such a unity to be understood? It is not the unity of one, but of many taken together. If there is order between many things, they are one, and there is order only if there is a principle. "Necesse est invenire principium in omnibus, in quibus est ordo" (In Joan. c. 1, lect. 1, n. 34). Everything within an order is related to one single principle, the principle of that order, which, in its most common understanding, means simply what is first in that order. Every order entails a 'first', whether it be an order of quantity, an order of time, or an order of discipline, to mention the examples of St. Thomas given in the text just quoted from. If there are two irreducible 'firsts', there will be two orders, and not just one. But if the universe is to be truly one, it will have to have one first principle.

What is at stake here is clearly the relation between creatures and God, but there is more to be understood than the mere fact of creation. In Q. 3, a. 5, De Potentia, St. Thomas shows that everything which exists is created by God. If this is so, we might consider the question of unity and multiplicity already closed, since through creation the many are reduced to the one and so an order is established. Yet St. Thomas still considered the question worth looking into, since he turns to it immediately in the following article, "utrum sit unum tantum creationis principium," and returns to it again in article 16, "utrum ab uno principio

possit procedere multitudo." This may appear to be a strange order of procedure, to discuss the possibility after the fact, but two things must be kept in mind here. First, St. Thomas has in mind certain doctrines on the universe which went counter to his own and which he had to discuss in order fully to justify his position. Secondly, such discussion served not only to justify his position, but also to understand better the implications of that position. What St. Thomas is actually doing is carrying on an historico-doctrinal dialectic of the sort which he found in Aristotle and which he used so frequently himself to shed light on many problems, such as that of knowledge or the origin of prime matter.[1] This is, indeed, the procedure that is found throughout this question of the De Potentia.

The principal difficulty with reducing all things to some kind of unity comes from the contrariety of forms actually found in the universe. Ancient natural philosophers were very keenly aware of this contrariety, and the search for first principles was first worked out in

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[1]For an excellent study of the role which this historico-doctrinal dialectic played in the thought of St. Thomas, cf. Robert Henle, S.J., Saint Thomas and Platonism, especially the first chapters of Part II, where the author discusses what he calls St. Thomas' via-positio technique in dealing with Platonic positions. Fr. Henle, however, tends to view things mostly from the viewpoint of the theory of knowledge, which, to be sure, is a dominant theme in the texts he lists, but it is not the only one. For an example of the dialectic as it is used with reference to creation and prime matter, see S.T. I, q. 44, a. 2, c and De Pot. q. 3, a. 5, c.

function of it in large part, as Aristotle brought out in Book I of the Physics. "Omnes enim accipiunt contraria pro principiis, sed tamen diversa" (In I Phys. I, lect. 10, n. 81(7)). Some held for sensible contraries as first principles, such as hot and cold, damp and dry, or dense and rare, while others held for more rational contraries, such as odd and even, or love and strife. But all agreed that first principles should somehow be contrary. Some of them, however, unable to bring the contraries to some kind of unity, were forced to posit two first principles simply.

> Antiqui philosophi specialia principia tantum naturae considerantes, ex consideratione materiae in hunc errorem devenerunt, quod non omnia naturalia creata esse credebant: ita quod ex consideratione contrariorum, quae cum materia ponuntur principia in natura, devenerunt in hoc ut rerum duo prima principia constituerent. (De Pot. q. 3, a. 6, c)

Such a position was not an easy one to escape, since any change seems to consist in passing from one contrary to another, as for example, passing from black to white, or from hot to cold. In any explanation of change such contrariety had to be taken into account along with the substrate of change, matter. The problem may not appear too difficult at first, but when we come to the first contraries, it becomes crucial. As first, they do not derive from others. And as contraries, they cannot be from one another, for, although 'hot' comes from 'cold' inasmuch as that which becomes hot was previously cold, heat itself does not come

from coldness.[1] Unless one transcends the contrariety of these specifically different principles, one is left simply with two first principles, apart from matter itself, to explain the differentiation of forms in matter.

The difficulty is further compounded by the fact that a substance as such has no contrary. "Substantiae non (est) aliquid contrarium, quod maxime manifestum est in animalibus et plantis" (In I De Caelo lect. 6, n. 67(10)). What is indeed contrary to an animal as such? Non-animal can be many things, but a contrary is an extreme and it can only be one, as black is the extreme opposite of white and cold the extreme opposite of hot. Now if there is no contrary for substance, how can there be generation and corruption? How can there be substantial change, coming to be simply and ceasing to be simply? Aristotle himself gave the answer to this problem, as St. Thomas points out.

> Dicendum est quod, sicut ipse etiam post dicet, substantiae nihil est contrarium secundum compositum, vel secundum materiam, vel secundum formam substantialem: est tamen aliquid sibi contrarium secundum propriam dispositionem ad talem formam, sicut ignis dicitur contrarius aquae contrarietate calidi et frigidi. (Ibid.)

As substances, fire and water are not contrary to one another, neither according to their composition, nor according to their matter, nor according to their substantial forms, but they are seen as contraries by reason of the contraries hot and

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[1] Cf. In I Phys. lect. 10, n. 77(3).

cold to which each is disposed respectively according to its nature. "Differentiae substantiales, quia sunt ignotae, per differentias accidentales manifestantur: et ideo multoties utimur differentiis accidentalibus loco substantialium. Et hoc modo Philosophus hic dicit calidum et frigidum esse differentias ignis et terrae. Calidum enim et frigidum, cum sint propriae passiones horum corporum, sunt proprii effectus formarum substantialium eorundem..." (In I De Gen. lect. 8, n. 62(5)). Thus, one can account for substantial change through contrariety, without introducing contrariety into the order of substances itself, for if the proper accident of a substance is attacked, it becomes impossible for the substance itself to continue in being and another substance comes to be in its stead. While contrariety is possible on the level of accidents, the only kind of opposition possible on the level of substance is privation and possession, privatio et habitus, the principle of all contrary opposition, but which is not itself an opposition of contrariety, since for both terms of a contrariety there is a nature to be understood, "contrariorum autem utrumque est aliqua natura," while clearly for privation there can be no such thing.[1]

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[1]All this is briefly explained in the text from the De Gen. we just quoted from, where reference is also made to Book X of the Metaphysics. There it is shown how privation and possession are the first opposition, and hence the principle of all opposition, and how this affects the opposition of contrariety in such a way that one of the two contraries

In the Q. 3, a. 6, De Potentia, however, St. Thomas takes another approach to the problem of two first principles. He views the matter more in the light of the universe as a whole. We see this when he prefaces his statement of the position of the ancients with the remark that they only considered the special principles of nature, "specialia principia tantum naturae considerantes." This is a reference to something that is mentioned in the preceding article in connection with the origin of prime matter. In the development of philosophy among the pre-Socratics, according to St. Thomas, there were some who arrived at a certain understanding of substantial forms, but they remained so intent on special forms that they never got beyond the idea of an agent that did not presuppose some preexisting matter to work with.

> Posteriores vero philosophi, substantiales formas aliquatenus considerare coeperunt; non tamen pervenerunt ad cognitionem universalium, sed tota eorum intentio circa formas speciales versabatur: et ideo posuerunt quidam aliquas causas agentes, non tamen quae universaliter rebus esse conferrent, sed quae ad hanc vel illam formam, materiam permutarent; sicut intellectum et amicitiam et litem, quorum actionem ponebant in segregando et congregando; et ideo etiam secundum ipsos non omnia entia a causa efficiente procedebant, sed materia actioni causae agentis praesupponebatur. (De Pot. q. 3, a. 5, c)

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always appears as a privation of its opposite. "Oppositio privationis et habitus est principium oppositionis contrariorum: et ideo semper alterum contrariorum est cum defectu et privatione quadam respectu alterius" (In I De Gen. lect. 8, n. 62(5)). Cf. In X Metaph. lect. 6.

It was for Plato and Aristotle, and their followers, St. Thomas continues, finally to arrive at the consideration of universal being, "ad considerationem ipsius esse universalis."

In article 6, St. Thomas returns to have a closer look at the unfinished business of the special and apparently contrary forms.

> Quia contraria considerabant secundum hoc tantum quod diversa sunt ex natura speciei, non autem secundum quod est aliquid unum in eis ex natura generis, licet contraria in eodem genere sint: unde non attribuebant eis causam secundum id in quo conveniunt, sed secundum hoc in quo differunt: et propter hoc in duo prima contraria, sicut in duas primas causas, omnia contraria reduxerunt, ut habetur in I Phys. Sed inter eos Empedocles prima contraria etiam primas causas agentes posuit, scilicet amicitiam et litem: et hic, ut habetur I Metaph., primo posuit bonum et malum principia. (De Pot. q. 3, a. 6, c)

Whereas others before him went no further than positing contrary principles in matter itself, Empedocles, in positing causes outside of matter, without transcending the contrariety of specific forms, was led to posit love and strife as contrary first principles. This, as St. Thomas implies, led to the further error of positing both good and evil as principles, although it seemed to mark some progress over what had gone before.

But there was still a second shortcoming in this consideration of contraries, besides the inability to transcend the contrariety, one which consisted in doing as if

both contraries were on a par with one another. Since one of them was nothing more than the privation of the other, this was equivalent to making something positive of privation and led to the elaboration of an order of imperfection alongside the order of perfection in the universe.

> Utrumque contrariorum aequaliter iudicabant; cum tamen oporteat semper duorum contrariorum unum esse cum privatione alterius: et propter hoc unum est perfectum et aliud imperfectum, et unum melius et aliud peius, ut habetur in I Phys.[1] (Ibid.)

