contained, self-subsisting and immutable. Aristotle was the first to perceive the importance of the final cause in the process of becoming. St. Thomas sees this final causality in a wider and deeper perspective. St. Thomas picked up the strands left by Aristotle, and knitted them together, and wove a detailed and perfect pattern of the universe in all its harmony and order.³⁵

It is in the third book of the Summa Contra Gentiles that St. Thomas undertakes a deep analysis of the order of creatures in their relation to God, as to their end. It is here that the order of the universe is aptly explained. The study is a logical continuation of that which occupied St. Thomas'

attention in the first two books. St. Thomas himself, in the first chapter of the third book offers a brief review of what he has already demonstrated and the conclusions which flow from it.

St. Thomas writes that there is one first being possessing the full perfection of all being. This First Being, Whom we call God, has bestowed being upon all things which exist, from the abundance of his own perfection. The result is that He is the first principle or source of all being.³⁶ The attribution of being on the part of God to others did not flow from any necessity of His nature, but purely from His free will. As a consequence He is the Lord of that which He has made. His dominion is perfect for it is He alone Who has produced all this.³⁷ Every agent freely producing an object determines an end for it, since this is the proper function of the will. Likewise, the object will pursue its ultimate end by its action, which will be directed by him who has bestowed upon it the principles by which it acts.³⁸ It follows necessarily that God is the director of all things, and just as there is nothing to which He has not given being, so there is nothing which does not fall beneath His sway.³⁹ The effects of His rule appear in various ways, according to the variety of natures which exist.⁴⁰ St. Thomas then goes on to show in a general way various orders created by God which seek their proper end under His guidance.

An objection may arise here and seem valid, if Kant, Schopenhauer and Bergson are followed. If it is necessary that

God be accepted as the Creator of all things in order to account for the order in nature, how can the argument proving God's existence from this order in nature be valid? In proving the existence of the Intelligent First Being we advance from the visible effects in the world to their proper cause. It is evident to any thinking man that an effect demands a proportionate cause. It was Aristotle who set forth the principle that order and intelligence go hand in hand. Genuine order, therefore, wherever observable, points undeniably to an intelligent cause.⁴¹

The starting point of St. Thomas in his study of the order of creation is nature's becoming. This activity is not only an observable fact, but reason recognizes it as a necessity levied upon finiteness and potentiality. Concerning the action of nature this statement echoes throughout St. Thomas' works--
Quod omne agens agit propter finem. All action is stamped with a teleological character.⁴² Every agent acts for a determinate end. A total lack of order in being becomes a metaphysical impossibility.⁴³ We can set the argument forth in the Saints' own words:

"Si agens non tenderet ad aliquem effectum determinatum, omnes effectus essent ei indifferentes. Quos autem indifferentur se habet ad multa non magis unum eorum operatur quam aliud; unde a contingente ad utrumque non sequitur aliquens effectus nisi per aliquod determinetur ad unum. Impossibile igitur esset quod ageret. Omne igitur agens tendit ad aliquem determinatum effectum, quod dicitur finis eius."⁴⁴

The thought^{sh} needs little explanation. Action means the doing of

something and it must lead in some certain direction. Activity without any determination is inconceivable. There must be an end before the action is begun. An agent must tend to achieve some specific effect. To remain equally indifferent to two or more accomplishments would mean to continue totally inactive. It does not mean, however that an agent must necessarily tend toward the making of a certain physical thing. St. Thomas specifically upholds the possibility of action for the sake of action alone.⁴⁵ Such actions fall within the range of conscious beings alone.

The determinateness of the end, St. Thomas teaches, arises from the specific character of the agent.⁴⁶ Both the action and the end are in total accord with its nature. The form of a thing definitely specifies its essence. It is the form, likewise, which fundamentally is the principle of motion and change. The form is necessarily the end of the producing cause. This means that a similarity or copy of the form exists within the agent. This is the case with intelligent and non-intelligent causes alike. In the former the form preexists in its intelligible essence; in the latter in its natural essence.⁴⁷ Intelligent agents produce the end by the activity of their intellect. The form is an idea. Intelligent agents are drawn toward the attainment of the idea by a rational appetite which is called the will. In beings devoid of intelligence the end is not consciously present. The end is wrapped up, however, with the form which is part of their very nature. Hence, the

momentum toward action is an inclination of their nature.⁴⁸ It is natural appetite.⁴⁹ All agents tend to an effect similar to their own nature. Agens enim facit sibi simile.⁵⁰

St. Thomas goes on to show that every agent acts not only for a specific end but that this end is good. Omne agens agit propter bonum.⁵¹ The end entices the agent specifically because of the good which is contained in it.⁵² This is expressed in St. Thomas' definition of good: Bonum est quod omnia appetunt.⁵³ The end toward which an agent tends is always seen to be convenient and agreeable to it. In the attainment of the end the agent finds rest and satisfaction. The end elevates the agent to a higher perfection. All this is characteristic of the good. Every agent acts in so far as it is in actuality. The agent, therefore, tends toward actuality which is toward the good.⁵⁴

The picture that St. Thomas gives is clear. The world is made up of varied and numerous individual things, each with its own particular nature. The nature of an object is the source of its action. By means of its activity a nature strives to attain a specific end, a certain perfection which agrees with its being and which is not beyond the reach of its powers.⁵⁵ An Intelligent First Cause originally planned an end for each specific creature, and fitted that creature with a nature and powers capable of attaining that end.⁵⁶

Such a picture shows an almost infinite array of minute particular orders, and hence necessarily displays a marked

regularity and order; it does not of itself however account for the universal harmony of nature. The multiple ends toward which individual objects tend in an orderly manner might oppose each other and cause confusion. However, by actual experience we know that this is not the case. We perceive the external finality of nature and the adaption of the different species to each other. This is due ultimately to a designing cause. St. Thomas tells us that things not only have their own particular ends, but that there is an ultimate universal end to which all ends are drawn. A marvelous coordination of harmonious parts results. Meaning and order are written boldly in the universe for all to see.

Quod omnia ordinantur in unum finem, qui est Deus.⁵⁷. God is not only the first cause of creation, but He is also the final end. St. Thomas gives several arguments to support his thesis. These arguments are grouped about two central ideas, God as the Summum Bonum, and God as First Cause. The first arguments deal with God as the Summum Bonum. We have already seen that action tends toward a definite end in so far as that end is good. God has been shown to be the very essence and font of goodness itself. All things in being ordered to the good are ultimately ordered to God, in whose Goodness all particular goods participate.⁵⁸.

The second part of the argument is built around the idea of God as the First Cause, the Creator of all finite being. God did not create the universe and then just throw it off into

space. God cooperates in the activity of finite things while He sustains them in being. This cooperation does not mean that two specific causes work toward the realization of an effect. It is rather a principle of principle and instrumental causality.⁵⁹ The Supreme Agent, St. Thomas states, acts the actions of all inferior agents.⁶⁰ Each finite effect can therefore identify God as its principle agent. A finite activity will not only tend toward a particular end, but more principally will tend toward that ultimate end which its principle agent intends.⁶¹ And that end can be but only one thing, the Divine Goodness, God Himself.⁶²

It is necessary at this point to distinguish between two types of finality. In the one type the end precedes the action of the efficient cause only in an intentional manner; the end is not yet realized. This is the case wherever the end is something which the agent produces, e. g. the restoration of health by medical treatment. The idea of curing precedes the cure and guides the physician in the application of remedies. In the second type of final causation, the objective is already in existence, not only in the agent's thought and desire, but also in reality. It is something to be obtained through the agent's efforts. The object will continue as a real existent whether the agent fails or succeeds. Such ends are, e. g. the acquisition of property by purchase, the capture of a stronghold by siege. In these and in similar instances the object maintains the reality, which it possesses irrespective of any-

one's purpose. The object causes action, but if and when it is obtained, it acquires nothing. The gain is for the person who successfully acquires the object. It is in this sense that God is the end of all things.⁶³

St. Thomas points out that God receives nothing from the straining of creatures toward their end. Being infinitely perfect, God cannot acquire anything. Creation hungers and receives. In St. Thomas' own words, "God is the end of things solely because He is acquired by them."⁶⁴ After outlining the mode of final causality which God exerts, St. Thomas explains what the tendency toward God as the final end means to all creation. Quod omnia intendunt assimilari Deo.⁶⁵ If, therefore, all things tend toward God as toward their final end that they may attain His goodness, it follows that the ultimate end of things is to become similar to God.⁶⁶