From this it also appeared that both good and evil were generaliora contraria, which led to their being posited as different natures. Thus it is that the Pythagoreans came to posit two genera of things, one good and one evil; and in the genus of good they placed everything perfect, such as light, male, rest, etc., and in the genus of evil, everything

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[1] St. Thomas is here referring to a text we alluded to earlier, where Aristotle is explaining how the ancient natural philosophers all came to think of first principles as contraries somehow or other. His commentary on the passage is illuminating here. "Alius modus in quo conveniunt secundum analogiam est, quod quaecumque principia accipiuntur ab eis, unum eorum se habet ut melius et aliud ut peius; sicut concordia vel plenum vel calidum ut melius, discordia vero vel vacuum vel frigidum ut peius; et sic est considerare in aliis. Et hoc ideo est, quia semper alterum contrariorum habet privationem admistam: principium enim contrarietatis est oppositio privationis et habitus, ut dicitur in X Metaph." (In I Phys. lect. 10, n. 81(7)). The final reference, for the explanation of the fact, is to a text we already saw alluded to above (p. 95, note 1). Cf. also In II Phys. lect. 2, n. 156(8).

imperfect, such as darkness, female, etc.[1]

This sort of solidification of privation and imperfection into something positive entailed a third defect in the consideration of contraries, one which pertained to the very subject that interests us here. It prevented these ancients from seeing the order of the universe as a whole.

> Tertius defectus fuit, quia iudicaverunt de rebus secundum quod in se considerantur tantum, vel secundum ordinem unius rei ad aliam rem particularem, non autem in comparatione ad totum ordinem universi. (Ibid.)

Hence, when they saw that one thing was destructive of another, or was imperfect in comparison with other more perfect things, they judged it to be evil simply according to its nature, and not to have its origin in the same cause as the good. And that is why, St. Thomas adds, Pythagoras placed the female, "quae est quid imperfectum," in the genus of evil.[2]

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[1]The De Pot. attributes this opinion to Pythagoras himself. In the Metaphysics, however, this opinion is attributed only to certain Pythagoreans. Cf. In I Metaph. lect. 8, which also explains how the Pythagorean dual system was evolved from the odd and the even, the supposed two first principles.

[2]St. Thomas's use of the terms perfect and imperfect in connection with male and female should surprise no one here. It is in keeping with the ancient perspective we have seen alluded to of opposing things according to possession and privation, perfection and imperfection. St. Thomas saw no attack on the dignity of the female in this manner of dividing any animal species, since both female and male still were seen as belonging to the same species, as having the same essence, while the division according to perfect and imperfect was established on another basis. He did, however, take serious exception to the step, taken by the Pythagoreans,

St. Thomas sees here the root of Manicheanism, which extended the error to the whole of Christian life and to the whole of reality, so to speak. But the Pythagorean theory itself did not embrace as much. It was conceived mostly in terms of the material universe, though its positing of numbers as principles of sensible being raised it to the realm of the immaterial and intelligible in certain respects,[1] and it contained something original which Aristotle did not entirely reject. "Una communis opinio accipi potest, scilicet quod principia entium sunt contraria; quod non est ab aliis dictum" (In I Metaph. lect. 8, n. 132). Empedocles had posited contrary principles in the line of efficient causality. He had also posited four elements, but he had not posited them as first principles ratione contrarietatis; he looked only to their nature and substance. The ancient naturalists, on the other hand, had posited contrary principles, such as the rare and the dense, but they saw contrariety only on the part of the form. It was for Pythagoreanism to first attempt a systematization in the line of

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that went from speaking of the female as 'imperfect' to speaking of her as evil. Within the order of one and the same animal species, the female is for the good of the species and hence clearly a good in its very 'imperfection'. De Ver. q. 5, a. 9, ad 9 shows that the male is more perfect because it is active principle in generation, but the female, while being passive, and hence the less perfect of the two, still has a role intended by nature as a whole, whence its goodness.

[1]Cf. In I Metaph. lect. 13, n. 201.

material causality, as St. Thomas says in explanation of the text just quoted. Though Aristotle was not to follow the system itself, he did adopt the idea behind the system, namely, a rational explanation for the first principles of the material order based on contrariety. This is the idea he puts to execution in Book II De Generatione et Corruptione, where he arrives at the four elements through a systematization of the four basic qualities, hot and cold, dry and humid, which he conceived as the first determinations of the potency of matter. It is also the idea he applies in De Caelo et Mundo to determine the order of places in the universe.

The error of Pythagoreanism, however, consisted basically in stopping short in the search for principles and not looking for a truly first principle that would explain the order between contraries. This stopping short at first contraries resulted in positing as absolutes things that were essentially relative and in erecting as a separate order one that was only a part of the single, universal order. Of the three arguments St. Thomas proposes against this error, the first insists on the need for reducing to one cause what is common in the things that differ. This unum commune either comes to one of the contraries from the other, or it comes to both from a cause common to both. It cannot, in any case, pertain to them according to that

which is proper to each. This community is a fact in the world, no matter how diverse or contrary things might be. "Omnia autem contraria et diversa, quae sunt in mundo, inveniuntur communicare in aliquo uno, vel in natura speciei, vel in natura generis, vel saltem in ratione essendi" (De Pot. q. 3, a. 6, c). Thus it appears that, beyond whatever diversity of causes in this world, beyond all contrariety, there has to be some one cause. Among the naturalists themselves this was recognized, for, above the contraries of nature, they posited one first agent in the heavens as cause of diverse movements in things here below. And because there remains a certain diversity in the heavens themselves, a diversity according to place, as the ancients saw it, St. Thomas adds that we have to go back further to a first Mover who moves neither per se, as terrestial bodies do, nor per accidens, as heavenly bodies, but is immovable.

The second argument shows that evil cannot be a positive principle even of things that are evil in one way or another. Evil is a privation of form, something negative. Everything that acts, on the other hand, acts in the measure that it is in act, and consequently in the measure that it is perfect or good somehow or other. The argument is presented in terms of general principles, but it can be

shown to be founded in reality.[1] In Book I of the Physics we find an explanation of the manner in which privation is principle of things without being anything positive.[2] Form and matter are per se principles of things. Privation is principle per accidens. Principle, because, while matter is perfected by one form, it remains in potency to other forms; but per accidens only, because it adds nothing positive besides the matter and form of a thing, it only accompanies (accidit) the form which actually perfects the matter. Privation will thus explain why one of two contraries will be imperfect with respect to the other, but it cannot make the imperfection as such something positive, since it remains something purely negative. That is why St. Thomas considers it an error to judge both contraries on equal footing, though both are within the same genus.

The real originality of St. Thomas in this whole matter seems to consist in having seen that the order of the universe was at stake here, and that ultimately the fundamental answer to the error lay in a proper understanding of this order. In article 16 he will again invoke the

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[1] C.G. II, c. 41 presents the argument in much more complete fashion. There it is shown that evil can have no per se principle and cannot be per se active principle of anything. Thus the idea of an order of evil parallel to the order of goodness or perfection, which is simply the order of the universe, is rejected from the viewpoint of both principium and principiatum.

[2] Cf. In I Phys. lectt. 11-15.

order of the universe against the Manicheans. Here in article 6 he uses it as the final and clinching argument against the gap which the Pythagoreans had introduced into the universe with their dual order.

> Si diversa entia essent omnino a contrariis principiis in unum principium non reductis, non possent in unum ordinem concurrere nisi per accidens. Ex multis enim non fit coordinatio nisi per aliquem ordinantem, nisi forte multa casualiter[1] in idem concurrant. Videmus autem corruptibilia et incorruptibilia, spiritualia et corporalia, perfecta et imperfecta in unum ordinem concurrere. Nam spiritualia movent corporalia, quod ad minus in homine apparet. Corruptibilia etiam per corpora incorruptibilia disponuntur, sicut patet in alterationibus elementorum a corporibus caelestibus. Nec potest dici, quod haec casualiter eveniant, nam non contingeret ita semper vel in maiori parte, sed solum in paucioribus. Oportet ergo omnia ista diversa in aliquod unum primum principium reducere a quo in unum ordinantur: unde Philosophus in XII Metaph. concludit quod unus est principatus.
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> (De Pot. q. 3, a. 6, c)

The spectacle of unity in the universe was argument enough against all those who would set up an unbridgeable cleavage between things or between various orders of things in the universe. Such an order was so impressive for Aristotle and St. Thomas that it could not be explained by mere chance,

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[1] We amend the text given in the Marietti edition. Instead of casualiter in this line and a few lines below, the text gives causaliter. This cannot be correct in the context, since the term appears in an objection or a supposition that would make the search for a single cause of everything futile. Causaliter, in both instances, if it makes any sense, can only give the phrase a meaning directly opposed to what St. Thomas intends. Besides, the phrase, "non contingeret ita semper vel in maiori parte, sed solum in paucioribus," is clearly reminiscent of the process of division which leads to the definition of casus. Cf. In II Phys lect. 8. Cf. also C.G. II, cc. 39-41.

as would have to be the case if there were two irreducible orders. Besides, chance itself appears as a departure from order and could hardly serve as an explanation of order. It is order that explains chance ultimately, and not chance that explains order. There is too much regularity in the world to justify the reversal of roles. The problem is to see the unity of this order.

In the question whether many can come from the One, the problem of unity and multiplicity presents itself in a different way. Here the difficulty does not arise so much from a consideration of contraries as from the manner of procession from the One. In article 16 St. Thomas shows that there is nothing in the process of creation to impose any kind of necessity on the wisdom and the power of the Creator, whether it be from the nature of efficient causality, or material causality, or final causality. The only kind of necessity that can be considered is that from the form which God intends to give to his work.

> Relinquitur igitur quod debitum in operibus divinis esse non potest nisi ex forma, quae est finis operationis. Ipsa enim cum non sit infinita, habet determinata principia, sine quibus esse non potest; et determinatum modum essendi, ut si dicamus, quod supposito quod Deus intendat hominem facere, necessarium est et debitum quod animam rationalem ei conferat et corpus organicum, sine quibus, homo esse non potest. Et similiter possumus dicere in universo. ...
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> Sed supposito quod tale universum producere voluerit, necessarium fuit quod tales et tales creaturas produxerit, ex quibus talis forma universi consur-

> geret. Et cum ipsa universi perfectio et multitudinem et diversitatem rerum requirat, quia in una earum inveniri non potest propter recessum a complemento bonitatis primae; necesse fuit ex suppositione formae intentae quod Deus multas creaturas et diversas produceret; quasdam simplices, quasdam compositas; et quasdam corruptibiles, et quasdam incorruptibiles.
> (De Pot. q. 3, a. 16, c)

The form of the universe is, of course, its order; and so the order of the universe appears once again in the solution to the question of unity and multiplicity. But now diversity appears in the role, not of a difficulty or an obstruction, as it did with Pythagoreanism, but of a necessity for order and perfection.

The crucial point in any theory of the universe has to do with diversity. At first, it is unity that appears as the fundamental question. Where to find the unity in the dispersion of individuals or in the diversity of irreducible orders such as the physico-chemical order, the biological order, or the personal order? But in any theory of the universe some answer has already been found to this question, some principle which embraces and unifies all the multiplicity of the world. Whatever this principle of unification may be, the question becomes one of knowing how to correlate the unity and the diversity, what to do with the multiplicity either of individuals or of irreducible orders, how to reduce the many to the one.

The tendency of any cosmologist at this point is to minimize the diversity, to reduce it, in the sense of

absorbing it within one common element and making it disappear from sight. This is a tendency that manifests itself in the systems that have been elaborated starting from the positive sciences in recent times as well as in the older idealistic and pantheistic systems. Whether a cosmologist starts from physics, or biology, or psychology, the more he attends to his principle of unification and of universal explanation, the more what is proper to different orders will become obscure. Even those who would renounce all cosmology, in order not to lose sight of the personal or existential order, actually lose sight of vast realms of order that really exist in the world. They too are not without their own cosmology, their own way of conceiving the world as one.

In the face of this tendency to reduce everything to one dimension, St. Thomas's affirmation of the need for diversity for the perfection of the universe appears quite significant and paradoxical. Generally, those who work from a perfection principle in cosmology manifest little concern for true diversity.[1] With St. Thomas it is the exact opposite. The greater the perfection of a whole, the greater will be the diversity of its parts. There are some wholes where the order of the parts makes no difference;

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[1] Cf., for example, J. Singh, Great Ideas and Theories of Modern Cosmology, pp. 134 ff.

for example, the body of water remains the same, equally perfect as body of water if we stir it. There are other wholes, however, where the order of the parts makes quite a difference; change the parts of a house or the parts of a man around, for example, and you risk losing your house and your man. In the first kind of continuum, the parts are in act or nearly so: we speak of the waters in a body of water even though they are waters only in potency, whereas in act they are parts of this body of water. The unity in this kind of continuum remains somewhat loose. In the second kind, there is a greater bond of unity, the parts are integrated in the whole to a higher degree, and totality is more perfectly realized.

> Totum vero significat collectionem partium in aliquo uno: et ideo in illis proprie dicitur totum in quibus, ex omnibus partibus acceptis simul, fit unum perfectum, cuius perfectio nulli partium competit, sicut domus et animal. (In V Metaph. lect. 21, n. 1108)

In the whole where totality is less perfectly realized, as we said, the order of the parts makes no difference. The reason why this is so is that the parts are all alike and all are like the whole itself--consimiles toti. As the differentiation between part and part, and between whole and part, increases, totality becomes more perfect. A homogeneous subject is not good matter for a perfect whole. "Totum vero quod componitur ex partibus eiusdem speciei est imperfectum in genere naturae, sicut aer et aqua et alia

inanimata corpora" (In II Polit. lect. 1, n. 180). Living things represent higher forms of totality, and the higher one goes in the order of life the more perfect the whole. The more perfect the whole also, the greater the exigency for diversity. For St. Thomas all this was seen most clearly in man, who is at once most perfect and most complex. "Omnis anima requirit diversitatem organorum in partibus corporis cuius est actus; et tanto maiorem diversitatem, quanto anima fuerit perfectior. Sic igitur formae infimae uniformiter perficiunt suam materiam; sed anima difformiter, ut ex dissimilibus partibus constituatur integritas corporis" (De Spir. Creat. q. un., a. 4, c). The reason for all this ultimately lies in the nature of wholeness itself.

> In toto enim bonum est integritas, quae ex partium ordine et compositione relinquitur. Unde melius est toti quod sit inter partes eius disparitas, sine qua ordo et perfectio totius esse non potest, quam quod omnes partes essent aequales, unaquaque earum perveniente ad gradum nobilissimae partis: quaelibet autem pars inferioris gradus, in se considerata, melior esset si esset in gradu superioris partis. Sicut patet in corpore humano: dignior enim pars esset pes si oculi pulchritudinem et virtutem haberet; corpus autem totum esset imperfectius, si ei officium pedis deesset.
> (C.G. III, c. 94, n. 2695a)

All this applies to the universe more than anything else; for, St. Thomas, along with the ancient Greeks, conceived the universe on an analogy with the human body. R. G. Collingwood has summarized this ancient view of the world along the lines of this analogy, "the analogy between the

macrocosm nature and the microcosm man."[1] For the ancients, the world of nature was a world of ceaseless motion, and therefore alive, and with a soul; and a world of orderly or regular motion, and therefore intelligent, and with a mind. "The life and intelligence of creatures inhabiting the earth's surface and the regions adjacent to it, they argued, represent a specialized local organization of this all-pervading vitality and rationality, so that a plant or animal, according to their ideas, participates in its own degree psychically in the process of the world's 'soul' and intellectually in the activity of the world's 'mind', no less than it participates materially in the physical organization of the world's 'body'."[2] The sketch is very rough, as is quite inevitable in all such attempts at capsule-characterization, and it would call for very important distinctions and qualifications, especially as concerns Aristotle and St. Thomas, and even Plato whom Collingwood seems to prefer generally. What we wish to note, however, is what has been neglected in Collingwood's use of the analogy in comparison with that of St. Thomas. It shows what place diversity had in the thinking of the latter.

For St. Thomas, the analogy served to bring out the need for greater diversity of parts in wholes that were more

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[1] R. C. Collingwood, The Idea of Nature, p. 9.

[2] op. cit., pp. 3-4.

perfect. For Collingwood, on the other hand, the analogy tends to obfuscate diversity and lead back to homogeneity. "This living and thinking body," he writes of nature, "was homogeneous throughout in the sense that it was all alive, all endowed with soul and with reason; it was non-homogeneous in the sense that different parts of it were made of different substances each having its own specialized qualitative nature and mode of acting. The problems which so profoundly exercise modern thought, the problem of the relation between dead matter and living matter, the problem of the relation between matter and mind, did not exist. ... There was no material world devoid of mind, and no mental world devoid of materiality; matter was simply that of which everything was made, in itself formless and indeterminate, and mind was simply the activity by which everything apprehended the final cause of its own changes."[1] If such problems as Collingwood mentions did not exist for certain pre-Socratics, they certainly did beginning with Plato and Aristotle, though the physical framework in which they presented themselves was different from that of today. Collingwood is so taken up with the monistic sense of the analogy that he fails to notice that the problem itself of the relation between mind and matter, and even of the relation between living matter and dead matter, arises within the very unity

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[1] *op. cit.*, p. 111.

of substance in man, something that both Plato and Aristotle were quite aware of. Besides, he sees nothing important in the non-homogeneity he mentions in passing, that of substances with specialized qualitative natures and modes of acting, which is precisely what strikes St. Thomas. The world is like an animal body, which does not mean that it is an animal, for the reason simply that it is made up of different parts, and that it is non-homogeneous in its very unity. As an animal body has parts that are, some superior and some inferior in dignity, so also the world is made up of parts that vary according to degrees of perfection. And this diversity of degrees makes for its perfection, just as the diversity in the parts of an animal makes for its perfection.

> Sed bonum et optimum universi consistit in ordine partium eius ad invicem, qui sine distinctione esse non potest: per hunc enim ordinem universum in sua totalite constituitur, quae est optimum ipsius.
> (C.G. II, c. 39, n. 1157)

Placed alongside this fundamental declaration of principle, the analogy appears in the light that St. Thomas saw it. The point of the analogy is not the unity of substance, but the unity of order which presupposes a distinction of parts--sine distinctione esse non potest. "Omnia quodammodo sunt unum perfectum, quae quidem unitas diversitatem partium requirit" (De Pot. q. 3, a. 16, ad 1).

St. Thomas encountered a doctrine that had a good deal in common with the one suggested by Collingwood as typical of the ancients. In the Fons Vitae, Avicebron maintained that no corporal substance could act, but that it was only a spiritual force which penetrated all bodies that acted in them. One of the reasons given for this position was that corporal substance was the furthest removed from the first agent. The first agent is active only and not passive in any way. Middle substances are both active and passive. Hence, it was inferred, corporal substance, which is the last, is passive only and not active in any way. The obvious error in this, St. Thomas points out, comes from taking all corporal substance as if it were one and the same thing numerically, as if there were no distinction according to substantial being, but only according to accident. If we admit a diversity of distinct corporal substances, it is possible to see how corporal substances can act. That they are diverse and that they do act is clear to St. Thomas; it is something which, for him, pertains to the very kind of order that was invoked by Avicebron.