This, then, is the end of all things, -- assimilari Deo. Things strive for that specific good which has been apportioned as their goal. In so doing they strive automatically to copy in their own way that Goodness which is God Himself.⁶⁷ St. Thomas is quick to stress, however, that after all it is only a similarity that is achieved, and a similarity always falls short of the original pattern. God's essence and His existence are one. His Goodness and His Being stand in the same relation to each other. To be and to be good are identical in Him. Evidently this lies beyond the capability of creatures. Creatures can never be goodness. They may possess it, but this

denotes a participation. In so far as finite beings exist they are good, but it is not of their essence to be such, they are good only in the possession of all those things which are necessary for their specific perfection.⁶⁸ It is not a single class of creatures that is called upon to copy the divine goodness but all of creation combined, a hierarchy of species, each of which reflects in its own way the goodness of its Creator.⁶⁹

In the second book of the Summa Contra Gentiles St. Thomas notes an order in the universe, a ladder of forms which nature exhibits on a gradation of perfection. St. Thomas shows how the various particular orders, or orders according to species or class, interlace in their activity, cooperating with each other as they strive to quench their common appetite for God. Nature becomes as a result a smooth running machine.

The resemblance of creatures to God is evident from the two purposes of their being. By the very fact that things exist and strive to preserve their own being they are similar to God. They reflect His perfection more in their effort to reproduce themselves, in their causality, for thus they tend as God does to diffuse their goodness abroad.⁷⁰ In these procedures objects and classes do not remain isolated, In striving for God each raises its head in union with the class which is immediately superior to it in the mode of reflecting divine goodness.

St. Thomas explains this universal dynamism in terms of actuality and potentiality. Matter is the lowest in the scale

of perfection. It longs to be united to a form. The more perfect the form to which it can be joined the greater is its desire for that juncture.⁷¹ It is here that the dynamism of creation beings. On its lowest level a higher nature meets a lower at its peak.⁷² Prime matter is in potentiality first to the form of an element, then to that of a compound. Next is the desire for a vegetative form. Vegetative life arises to the union with the sensitive, and sensitive life to intellectual. Here the high point of perfection is reached. It is here that the infinite perfection of God is most capably copied. Man in his intellectual pursuits most perfectly reflects his Maker.⁷³

Throughout this upward surge there is a unification of the lower order by the higher. And the higher the order the wider is its range of assimilation, the more perfect is its unifying power.⁷⁴ It is here that the glory of man as the crown of creation is most evident. Man does not merely unify the lower orders in his material make up, but he achieves this in a most perfect manner in his intellectual or spiritual nature. By a mere thought man can draw the hierarchy of nature to himself in a unified existence, and nature does not suffer any change by this act of mental assimilation.

There is also an order of conservation that St. Thomas notes. The higher depends on the lower for its existence. The compound is sustained by the qualities of its elements. Plant life is nourished by inorganic matter. Animal life feeds upon the plant, and man makes use of all three for his sustenance

and livelihood.⁷⁵

St. Thomas' picture of the universe is consistent and true. Nature used collectively is but a number of individual particular substances, each with its own qualities. Each nature is in a particular order. Each particular object has a definite end predetermined by the Creator. Each object has an activity which is not only capable of attaining its end, but which strives for it with the very necessity of its being. Nature is thus "the plan of a divine artist, introduced into things, whereby they move to a determinate end."⁷⁶ The form of a thing is most important, for it is the divine idea realized,⁷⁷ the pattern stamped into things, that which underlies the other characteristics. There is an order of subordination and coordination of the total powers of each individual object about each individual end, and it is here that we find the reason for the order and regularity in nature.