> Si enim diversae substantiae corporales substantialiter distinctae accipiantur, tunc non quaelibet substantia corporalis erit ultima entium et remotissima a primo agente, sed una erit alia superior et primo agenti propinquior, et sic una in alia agere poterit. (De Pot. q. 3, a. 7, c)

Chapters 39-43 of Contra Gentiles constitute one

of the most extensive treatments of this matter of diversity in the universe in St. Thomas. According to the ordo dicendorum given in chapter 5 of the same book, these chapters taken together are one of the three major divisions of the book, the matter of diversity thus appearing as quite important in the mind of St. Thomas, somehow on a par with creation, on the one hand, and the things created, on the other, making a sort of connection between the two.[1] The object of St. Thomas is to show that the first cause of diversity is the wisdom and the goodness of the Creator himself. He proceeds by way of exclusion. Inequality and diversity do not originate by chance (c. 39), nor from the diversity of matter, though, in a way, matter is cause of multiplicity, but not the first (c. 40). Nor do they originate because of contrariety in things, as Empedocles and the Pythagoreans thought (c. 41). Nor through the mediation of a chain of causes starting from the simplicity of the First and becoming more and more complex, as Avicenna thought (c. 42). Nor through some intermediate dator formarum, as some thought, who said that God had created matter, but some angel brought distinction into it by inserting forms (c. 43). Nor finally from the respective merits and demerits of different creatures, all of whom were originally created equal, as Origen thought

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[1]The same major division appears in the Summa Theologiae, as is explained in the Prologue to q. 44 and as is seen in qq. 47 ff.

(c. 44). No, the inequality and diversity in creation originate "ex propria Dei intentione perfectionem creaturae dare volentis qualem possibile erat habere" (C.G. II, c. 45, n. 1227). The idea of perfection figures prominently in the argumentation as it does in the conclusion.[1] It serves as a kind of middle term to show the need of diversity in creation and the need of bringing this diversity back directly to God.

We are already familiar with a good deal of the matter that comes up in this discussion. It would be good, however, to examine the case of Origen more closely. His name always figures most prominently whenever the question of diversity appears in St. Thomas,[2] and in the Contra Gentiles his case remains to be settled after all the others. The fact is that Origen had all the elements for a correct solution of the question, except one. As a Christian, he held for creation. Though influenced by Platonism, he did not accept its doctrine of a necessary emanationism from the One. St. Thomas even represents him as intent upon refuting the error of those who maintained that the differences

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[1] Cf. c. 39, nn. 1156f; c. 40, n. 1165; c. 42 nn. 1183-1186; c. 44, nn. 1204, 1216, 1218; c. 45, in toto.

[2] S.T. I, q. 47, a. 2 deals with Origen alone, after a. 1 has dealt with all the others who erroneously explained the origin of diversity. De Pot. q. 3, a. 16 mentions him as erring precisely on the point of order and perfection in the universe. Cf. also Q.D. de Anima q. un., a. 7, c.

in things came from the contrariety of a good and an evil principle.[1] In order to do this, Origen argued that God created only rational creatures and that He created them all equal. The inequality originated from the free choice of these first creatures, some of whom chose good and others, evil. Those who turned toward God became angels in different degrees of perfection according to the diversity of merits. Those who turned away from God fell to an inferior state and became engulfed in matter, again in different degrees according to the degree of evil they had chosen. Whence the creation of bodies and the order of the corporeal universe.

According to St. Thomas, this solution still has too much in common with the error it was opposed to. He mentions it as belonging, with Manicheanism, in the class of those who erred for not paying attention to the requirement of form in the universe, but only to that of divine goodness--"debitum causae formalis non attendentes, sed solum debitum divinae bonitatis" (De Pot. q. 3, a. 16, c). For the Manicheans, since God was most perfect, only the best could come from him, namely, the spiritual and incorruptible. The corporal and corruptible had to come from another principle. Origen rejected this last inference, but he continued to read the first premise in the same way as the Manicheans. For

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[1]Cf. S.T. I q. 47, a. 2, c; C.G. II, c. 44, n. 1203.

him, it was God who created the corporal universe, but only as punishment for the evil of certain rational creatures, so that the first cause of the diversity was not the divine wisdom and goodness, but the merits and demerits of creatures. The way out of the dilemma lies in a proper understanding of the universe as a whole; both errors are still fixed upon only partial aspects of reality.

> Uterque error ordinem universi praeterire videtur **in sua consideratione, considerando tantummodo singu**las partes eius. Ex ipso enim ordine universi potuis**set apparere, quod ab uno principio, nulla meritorum** differentia praecedente, oportuit diversos gradus **creaturarum institui, ad hoc quod universum esset com**plementum. (De Pot. q. 3, a. 16, c)

What was lacking in Origen, as well as in Manicheanism, was a true appreciation of perfection and goodness understood as order in a whole, a complementum made up of parts. This kind of perfection requires diversity, a relative imperfection in some parts with respect to other parts, for the good and perfection of the whole. St. Thomas uses the familiar examples of the house or the human body, where perfection or completion would be lacking if all parts were the same and served the same function.

Paradoxically enough, in by-passing the perfection of the universe as a whole, Origen was by-passing what is most perfect in creation. For St. Thomas, the highest created good is in fact the order of the universe. Hence Origen, who was so concerned to have only the highest good come from

God, was in effect attributing the highest good to the choice of creatures, and in large part to an evil choice at that. He would not accept the diversity as intended by God directly, whereas for St. Thomas it was the exact opposite.

> Quanto enim aliquid est melius in effectibus, tanto est prius in intentione agentis. Optimum autem in rebus creatis est perfectio universi, quae consistit in ordine distinctarum rerum: in omnibus enim perfectio totius praeeminet perfectioni singularium partium. Igitur diversitas rerum ex principali intentione primi agentis provenit, non ex diversitate meritorum.
> (C.G. II, c. 44, n. 1204)

But what sort of diversity did St. Thomas have in mind in speaking of the perfection of the universe in this manner? Origen seemed especially embarrassed with the material realm. Was this also the case with St. Thomas? Quite the contrary, for his argument was conceived precisely to bring out the necessity even of the material realm for the perfection of the universe. Just as feet are necessary for the perfection of the whole animal, so also this relatively imperfect order of being is necessary for the perfection of the universe. Many of the texts we have already seen show how St. Thomas thought always in terms of a double diversity in creation: first, the spiritual and the material, and secondly, in the material itself, the incorruptible and the corruptible.[1]

St. Thomas has many ways of alluding to this double

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[1]Cf. De Pot. q. 3, a. 6, c.

diversity. In the Summa Theologiae he will speak of the two-fold distinction in things as formalis, on the one hand, where things differ according to species, and as materialis, on the other, where they differ according to number or individuality only.[1] In the Contra Gentiles he will explain how this diversity entails a graduated participation in the perfection of God, going from pure forms that participate the divine goodness according to what they are, to substances composed of matter and form that participate the divine goodness only according to something of themselves--aliquid sui--namely, their form, and in the latter, going from those composites where the form exhausts the potentiality of its matter, thus making each individual incorruptible and unique in its species, to those where the form does not so exhaust the potentiality of matter but is accompanied by the privation of other forms, thus leaving each individual corruptible and allowing for a multiplicity in each species.[2] All this diversity and multiplicity has to do with the perfection of the universe. The Commentary on the Sentences, in the very article which we analyzed at length in chapter two, had a graphic way of putting it in the simple terms of angels and rocks.

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[1] S.T. I, q. 47, a. 2, c.

[2] C.G. III, c. 20.

> Quamvis angelus absolute sit melior quam lapis, tamen utraque natura est melior quam altera tantum: et ideo melius est universum in quo sunt angeli et aliae res, quam ubi essent angeli tantum, quia perfectio universi attenditur essentialiter secundum diversitatem naturarum, quibus impleatur diversi gradus bonitatis, et non secundum multiplicitatem individuorum in una natura. (In I Sent. d. 44, q. 1, a. 2, ad 6)

Thus, the existence of only one species, no matter how perfect by itself, would not constitute a universe as perfect as this one which we know.

St. Thomas was willing to go even as far as to consider evil as having something to do with the perfection of the universe. "Universum in quo nihil mali esset, non esset tantae bonitatis quantae hoc universum: quia non essent tot bonae naturae in illo sicut in isto, in quo sunt quaedam naturae bonae quibus non adiungitur malum, et quaedam quibus adiungitur: et est melius utrasque naturas esse, quam alteras tantum" (In I Sent. d. 44, q. 1, a. 2, ad 5). This does not mean that evil pertains per se to the perfection of the universe. Only the parts of the universe, the natures that constitute it, pertain per se to its perfection, and evil is neither a part of the universe nor a nature for the simple reason that it is a defect and a privation in something that is but is not what it should be from a particular viewpoint or even from a universal viewpoint. It pertains to the perfection of the universe per accidens, inasmuch as certain natures can be and are in fact deficient, or can and do commit

evil; and these natures are important parts of the universe.[1] The existence of these natures constitutes an added perfection in the universe. "Ipsum autem totum quod est universitas creaturarum, melius et perfectius est, si in eo sint quaedam quae a bono deficere possunt, quae interdum deficiunt, Deo hoc non impediente" (S.T. I, q. 48, a. 2, ad 3). God only permits the evil, so that the universe may not be without the good that comes from having defectible natures. He does not will these because of their defectibility, but because they would not be without their defectibility and

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[1] Cf. In I Sent. d. 46, a. 3, c. We are speaking of moral evil principally. It presents a greater problem for us here than mere physical evil, for, physical evil, which affects only individuals as such, can be reconciled with the good of the whole more easily, whereas moral evil goes against the good of the whole itself. "Malum poenae est contra ordinem unius partis universi ad aliam partem, et similiter malum cuiuslibet defectus naturalis; sed malum culpae est contra ordinem totius universi ad finem ultimum, eo quod voluntas, in quae est malum culpae, ab ipso ultimo fine universi deordinatur per culpam" (De Pot. q. 6, a. 1, ad 8). St. Thomas, however, tends to solve the problem of moral evil through its analogy with physical evil, inasmuch as a guilty will is always only a particular in the universe.

The fact that some creatures do commit evil and are punished for it does not add to the perfection of the universe. It is the existence of natures that can commit evil that does. Thomists sometimes speak of evil as if it were a nature, applying what St. Thomas said of natures to the fact of evil itself. "Malum neque ad perfectionem universi pertinet, neque sub ordine universi concluditur, nisi per accidens, id est, ratione boni adiuncti" (S.T. I, q. 48, a. 1, ad 3). We could say that the fact of evil deprives the universe of perfection it might have had, but this would not take away from the truth of St. Thomas's position on the perfection of the universe. In the concrete perspective that is his, this perfection remains real, limited as it is by the privation of some good, and it remains the greatest created perfection, since this universe is still the only one that is.

the universe would be less good without them. He directly wills the existence of such natures. For St. Thomas, as for Aristotle, if something is defectible in one way or another by nature, it is understood that it will de facto defect at some time.[1]

In the presence of such far ranging diversity it is not easy to see always how it pertains to the perfection of the universe and especially how it is necessary for this perfection. To understand this we must keep in mind the point of the analogy with the house or with an animal. The perfection of the form in such things requires a diversity in the parts and the more perfect the form the greater has to be the diversity. The architect does not choose the same kind of material for the foundations of a house as for the roof, lest the house crumble. "Factor igitur omnium, Deus, non faceret totum universum in suo genere optimum, si faceret omnes partes aequales: quia multi gradus bonitatis in universo deessent, et sic esset imperfectum" (C.G. II, c. 44, n. 1218). In suo genere, according to its form, the

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[1]Beyond the question of fact, there remains for St. Thomas the problem of seeing how Divine Providence could bring evil to order, that is, draw some good from the evil, somehow. But this is not the place to go into this question. It pertains more to the realm of the government of the world and of second perfection than to that of creation and of first perfection which concerns us in this chapter. For a concise treatment of this broader aspect of the question, cf. Wright, op. cit., pp. 108-113. Cf. also R. P. Sertillanges, O.P., Le probleme du mal, vol. I, pp. 195-202, vol. II, pp. 35-52. See also below, ch. 5, pp. 193-196.

universe as a whole requires a certain diversity of parts without which it cannot be perfect. If it is lacking any of these parts, even those that are relatively imperfect, it does not have all that its form requires, it is lacking something that pertains to it, it is imperfect. As an abstract possibility, it could have a form that would require less parts, but for St. Thomas such a world would be less perfect than the one with more. That is the point of his argument against those who thought the world would be better without such natures as rocks or as those who could commit evil. There are animals of many sorts in nature, but the fact is that the more perfect are those with the greater diversity of parts and functions. In the same way, the universe is the more perfect for having a greater diversity of parts.

It is of utmost importance to note how St. Thomas's manner of expression is always concrete in speaking of the perfection of the universe. The perfection of which he speaks is always that which belongs to this universe--in suo genere optimum--and not some abstract form of perfection such as that conceived in Platonic or Leibnizian optimism. St. Thomas rejects this form of optimism. Though this universe is the best of what is, and though it is such by reason of the divine goodness, still the divine goodness was not bound to produce this universe, without any possibility of

creating one more or less perfect. "Universitas creaturarum non est optima simpliciter, sed in genere creatorum; unde nihil prohibet ea aliquid melius esse" (De Pot. q. 5, a. 1, ad 14). The universe exhausts neither the divine power nor the divine wisdom which comprehends everything that the divine power can. "Ordo a divina sapientia rebus inditus ... non adaequat divinam sapientiam, ut sic divina sapientia limitetur ad hunc ordinem" (S.T. I, q. 25, a. 5, c). There could be other better worlds that divine wisdom does indeed conceive, but St. Thomas was not given to speculating on such possibles. The perfection of the universe that is, is perfection enough for him to be satisfied with, for it was the perfection willed by Him who is all goodness. "Universum, suppositis istis rebus, non potest esse melius propter decentissimum ordinem his rebus attributum a Deo, in quo bonum universi consistit" (S.T. I, q. 25, a. 6, ad 3).

When, therefore, St. Thomas speaks of a need for diversity in the universe, he is thinking of a real necessity in things. "Licet autem omnia ex Dei voluntate dependeant sicut ex prima causa, quae in operando necessitatem non habet nisi ex sui propositi suppositione, non tamen propter hoc absoluta necessitas a rebus excluditur, ut sit necessarium nos fateri omnia contingentia esse" (C.G. II, c. 30, n. 1063). There are two poles to the necessity of

supposition, the divine pole, the intention or the proposal of the Creator, and the created pole, the universe which is actually created--supositis istis rebus. If we take only the divine pole, we are still in the abstract, in the realm of possibles, for we have no way of knowing the intentions of God apart from the things He actually creates, unless, of course, He chooses to reveal them directly to us, a supposition which would take us beyond the realm of natural philosophy. Both poles together, however, make of this necessitas ex suppositione a concrete necessity.[1]

St. Thomas illustrates the need for diversity through the analogies of the house and of the perfect animal. But these analogies only show us a certain necessity of order and diversity in things, not the concrete necessity of the universe itself. For the necessity in the concrete we must go to the principles of things themselves, for it is from these principles that the necessity comes immediately.[2] The universe is complex, yet we can speak of it as having a form, a form with certain exigencies willed by God. "Supposito quod tale universum producere voluerit,

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[1]Fr. A. Hayen justifies this translation of necessitas ex suppositione by concrete necessity in La communication de l'etre d'après saint Thomas d'Aquin, vol. II, pp. 153-177. These pages represent an excellent effort to sort out the many uses of the term necessitas in St. Thomas in order to define what the author calls "le caractère concret de la réflexion thomiste".

[2]Cf. C.G. II, c. 30, nn. 1069-1071.

necessarium fuit quod tales et tales creaturas produxerit, ex quibus talis forma universi consurgeret" (De Pot. q. 3, a. 16, c). This form of the universe, its order, requires diversity and it is knowledge of the form that gives us knowledge of the necessity as well as of the nature of this diversity, for a form requires its appropriate matter.

> Ex principiis essentialibus est in rebus absoluta[1] necessitas per ordinem ad partes materiae vel formae, si contingat huiusmodi principia in aliquibus non simplicia esse. Quia enim materia propria hominis est corpus commixtum et complexionatum et organizatum, necessarium est absolute hominem quodlibet elementorum et humorum et organorum principalium in se habere. (C.G. II, c. 30, n. 1074)

The universe, which is uppermost among the non simplicia, has different parts which also constitute its proper matter and it is necessary, per ordinem ad partes, that it have at least those parts which are essential to it.

The argument to which St. Thomas returns most consistently, however, to show the necessity of diversity in creation is one which we have already encountered in De Pot. q. 3, a. 16, c.[2] This argument embraces both poles of the concrete necessitas ex suppositione. It is based on the manner in which the universe is related to God and on the radical difference which distinguishes the perfection of

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[1] The meaning of the term absolute in this context is explained in In V Metaph. lect. 6, n. 833. Absolute necessity is said with reference to intrinsic causes and is opposed to secundum quid necessity which is said with reference to extrinsic causes.

[2] Cf. supra, pp. 105-106, 116-117.

creation from that of God. What is found in God simpliciter et unite can be found only composite et multipliciter in creation.[1] Yet, in creating, God wished to communicate His goodness and perfection and somehow to represent it through creatures. He did this according to the mode that was most fitting to created nature, through variety and multiplicity.

> Distinctio rerum et multitudo, est ex intentione primi agentis, quod est Deus. Produxit enim res in esse propter suam bonitatem communicandam creaturis, et per eas repraesentandam; et quia per unam creaturam sufficienter repraesentari non potest, produxit multas creaturas, et diversas; ut quod deest uni ad repraesentandam divinam bonitatem, suppleatur ex alia. Nam bonitas, quae in Deo est simpliciter et uniformiter, in creaturis est multipliciter et divisim; unde perfectius participat divinam bonitatem, et repraesentat eam totum universum, quam alia quaecumque creatura. (S.T. I, q. 47, a. 1, c)

The better a creature can represent the divine goodness, the closer it is to divine perfection, and hence the more perfect it is. But no creature can approach the simplicity and the uniformity of God. "In rerum naturalium ordine perfectio, quae in Deo simpliciter et uniformiter invenitur, in universitate creaturarum inveniri non potest, nisi difformiter et multipliciter" (S.T. II-II, q. 183, a. 2, c). The partiality and the insufficiency of different creatures in representing the divine perfection is overcome as much as can be in the universe when all of them are taken together as a totality. This is why the order of the universe is the

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[1] These are the terms used in the argument as presented in C.G. II, c. 45, n. 1220.

highest created good, for the perfection of the whole, with its diversity and multiplicity, surpasses the perfection of the parts taken singly. Furthermore, the fact that there be many parts, does not take away from the perfection of the universe, but rather it adds to it. "Plura bona uno bono finito sunt meliora: habent enim hoc et adhuc amplius. ... Perfectius est igitur universum creaturarum si sunt plures, quam si esset unus tantum gradus rerum" (C.G. II, c. 45, n. 1223).

The ideas of unity and multiplicity, simplicity and composition, uniformity and difformity recur almost like a refrain in all these considerations on the need of diversity in creation. There are variations, but an important thing to note is that the contrasts between the universe and God always appear in doubles. Unity, simplicity or uniformity in God are always set off against multiplicity and diversity in the universe. This is another indication of the concrete perspective in which St. Thomas always maintained himself, for multiplicity and diversity represent for him the principal aspects of the order in the universe. Let us now examine these two aspects more closely.