Each object not only has its particular end, but there is an ultimate end for all which is God Himself. The consideration of God as First Cause is sufficient to establish this.⁷⁸ There is no question of strife between the ends, because in the effort to reach their particular ends things strive to attain God. Their effort to reach their full perfection is an endeavor to be like God, to manifest His Goodness to the utmost of their capabilities. And since the ultimate end is the greatest in importance, things hunger for God most, and they love Him above all things.⁷⁹ The result of it all is a marvelous unity. The

universe becomes possessed of one aim, one activity, one order.⁸⁰
 An order of coordination of parts is necessary, an order of subordination at the same time of the whole to God.⁸¹

Aristotle's picture of the order of nature stands as a rough sketch next to the complete product of St. Thomas. To St. Thomas an ultimate explanation of things without reference to God is an absurdity. The very becoming which we ceaselessly witness, the potentiality and imperfection, has meaning only in reference to the fulness of Being and Actuality, God. This constant change points to God as the total cause and sole final end.

The order of the universe as a plan preexisted in the Divine Mind. As such it may be said to be originally rooted in the providence of God.⁸² In the actual execution of the order of nature there is required by the very necessity of things the principle agency of the Creator. God is thus the Source, the End, and the prime efficient Agent of the harmony of the universe. But if we would express the order of nature in one phrase we may choose St. Thomas' own words. Order is "the ordination of things to their end, and particularly to their final end which is Divine Goodness."⁸³

Notes

1. Aristotle, Physics, Book VIII, 1, 252a, line 12.
2. "Sed manifestum est, quod nulls res naturalis nec aliquid eorum, quae naturaliter rebus conveniunt potest esse absque ordine, quia natura est causa ordinationis. Videmus enim, naturam in suis operibus ordinate de uno in aliud procedere; quod ergo non habet aliquem ordinem, non est secundum naturam, nec potest accipi ut principium." In Physic., VIII, 3.
3. Aristotle, Metaphysics, Book I, 10, 993a, line 15.
4. William Turner, History of Philosophy, p. 33.
5. Aristotle, Metaphysics, Book I, 983 b, line 7.
6. William Turner, op. cit., pp. 34-38.
7. ibid., p. 58.
8. J. A. McWilliams, "Theories of Matter," New Scholasticism. 1 (Oct. 1927) 297-298.
9. Aristotle, Metaphysics, Book I, 3, 984b, line 17.
10. ibid., chapter 4.
11. William Turner, op. cit., p. 82.
12. ibid., p. 109.
13. Aristotle, Metaphysics, Book XIII, 4.
14. William Turner, op. cit., pp. 96 - 114.
15. ibid., pp. 96 - 114.
16. Aristotle, Physics; Book I, 1, 184a, lines 10 - 15.
17. ibid., Book II, 3.
18. ibid., Book II, 8, 199b, line 15.
19. ibid., 199b, lines 25 - 30.
20. ibid., chapter 8.
21. ibid.

22. Aristotle, Metaphysics, Book XIV, 3, 1090b, lines 20-21.
23. ibid., Book XII, 10, 1075a, lines 12-25.
24. ibid., Book XII, 7.
25. Aristotle, Physics, Book VIII, 1, 252a, line 12.
26. ibid., Book II, 8, 199a, line 10.
27. Aristotle, Metaphysics, Book XII, 7.
28. Aristotle, Physics, Book VIII, 1, 252a, line 13. II, 6, 198a, 9.
29. Aristotle, De Caelo, Book II, 4, 271a, line 34.
30. Aristotle, De Generatio et Corruptio, Book II, 10, 336b. line 32.
31. Aristotle, Metaphysics, Book XII, 10, 1075a, line 15.
32. Summa Theol., I, q. 44, a. 2, c.
33. Summa Contra Gentiles, II, cap. 45. Summa Theol. I, q. 47, a. 1, c.
34. Summa Contra Gentiles, II, cap. 93.
35. Edward A. Pace, "The Teleology of St. Thomas," New Scholasticism. I (July 1927) pp. 213-231.
36. "Unum esse primum entium, totius esse perfectionem plenam possidens, quod Deum dicimus, in superioribus est ostensum, qui ex sui perfectionis abundantia omnibus existentibus esse largitur, ut non solum primum entium, sed et principium omnium esse comprobetur." Contra Gentiles, III, cap. 1.
37. "Esse autem aliis tribuit non necessitate naturae, sed secundum suae arbitrium voluntatis, ut ex superioribus est manifestum. Unde consequens est ut factorum suorum sit Dominus: nam super ea quae nostrae voluntati subduntur, dominamur. Hoc autem dominum super res a se productas perfectum habet, utpote qui ad eas producendas nec exterioris agentis adminiculo indiget, nec materiae fundamento: cum sit totius esse universalis effector." ibid., III, cap. 1.
38. "Eorum autem quae per voluntatem producuntur agentis, unumquodque ab agente in finem aliquem ordinatur: bonum enim et finis est obiectum proprium voluntatis, unde necesse est ut quae ex voluntate procedunt, ad finem aliquem

ordinentur. Finem autem ultimum unaquaeque res per suam consequitur actionem, quam oportet in finem dirigi ab eo qui principia rebus dedit per quae agunt." ibid.

39. "Necesse est igitur ut Deus, qui est in se universaliter perfectus, et omnibus entibus ex sua potestate esse largitur, omnium entium rector existat, a nullo utique directus: nec est aliquid quod ab eius regimine excusetur, sicut nec est aliquid quod ab ipso esse non sortiatur. Est igitur, sicut perfectus in essendo et causando, ita etiam et in regendo perfectus." ibid.
40. "Huius vero regiminis effectus in deversis apparet diversimode, secundum differentiam naturarum." ibid.
41. Garrigon - Lagrange, God His Existence and His Nature, ppl 345-372. "Rationis enim est ordinare ad finem, qui est primum principium in agentis I-II, 90, 1, c.
42. Edward A. Pace, op. cit. pp. 213-231.
43. "Impossibile est aliquam rem esse quae omni ordine destituatur." Sententiae, Book II, d 37, 1, 1, 5m.
44. Summa Contra Gentiles III, cap. 2.
45. "Actio vero quandoque quidem terminatur ad aliquod factum sicut aedificatio ad domum, sanatio ad sanitatem: quandoque autem non, sicut intelligere et sentire. Et si quidem actio terminatur ad aliquod factum, impetus agentis tendit per actionem in illud factum: si autem non terminatur ad aliquod factum, impetus agentis tendit in ipsam actionem." ibid.
46. "omnis autem agentis impetus ad aliquid certum tendit: non enim ex quaeumque virtute quaevis actio procedit, sed a calore quidem calefactio, a frigore autem infrigidatio; unde et actiones secundum diversitatem activorum specie differunt." ibid.
47. "In omnibus enim quae non a casu generantur, necesse est formam esse finem generationis cuiuscumque. Agens autem non ageret propter formam, nisi inquantum similitudo formae est in ipso. Quod quidem contingit dupliciter. In quibusdam enim agentibus praeexistit forma rei fiendae secundum esse naturale, sicut in his quae agunt per naturam; sicut homo generat hominem, et ignis ignem. In quibusdam vero secundum esse intelligibile, ut in his quae agunt per intellectum; sicut similitudo domus praeexistit in mente aedificatoris." Summa Theol., I, q. 15, a.1, c.
48. "Sicut igitur agens per intellectum tendit in finem

determinatum per suam actionem, ita agens per naturam."
Summa Contra Gentiles, III, cap. 2.

49. "Appetitus naturalis est inclinatio cuiuslibet rei in aliquid ex natura sua." Summa Theol., I, q. 78, a. 1, ad 3.
50. "Forma alicuius propria non fit alterius visi eo agente: agens enim facit sibi simile inquantum formam suam alteri communicat." Summa Contra Gentiles, III, cap. 52.
51. "Omne agens agit propter bonum." ibid., III, cap. 3.
52. "Bonum est quod omnia appetunt." Summa Theol. I-II, q. 8, a. 1, c.
53. ibid.
54. "Omne agens agit secundum quod est actu. Agendo autem tendit in sibi simile. Igitur tendit in actum aliquem. Actus autem omnis habet rationem boni: nam malum non invenitur nisi in potentia deficiente ab actu. Omnis igitur actio est propter bonum." Summa Contra Gentiles, III, cap. 3. Summa Theol. I-II, q. 8, a. 1.
55. Summa Theol., III, q. 77, a. 1, ad 1.
56. Summa Contra Gentiles, III, cap. 1.
57. ibid., III, cap. 17.
58. "Si enim nihil tendit in aliquid sicut in finem nisi inquantum ipsum est bonum, ergo oportet quod bonum inquantum bonum sit finis. Quod igitur est summum bonum, est maxime omnium finis. Sed summum bonum est unum tantum, quod est Deus: ut in primo libro probatum est. Omnia igitur ordinantur sicut in finem in unum bonum quod est Deus." ibid.
59. ibid., III, cap. 70. Summa Theol. I-II, q. 1. a. 2; I-II, q. 21, a. 4, ad 2.
60. "Agit autem supremum actiones omnium inferiorum agentium, movendo omnes, ad suas actiones, et per consequens ad suos fines." ibid. III, cap. 17.
61. "Sed Deus est prima causa in ordine causarum finalium: cum sit summum in ordine bonorum. Est igitur magis finis uniuscuiusque rei quam aliquis finis proximus." ibid.
62. "Ad ordinem agentium sequitur ordo in finibus: nam sicut supremum agens movet omnia secunda agentia, ita ad finem supremi agentis oportet quod ordinentur omnes fines