CHAPTER 4

THE TWO MODES OF ORDER IN THE UNIVERSE

What St. Thomas understands by multiplicity as distinct from diversity can be called material diversity as opposed to formal diversity. These two kinds of diversity are not on a par with one another. As matter is for the sake of form, so also material diversity is subordinated to formal diversity. "Principalior est distinctio formalis quam materialis" (S.T. I, q. 47, a. 2, c). Consequently the two kinds of diversity do not pertain to the perfection of the universe in the same way. One belongs more intimately than the other.

> Perfectius autem participant ordinem ea in quibus est ordo per se, quam ea in quibus est ordo per accidens tantum. Manifestum est autem quod in omnibus individuis unius speciei non est ordo nisi secundum accidens: conveniunt enim in natura speciei, et differunt secundum principia individuantia, et diversa accidentia, quae per accidens se habent ad naturam speciei. Quae autem specie differunt, ordinem habent per se et secundum essentialia principia.
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> (De Spir. Creat. q. un., a. 8, c)

Formal diversity constitutes a difference of species. Material diversity constitutes a multiplicity within a species. The first involves order in a strict sense, the second only in a looser sense. That is why "pertinet etiam magis ad perfectionem universi, multiplicatio specierum, cum sit formalis

quam multiplicatio individuorum, quae est materialis" (In II de Caelo lect. 16, n. 449(9)).

The distinction between per se and per accidens with respect to order as we see it here must not be confused with the distinction as we saw it above in connection with evil. Material diversity is not an evil in the universe. It pertains to its perfection in a positive way. What we speak of here as order only per accidens is not mere privation; it is something quite positive, the multiplicity of individuals in a given species. As such these individuals are not directly and principally ordered to the perfection of the universe, but rather to the perfection of the species, and through this eventually to the order of the universe. "Perfectio universi essentialis non attenditur in individuis, quorum multiplicatio ordinatur ad perfectionem speciei, sed in speciebus per se" (In II Sent. d. 3, q. 1, a. 4, ad 3). In corruptible things there has to be a multiplicity of individuals, if the species is not to disappear and so bring about a diminution of perfection in the universe. Thus, in a secondary, but real, way, individuals bring something to the perfection of the universe. "Individua vero corruptibilia non ordinantur ad bonum universi quasi principaliter, sed quasi secundario, in quantum in eis salvatur bonum speciei" (S.T. I, q. 23, a. 7, c).

The reason why material diversity pertains less to the perfection of the universe is that it does not entail inequality. "In his autem quae materialiter differunt nihil prohibet inveniri multa ex aequo se habere: nam in substantiis, individua unius speciei aequaliter speciei rationem participant. In accidentalibus etiam possible est diversa subiecta aequaliter participare albedinem" (In De Causis lect. 4, n. 114). In formal diversity such equality is impossible. Inequality is required: "distinctio formalis semper requirit inaequalitatem; quia, ut dicitur in VIII Metaph., formae rerum sunt sicut numeri, in quibus species variantur per additionem vel subtractionem unitatis" (S.T. I, q. 47, a. 2, c). Without inequality there cannot be order per se, but with inequality of forms there has to be order in the strict sense of the term. The reason why is to be found in the very way in which forms differ.

> Sed in his quae formaliter differunt, semper quidam ordo invenitur.
>
> Si quis enim diligenter consideret in omnibus speciebus unius generis semper inveniet unam alia perfectiorem, sicut in coloribus albedinem et in animalibus hominem. Et hoc ideo quia quae formaliter differunt, secundum aliquam contrarietatem differunt: est enim contrarietas differentia secundum formam, ut dicit Philosophus in X Metaph. In contrariis autem semper est unum nobilius et aliud vilius, ut dicitur in I Phys. Et hoc ideo quia prima contrarietas est privatio et habitus, ut dicitur in X Metaph. Et propter hoc, in VIII Metaph. Philosophus dicit quod species rerum sunt sicut numeri secundum additionem unius super alterum. (In De Causis lect. 4, nn. 114f)

Numbers constitute an ordered series, because by the addition of one we arrive at a new number which differs specifically, as it were, from the preceding one. "Binarius secundum quod est quoddam totum, speciem et formam determinatam habens, est diversum specie a ternario" (In X Metaph. lect. 4, n. 1995). The different species of things found in the universe constitute a similar order, one species differing from the other by something which the other does not have, as the living from the merely corporal, the sensing from the merely living, and the rational from the merely sensing. Thus they constitute the different degrees of perfection in which the perfection of the universe consists essentially, a perfection which presupposes inequality. Inasmuch as there is no inequality in merely material diversity, there is no order per se.

It is this exigency for inequality in per se order which, in the last analysis, Origen failed to appreciate. St. Thomas brings this out very well in De Substantiis Separatis, and to do so he appeals even to the order of nature itself.

> In his quae formali differentia differunt, aequalitas inveniri non potest. Oportet enim omnem formalem differentiam ad primam oppositionem reduci, quae est privationis ad formam. Unde omnium formaliter differentium natura unius imperfecta existens respectu alterius, se habet ad ipsum secundum habitudinem privationis ad formam. Hoc autem in diversitate specierum nobis notarum apparet. Sic igitur specierum differentiam in animalibus et plantis et

> metallis et elementis invenimus secundum ordinem naturae procedere, ut paulatim ab imperfectiori ad perfectissimum natura consurgat: quod etiam apparet in speciebus colorum et saporum et aliorum sensibilium qualitatum. (De Subst. Sep. c. 12, n. 110)

We speak of lower species and higher species in nature. This implies an order of nature which presupposes inequality in the different kinds of species. And it is only the most crass sort of materialism that will not recognize this kind of diversity, if not in the different kinds of colors, or odors, or other sensible qualities, at least in the different kinds of beings. It is quite ironic that Origen, whose intentions certainly were not of the sort that one would call materialistic, should find himself in the company of such a materialism, but that is where St. Thomas places him in the text we are looking at.

> In his vero quae materialiter differunt, eamdem formam habentibus, nihil prohibet aequalitatem inveniri. Possunt enim subiecta diversa eamdem formam participare aut secundum aequalitatem, aut secundum excessum et defectum. Sic igitur possibile esset spirituales substantias omnes aequales esse, si solum secundum materiam differrent, eamdem formam secundum speciem habentes. Et forte tales eas esse Origenes opinabatur, non multum discernens inter naturas spirituales et corporales. Quia vero spirituales substantiae immateriales sunt, necesse est in eis ordinem naturae esse. (Ibid.)

Thus, the order of nature requires inequality, different degrees of being. What would St. Thomas not have to say to those who do not recognize the order of nature in nature itself today and reduce everything, from man to rocks, to a single species of being?

Merely material diversity, however, does not imply a total absence of order among the individuals of a species. There is an imperfect kind of order, but nevertheless truly an order, a kind of order that is usually recognized even by those who reduce all material beings to one and the same species. Various individuals of an animal species need one another for living, ad convictum, as St. Thomas says. Where generation starts from a seed, the male needs the female of his species, ad generandum. Beyond this, in every corruptible species, there is at least the order of succession for the preservation of the species. "Et ulterius in omnibus generabilibus et corruptibilibus, in quibus necessaria est multitudo individuorum unius speciei, ut natura speciei, quae non potest perpetua conservari in uno individuo propter eius corruptibilitatem, conservetur in pluribus" (De Spir. Creat. q. un., a. 8, c). But St. Thomas had little to say about this secondary and somewhat tenuous sort of order, in comparison with the primary and more significant order of the species in the universe. He thought of it mostly in terms of the preservation of the species, and did little by way of investigation into its concrete articulations.

In the material universe, however, there is more than merely material diversity, as is clear from the text we just read from De Substantiis Separatis. There is a truly formal diversity about which St. Thomas had a good deal to

say. For one thing, in his understanding of the universe, there was a whole part of the cosmos itself where there was only formal diversity, and no merely material diversity, understood in the sense that there is more than one individual of the same species. According to the ancient view the heavenly bodies were incorruptible. Hence, for them, there was no need of a multiplicity of individuals to preserve the species. Each individual was a species unto itself, and as a result only an order per se was understood to exist between them.

> In superiori autem parte universi, scilicet in corporibus caelestibus, non invenitur ordo per accidens, sed solum per se; cum omnia corpora caelestia ab invicem specie differant, nec sint in eis plura individua unius speciei, sed unum tantum sol et luna, et sic de aliis. (De Spir. Creat. q. un., a. 8, c)

Below this, in the realm of corruptible natures, there was also an order per se. We have already seen how St. Thomas used the obvious diversity of material beings to argue against Avicebron's contention that material being as such could not act.[1] The same idea recurred in dealing with Origen, as we saw in De Substantiis Separatis, and as we see again in the Summa Theologiae. After enunciating the principle that formal diversity requires inequality, St. Thomas goes on to point out that we find just such a diversity in nature itself.

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[1] Supra, ch. 3, p. 113.

> Unde in rebus naturalibus gradatim species ordinatae esse videntur; sicut mixta perfectiora sunt elementis, et plantae corporibus mineralibus, et animalia plantis, et homines aliis animalibus; et in singulis horum una species perfectior aliis invenitur.
> (S.T. I, q. 47, a. 2, c)

As we can see, this diversity is defined precisely in the manner required for formal diversity, that is, by adding something to the form that constitutes each species so that together they constitute different degrees of perfection.

St. Thomas was conscious that his knowledge of nature was very imperfect; he could not distinguish the finest details of acts, powers and natures. But the little that he did know enabled him to perceive lines of order in the world. What he says in the following text seems very apt as an indication not only of his conception of the universe, but also of his sense of having arrived at only an imperfect grasp even of what is in the "lower part" of the universe.