secundorum agentium: quidquid enim agit supremum agens, agit propter finem suum. Agit autem supremum actiones omnium inferiorum agentium, movendo omnes ad suas actiones, et per consequens ad suos fines. Unde sequitur quod omnes fines secundorum agentium ordinantur a primo agente in finem suum proprium. Agens autem primum rerum omnium est Deus, ut in Secundo (cap. 15) probatum est. Voluntatis autem ipsius nihil aliud finis est quam sua bonitas, quae est ipsemet, ut in Primo (cap. 74) probatum est. Omnia igitur quaecumque sunt facta vel ab ipso immediate, vel mediantibus causis secundis, in Deum ordinantur sicut in finem. Omnia autem entia sunt huius modi: nam, sicut in Secundo probatur, nihil esse potest quod ab ipso non habeat esse. Omnia igitur ordinantur in Deum sicut in finem." ibid.

63. Edward A. Pace, "Assimilari Deo," New Scholasticism. 2 (October 1928) pp. 347, 348.
64. "Relinquitur igitur quod Deus sit finis rerum, non sicut aliquid constitutum aut effectum a rebus, neque ita quod aliquid ei a rebus acquiratur, sed hoc solo modo, quia ipse rebus acquiritur." ibid. III, 18. Summa Theol. I, q. 44, a. 4.
65. Summa Contra Gentiles, III, 19.
66. "Ex hoc autem quod acquirunt divinam bonitatem, res creatae similes Deo constituuntur. Si igitur res omnes in Deum sicut in ultimum finem tendunt ut ipsius bonitatem consequantur (cap. praec.), sequitur quod ultimus rerum finis sit Deo assimilari." ibid., III, 19. Edward A. Pace, "Assimilari Deo," New Scholasticism. 2 (October 1928) pp. 342-356.
67. "Bonitatem autem creaturae non assequuntur eo modo sicut in Deo est, licet divinam bonitatem unaquaeque res immitetur secundum suum modum." ibid., III, 20.
68. Garrigou-Lagrange, op. cit., pp. 45-46.
69. Summa Contra Gentiles, III, 20.
70. "In rebus evidenter apparet quod esse appetunt naturaliter: unde et si qua corrumpi possunt, naturaliter corruptibilibus resistunt, et tendunt illuc ubi conserventur, sicut ignis sursum et terra deorsum. Secundum hoc autem esse habent omnia quod Deo assimilantur, qui est ipsum esse subsistens: cum omnia sint solum quasi esse participantia." ibid., III, 19.
71. "Unde oportet quod in ultimum et perfectissimum actum quem materia consequi potest, tendat appetitus materiae quo

appetit formam, sicut in ultimum finem generationis." ibid., III, 22.

72. "Natura superior in suo infimo contingit naturam inferiorem in eius supremo." ibid., III, 91.

73. "Deo autem assimilatur maxime creatura intellectualis per hoc quod intellectualis est: hanc enim similitudinem habet prae ceteris creaturis, et haec includit omnes alias. In genere autem huius similitudinis magis assimilatur Deo secundum quod intelligit actu, quam secundum quod intelligit in habitu vel potentia: quia Deus semper actu intelligens est." ibid., III, 25.

74. "Hoc enim rerum ordo habet, quod quanto aliquid est superius, tanto habeat virtutem magis unitam et ad plura se extendentem." Summa Theol. I, q. 57, a 2, c.