> Ille qui perfecte cognoscit res aliquas, potest usque ad minima et actus, et virtutes, et naturas earum distinguere. Qui autem cognoscit eas imperfecte, non potest distinguere nisi in universali; quae quidem distinctio fit per pauciora. Sicut qui imperfecte cognoscit res naturales, distinguit earum ordines in universali, ponens in uno ordine caelestia corpora, in alio corpora inferiora inanimata, in alio plantas, in alio animalia; qui autem perfectius cognosceret res naturales, posset distinguere et in ipsis corporibus caelestibus diversos ordines, et in singulis aliorum.
> (S.T. I, q. 108, a. 3, c)

In the eyes of St. Thomas, St. Albert would surely have been of those who knew nature more perfectly, though not to the

degree of distinguishing everything in detail. For himself, he did little beyond the pauciora that gave the big distinctions indicated here.

The broad lines of St. Thomas's universe thus begin to appear. They stretch between the two extremes of reality against which the different degrees of perfection can be measured. God is perfect in the highest degree: He contains in Himself the perfection of all being simpliciter et excellenter. At the opposite extreme is the individual in the lowest part of the universe, the realm of generation and corruption. Such an individual is perfect when it has all that pertains to it according to its individuality, but not according to the nature of its species; it needs other individuals of the same species and together they constitute the perfection of the species. At a higher level, where the individuals are more perfect, each of them is unique in its species and has everything that pertains to its species. For St. Thomas, this was true of the heavenly bodies and, a fortiori, of separate substances.[1] As the order of perfection draws closer to God, each being thus is more perfect in itself and participates more intimately in the order of the universe. Beings in the upper part of the universe are like the sons in the order of a household, to recall the metaphor

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[1]Cf. De Spir. Creat. q. un., a. 8, c: Tertia vero ratio.

of lesson 12 in the Commentary on XII Metaph. Those in the lower part are like slaves and brute animals, individuals that can be substituted one for the other, replaced by one another, without affecting the essential order of the house.[1]

St. Thomas never attempted to draw up a complete list of what he would have considered the essential parts of the universe. It is possible at this point, however, to indicate a few things that such a list would have to include. In view of all that we have just seen, it is clear that what should appear first in that list is the separate substances. They are the principal parts of the universe, its superior parts, and the ones that participate most intimately in its order. "Unaquaeque autem substantiarum separatarum est de principalibus partibus universi multo amplius quam sol vel luna, cum unaquaeque earum habeat propriam speciem et nobiliorem quam quaevis species corporalium rerum" (C.G. II, c. 98, n. 1832). In spite of their immateriality, these separate substances should not be considered as being entirely apart from the material world. They are parts of the universe and as such they belong with bodily creatures: "competit eis quod simul cum creatura corporali sint conditi" (De Pot. q. 3, a. 18, c).

Among the bodily creatures there are two kinds which bear a special resemblance to separate substances and

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[1]Cf. In XII Metaph. lect. 12, n. 2633.

which consequently are also parts of the universe in a special way. First, there is man who has a rational soul. No other corporal creature has such a soul and so no other material being is as much an essential part of the universe. "Homo ordinatur ad perfectionem universi ut essentialis pars ipsius, cum in homine sit aliquid quod non continetur virtute nec in elementis nec in caelestibus corporibus, scilicet anima rationalis" (De Pot. q. 5, a. 10, c).[1]

In the second place, there were also for St. Thomas the heavenly bodies which closely resembled separate

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[1]Note that man presents a peculiar problem as a part of the universe. He belongs among the corruptible species in the lowest part of the universe (cf. De Spir. Creat. q. un., a. 8, ad 11). Yet, unlike any other species of this kind, he has something incorruptible about him, his immortal soul. By his intelligence, he is also able to participate directly and personally in the common good of the universe. This means that not only the species, but also individuals pertain somehow directly to the perfection of the universe. St. Thomas sometimes speaks of man as of any other corruptible species. In order to show how it is not repugnant to the perfection of the universe to have new souls created in time, and not all at the beginning of the universe, he will say that the perfection of the universe is more a question of species than of individuals (cf. C.G. II, c. 84, n. 1689; De Pot. q. 3, a. 10, ad 2). But this does not take away from the difference between man and the other species of material beings. For other corruptible species, the individuals do not have any importance; all that counts is that there be enough to assure the preservation of the species (cf. S.T. I, q. 23, a. 7, c). The entire process of material change, however, is ordered to the multiplication of human souls (De Pot. q. 3, a. 10, ad 4) and ultimately to the production of a certain number of human souls (De Pot. q. 5, a. 5, c). This gives the very multitude of human souls a special place in the perfection of the universe. Man is a species apart from every other one in the material world. It is easy to see already that St. Thomas will give him a very prominent place in his theory of the universe. Cf. below, ch. 8, 9, and conclusion.

substances in that they were incorruptible and each unique in its species. This meant a special closeness to the order of the universe, as it indicated a superior degree of perfection in bodily existence as such. Thus the heavenly bodies were also considered essential parts of the universe: "sunt autem partes eius essentiales corpora caelestia" (Comp. Theol. I, c. 170, n. 336).

But this did not exhaust the list of essential parts of the universe for St. Thomas: there were also the four elements which, together with the heavenly bodies, constituted the whole machine of the world: "utpote ex quibus tota mundi machina consistit" (Ibid.). Hence, the elements, corruptible though they were, were destined to remain as well as the heavenly bodies as long as the world would be. In the final state of the world all of this would remain along with the glorified bodies of risen men. This theory of the heavenly bodies and the four elements is worth recalling here, even though it has been superceded, because it brings out an essential aspect of St. Thomas's thought. He saw the material world as essentially structured, and he considered this structure as pertaining to the perfection of the universe. This remains true even with whatever modifications have been brought to the structure as conceived by the ancients.

But what of all the other corporal beings, the mixts, the minerals, the plants, the brute animals, all the inter-

mediate species between the elements and the human body? Were they also considered essential parts of the universe? St. Thomas denied them a place in the definitive state of the universe on the grounds that they were not "sicut per se et essentialiter de perfectione universi existentes" (De Pot. q. 5, a. 9, c). At first glance this may seem surprising, since we have seen St. Thomas describe a certain order of perfection in nature going from minerals to plants to animals and insist that any such order was an order per se and hence an order of parts of the universe as such. But the answer to the problem can be found in the difference between two states of the universe: the final state, which is one of immobility, and the present state, which is one of mobility. Some things which pertain to the perfection of the universe in its present state will no longer be required in the final state. What will remain in the final state will be only that which is essential to the universe as such. The intermediate species are not included in this, since there is nothing in them which is not already found in the principal parts of the world, namely, the heavenly bodies and the elements, as in their active and material principles. For the universe as we know it by experience, however, these intermediate species constitute parts of the universe in the strict sense of the term, because they are the particular effects of the universal causes in the

universe as long as it is in progress toward its final state of perfection.

> Unde res praedictae sunt quidam particulares effectus causarum universalium, quae sunt essentiales partes universi; et ideo de perfectione sunt universi secundum hoc tantum quod a suis causis progrediuntur, quod quidem fit per motum. Unde pertinent ad perfectionem universi sub motu existentis, non autem ad perfectionem universi simpliciter. (De Pot. q. 5, a. 9, c)

As St. Thomas saw it, then, the universe had not attained its final perfection. It was already perfect, however, in a way proper to a whole progressing toward its final perfection by the activity of its parts.

Again St. Thomas nowhere undertakes a systematic treatment of these intermediate species which pertain to the perfection of the universe sub motu existentis. Though he is aware of a gradation and a continuity going from minerals to plants to animals, he does not go into the details of these relationships. This makes any discussion of evolution in connection with his theory of the universe somewhat difficult and delicate. In passing, however, let us call attention to the importance of the distinction between two states of the universe in this matter. For St. Thomas, the universe was created perfect, with all its species, from the start. "Universum in sui principio fuit perfectum quantum ad species" (De Pot. q. 3, a. 10, ad 2). The first things also were created perfect. "Deus primas res instituit in perfecto statu suae naturae secundum quod

species uniuscuiusque rei exigebat" (De Pot. q. 4, a. 2, ad 22). But with all of that, St. Thomas still was not certain whether the formation of the universe took place in an instant or according to a temporal succession. Both possibilities, which he encountered in the Fathers, seemed compatible to him with the Faith and with Genesis; he presented arguments in favor of both positions and let it go at that.[1]

Temporal succession tended to bring out better the order of divine wisdom in the formation of things: "... ut ordo divinae sapientiae in rerum institutione demonstraretur, qui res ex nihilo in esse producens non statim post nihilum in ultima perfectione naturae eas instituit, sed primo fecit eas in quodam esse imperfecto, et postea eas ad perfectum adduxit, ut sic gradatim ex nihilo ad ultimam perfectionem mundus perveniret" (De Pot. q. 4, a. 2, c, in fine). But even in the hypothesis of instantaneous formation, and in spite of the affirmation that all species were present from the start, St. Thomas did not think that the world was created from the start as it was actually in his day. In the beginning the world was perfect "quantum ad causas rerum naturalium, ex quibus possunt postmodum alia propagari, non quantum ad omnes effectus" (De Pot. q. 3, a. 10, ad 2). Thus St. Thomas could distinguish between things created actualiter at the beginning: this would include the heavenly bodies

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[1] Cf. De Pot. q. 4, a. 2. Cf. also S.T. I, q. 66, a. 1; q. 74, a. 2.

and the four elements; and things created only originaliter or causaliter or potentialiter at the beginning; this would include, of course, the succession of individuals that were to follow in the different species, but also most of the intermediate species which were produced actually as time went on, from the elements and through the influence of the heavenly bodies.[1]

This distinction calls for a rather broad interpretation of such statements as the one we find in S.T. I, q. 118, a. 3, ad 2: "perfectioni universi, quantum ad numerum individuorum, quotidie potest addi aliquid, non autem quantum ad numerum specierum." This does not have to mean that the appearance of new species is strictly contrary to the perfection of the universe as St. Thomas understood it, but simply that the appearance of new species concerns the perfection of the universe more than the appearance of new individuals. It is not an every-day affair (quotidie), as is the appearance of new individuals. It affects the per se order of the universe, and not merely its per accidens order. Furthermore, St. Thomas himself expressly acknowledged the possibility of new species appearing in the universe, something that suggested itself to him in connection with spontaneous generation and the generation of mules. "Species

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[1]Cf. De Pot. q. 4, a. 2, ad 28; S.T. I, q. 69, a. 2, c; q. 71, a. un.; q. 72, a. un.

etiam novae, si quae apparent, praeexistiterunt in quibusdam activis virtutibus, sicut et animalia ex putrefactione generata producuntur ex virtutibus stellarum et elementorum, quam a principio acceperunt, etiamsi novae species talium animalium producantur. Animalia etiam quaedam secundum novam speciem aliquando oriuntur ex commixtione animalium diversorum secundum speciem; sicut cum ex asino et equa generatur mulus; et haec etiam praecesserunt causaliter in operibus sex dierum" (S.T. I, q. 73, a. 1, ad 3).

St. Thomas was far from advancing a general theory of evolution. The evidence he had before him was too little, and the little he did have seemed more like something outside the order of nature, defects or aberrations, as it were, which led to nothing, rather than something that formed an integral part of the whole. This is why he remained hesitant about speaking of the appearance of new species. The fact is, however, that in De Potentia q. 5, a. 9, c, he spoke of all the intermediate species, such as the minerals, plants, and brute animals, as particulares effectus, as opposed to the universal causes which pertain to the essential perfection of the universe and from which they flow, and this, it seems to us, opens up the way for a general theory of evolution in nature. As effects, these intermediate species were not necessarily present in the universe from the beginning. All that was required for the first perfec-

tion of the universe was the causes, and not the effects themselves.[1]

In reading Genesis St. Thomas distinguished three stages in the work of creation. He spoke of the fishes of the sea, the birds of the air, and the animals of the land, as ornaments of the various parts of the universe, ornaments which came after the opus creationis ("per quod caelum et terra producta leguntur, sed informia") and the opus distinctionis ("per quod caelum et terra sunt perfecta"); "et his duobus operibus additur ornatus; et differt ornatus a perfectione; nam perfectio caeli et terrae ad ea pertinere videtur quae caelo et terrae sunt intrinseca; ornatur vero ad ea quae sunt a caelo et terra distincta; sicut homo perficitur per proprias partes et formas; ornatur autem per vestimenta, vel aliquid huiusmodi" (S.T. I, q. 70, a. 1, c).

This way of viewing things is clearly something St. Thomas got from Aristotle, and more particularly from the De Caelo, for it is in this book that the integral parts of

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[1] De Pot. q. 3, a. 10, ad 2 speaks of two kinds of things required at the beginning for the first perfection of the universe, species and causes. "Universum in sui principio fuit perfectum quantum ad species, et non quantum ad individua; vel quantum ad causas rerum naturalium, ex quibus possunt postmodum alia propagari, non quantum ad omnes effectus." The presence of the heavenly bodies and the four elements would be enough to fulfil these requirements on the score both of species and of causes. The fact that elsewhere St. Thomas speaks of the intermediate species as particular effects certainly allows us to think that they could have appeared only in time, like the individuals and the effects of which he speaks here.

the universe were the object of investigation. Early in his commentary on this book we find St. Thomas making the distinction between the integral parts of the material universe and the other more ornamental or secondary parts, opposing the latter to the former. "Interim tamen ... dicendum est de partibus eius quae sunt secundum speciem, in quibus scilicet integritas speciei ipsius consistit, cuiusmodi sunt simplicia corpora. Nam animalia et plantae et alia huiusmodi sunt secundariae partes eius, quae magis pertinent ad bene esse ipsius quam ad primam eius integritatem" (In I De Caelo lect. 3, n. 19(1)). The simple bodies correspond to the caelum et terra of Genesis, for they are the four elements on the one hand, and the heavenly bodies on the other; and the idea of bene esse is not too far removed from that of ornament in the Summa Theologiae, especially if we remember that these 'ornaments' of the universe pertain to its perfection while it is in transition toward its final perfection. In the Summa Theologiae St. Thomas speaks only of creation with regard to these ornaments, but this does not exclude the agency of nature itself in their production. "Omne quod est in natura, vel est a Deo, sicut primae res naturales; vel est a natura sicut a secunda causa, puta inferiores effectus" (In I De Caelo lect. 8, n. 91(14)). Among the inferior effects St. Thomas would have been ready to number the species that are intermediate between the simple bodies and

man, for later on he writes, "Huiusmodi corpora quae sunt generabilia et corruptibilia, sicut animalia et plantae et lapides, non proprie sunt partes mundi (alioquin mundus nunquam perfectus esset, cum non habeat omnia huiusmodi simul); sed huiusmodi sunt quidam effectus partium mundi" (In II De Caelo lect. 1, n. 289(2)).

We could ask ourselves if St. Thomas is talking of species precisely in this text, or simply of the individuals that constitute the corruptible species. The phrase in the parentheses would lead us to believe that he had more the individuals themselves in mind than the species, and so we would have to understand the phrase "non proprie sunt partes mundi" in terms of the distinction between per se and per accidens order in the universe, the individuals of these species belonging to the universe only per accidens, while the species belong per se. But the text does not exclude the first supposition. It could apply to the species as such, for we have seen these species characterized as particulares effectus causarum universalium, not pertaining to the essential perfection of the universe, but only to its perfection sub motu existentis. St. Thomas was only a step away from a theory of evolution of species. The Aristotelian system thus made room for a large part of evolution in the order of nature, and St. Thomas was not slow to seize upon this idea. But in the last analysis, this same model set

very definite limits to his understanding of evolution, as we shall see in chapters 7 and 8.

It is the same structure we saw earlier in connection with the final state of the universe that has reappeared concerning the manner of creation, the same distinction between principal or essential parts and parts that are effects of the essential parts and pertain to the perfection of the universe only sub motu existentis. Through this structure there emerges in St. Thomas a tendency always to allow as much room as possible for development in the universe through the agency of the parts of the universe themselves.

> Deus ex nihilo universas creaturas in esse producens, primam universi perfectionem, quae consistit in partibus essentialibus universi, et diversis speciebus, per seipsum instituit. Ad ultimam vero perfectionem, quae erit ex consummatione ordinis beatorum, ordinavit diversos motus et operationes: quosdam quidem naturales, sicut motum caeli et operationes elementorum, per quas materia praeparatur ad susceptionem animae rationalis; quosdam vero voluntarios, sicut Angelorum ministeria... (De Pot. q. 5, a. 5, ad 13)

It is significant that St. Thomas mentions only the four elements among the diverse species instituted in nature by God per seipsum, and none of the intermediate species, but this does not mean that he went as far as positing a theory of evolution such as we are familiar with today. He had no grounds for thinking that certain intermediate species might serve a positive function only for a time in the evolution

of the universe. His theory, however, rested on a notion of universal causality which it would be useful to keep in mind in dealing with any theory of evolution. The rest of this study on how St. Thomas conceived the connections between the parts of the universe will, we hope, make this clear.

The text from the Commentary on the Sentences had left us with a certain dilemma concerning the question of evolution.[1] How could this universe, as St. Thomas conceived it, with its parts, remain this universe, if new parts were added to it, if new species appeared in it at some time or other? St. Thomas himself perhaps would have answered simply that, though these parts were not actually in the universe before, they were there causally from the start, and so the identity of the universe should not appear to be in question. But with his distinction between two different kinds of parts in the universe, those that are simpliciter essential and those that pertain to the perfection of the universe only sub motu existentis, a more complete answer suggests itself. If the addition of parts were a creation of parts simply essential to the universe, the result would be a universe partially other than this one, since the form and the perfection of the universe as a whole would be different

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[1] Supra, ch. 2, p. 79, note.

and this universe would be only a part of that other universe.[1] But if we have to do with an addition of parts that are only particular effects of the universal causes of this universe moving toward its final perfection, then the universe would simply remain this universe, although we would have to do with an addition of parts of the universe as such, that is, an addition of new species. The new parts would be produced by the universal causes at work in the universe since creation, and they would serve as instruments, intermediate causes, in the progression of the universe toward its final perfection. They would be species, but they would be somehow akin to individuals produced by the universal causes, standing somewhere between simple individuals and the essential species of the universe as St. Thomas conceived them.

Whatever may be said for these considerations on evolution, the important thing to remember here from St. Thomas himself is the distinction between two kinds of parts in the universe, those that constituted different degrees of perfection by reason of their differences of form and those that constituted only a multiplicity of individuals within a species. Order *per se* held the first kind of parts in the essential unity of the universe, but only a less perfect kind of order bound the other kind in the looser unity of

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[1] Cf. the text from *In I Sent.* d. 44, q. 1, a. 2, c; *supra*, p. 80.

species that existed in a series of individuals coming one after the other in time. This distinction, which was seen only *per pauciora* and *in universali*, be it recalled, allows for many variations of detail and an extensive gradation in the order of the universe. St. Thomas was aware of lacking a good deal as far as knowledge of details was concerned, but for him both kinds of diversity made for the greater perfection in a different way, one in a less perfect way than the other, to be sure, but this was the condition of their being different and made for greater diversity and hence for greater perfection. And what St. Thomas lacked with regard to the detailed articulations of these two orders he compensated for, at least in part, by situating man at the center of the universe, where the two orders come together in the concrete process whereby the universe as a whole is tending toward its final perfection according to an order of generation and time, an order which is not strictly *per se*, but which is still an order of nature. In order eventually to understand this better, let us now turn to the order of causes in the universe.