75. "Cum vero, ut dictum est, quaelibet res mota, inquantum movetur, tendat in divinam similitudinem ut sit in se perfecta; perfectum autem sit unumquodque inquantum fit actu: oportet quod intentio cuius libet in potentia existentis sit ut per motum tendat in actum. Quanto igitur aliquis actus est posterior et magis perfectus, tanto principalius in ipsum appetitus materiae fertur. Unde oportet quod in ultimum et perfectissimum autem quem materia consequi potest, tendat appetitus materiae quo appetit formam, sicut in ultimum finem generationis. In actibus autem formarum gradus quidem inveniuntur. Nam materia prima est in potentia primo ad formam elementi. Sub forma vero elementi existens est in potentia ad formam mixti: propter quod elementa sunt materia mixti. Sub forma autem mixti considerata, est in potentia ad animam vegetabilem: nam talis corporis anima actus est. Itemque anima vegetabilis est in potentia ad sensitivam, sensitiva vero ad intellectivam. Quod processus generationis ostendit: primo enim in generatione est fetus vivens vita plantae, postmodum vero vita animalis, demum vero vita hominis. Post hanc autem formam non invenitur in generabilibus et corruptibilibus posterior forma et dignior. Ultimus igitur finis generationis totius est anima humana, et in hanc tendit materia sicut in ultimam formam. Sunt ergo elementa propter corpora mixta; haec vero propter viventia; in quibus plantae sunt propter animalia; animalia vero propter hominem. Homo igitur est finis totius generationis.

Quae vero per eadem res generatur et conservatur in esse secundum ordinem praemissum in generationibus rerum est etiam ordo in conservationibus earundem. Unde videmus quod corpora mixta sustentantur per elementorum congruas qualitates: plantae vero ex mixtis corporibus nutriuntur; animalia ex plantis nutrimentum habent; et quaedam etiam perfectiora et virtuosiora ex quibusdam imperfectioribus et

infirmioribus. Homo vero utitur omnium rerum generibus ad sui utilitatem. Quibusdam quidem ad esum, quibusdam vero ad vestitum: unde et natura nudus est institutus, utpote potens ex aliis sibi vestitum praeparare; sicut etiam nullum sibi congruum nutrimentum natura praeparavit nisi lac, ut ex diversis rebus sibi cibum conquireret. Quibusdam vero ad vehiculum: nam in motus celeritate, et in fortitudine ad sustinendos labores, multis animalibus infirmior invenitur, quasi aliis animalibus ad auxilium sibi praeporatis. Et super hoc omnibus sensibilibus utitur ad intellectualis cognitionis perfectionem." Summa Contra Gentiles, III, 22.

76. "Unde patet, quod natura nihil est aliud quam ratio cuiusdam artis, scilicet divinae, indita rebus, qua ipsae res moventur ad finem determinatum." In Physic., Book II, 14.
77. Summa Theol., I, q. 44, a. 3, c.
78. ibid., I, q. 44, a. 4.
79. "Deligere autem Deum super omnia est quiddam connaturale homini; et etiam cuilibet creaturae non solum rationali, sed irrationali et etiam inanimatae, secundum modum amoris qui unicuique creaturae competere potest." ibid., I-II, q. 109, a 3, c.
80. "Haec ratio est quare mundus est unus, quia debent omnia esse ordinata uno ordine, et ad unum." ibid., I, q. 47, a 3, ad 1.
81. ibid., I, q. 21, a. 1, ad 3.
82. "Cum autem Deus sit causa rerum per suum intellectum, et sic cuiuslibet sui effectus oportet rationem in ipso praexistere, ut ex superioribus patet; necesse est quod ratio ordinis rerum in finem in mente divina praeexistat. Ratio autem ordinandorum in finem, proprie providentia est." Summa Theol., I, q. 22, a. 1, c.
83. "In rebus autem invenitur bonum, non solum quantum ad substantiam rerum, sed etiam quantum ad ordinem earum in finem, et praecipue in finem ultimum, qui est bonitas divina, ut supra habitum est. Hoc igitur bonum ordinis in rebus creatis existens a Deo creatum est." ibid.

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