A STUDY OF SUBSTANTIAL CHANGE IN THE WRITINGS OF ST THOMAS AQUINAS

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Statement of Authorship and Sources

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SANCTAE DEI GENETRICI

AUCTOR DEDICAT

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Feast of Our Lady Help of Christians

Table of Contents

Abstract

This dissertation examines substantial change as explained by St Thomas Aquinas in a number of his works. It provides a systematic exposition, explanation and defence of his account of substantial change, arguing that it is not only satisfactory but also in accord with a sound philosophy of nature as well as being metaphysically consistent.

The central aim of the dissertation is to explain how substantial changes are said to occur, that is, to explain the process of substantial change. This process involves a transition from potency to act, which constitutes the essence of change. The explanation of the process of substantial change is said to be a hylomorphic explanation, in that it involves the postulation of two *per se* principles of nature, namely prime matter as the potential principle and substantial form as the actuating principle, and one *per accidens* principle, namely privation.

This dissertation deals with its topic in five chapters. The first chapter deals with some considerations preliminary to the investigation of substantial change. It considers what is meant by substance, the argument that there are many different substances, and the evidence of substantial change. There is then examined three possible explanations of substantial change, namely annihilation/creation, transubstantiation and a substratum theory. St Thomas's explanation is identified as a substratum theory, and more particularly as a hylomorphic version of a substratum theory. According to this substratum theory, substantial change involves one substantial form replacing another in the underlying substratum of prime matter. The central aim of the dissertation is to explain how the prime matter undergoes the transition from potentially possessing a substantial form to actually possessing it. The second chapter examines the three principles of change, namely matter, form and privation, beginning with accidental change and then arguing by way of analogy to substantial change. At the end of the chapter, five difficulties or objections are raised, which are then answered in subsequent chapters. The fifth difficulty is in fact the principal problem addressed in the dissertation, namely how to explain the origin of the new substantial form in the prime matter.

The third and fourth chapters examine the process of substantial change and in particular respond to the principal problem of the dissertation. Three possible explanations for the origin of substantial forms are examined, namely that the form was actual but latent in the prime matter, that it was created by an external agent or that it was educed from the potency of prime matter. St Thomas argues for the third explanation of eduction, from the Latin *ex ducere*, meaning 'to bring out of.' The fourth chapter examines in detail the process of eduction by which a new substantial form is produced. In particular the role of dispositions in prime matter is examined. Prime matter is said to be indirectly disposed by means of changes in the accidents inhering directly in the composite supposit, i.e., the individual substance. The fifth and final chapter considers the objections raised at the end of chapter two in light of some modern authors and replies are given to these objections. It is concluded that St Thomas's account is sufficiently robust to provide a philosophical explanation of substantial change based upon metaphysical principles.

Abbreviations of Works Cited

Comp. Theol.	*Compendium Theologiae.*
De Anima.	*Quaestio Disputata de Anima.*
De Ente.	*De Ente et Essentia.*
De Malo.	*Quaestiones Disputatae de Malo.*
De Mixtione.	*De Mixtione Elementorum.*
De Potentia.	*Quaestiones Disputatae de Potentia.*
DPN.	*De Principiis Naturae.*
De Spir. Creat.	*Quaestio Disputata de Spiritualibus Creaturis.*
De Veritate.	*Quaestiones Disputatae de Veritate.*
De Virtutibus	*Quaestiones Disputatae de Virtutibus.*
In de Anima	*Sententia Libri de Anima.*
In de Div. Nom.	*In Librum Beati Dionysii de Divinis Nominibus Expositio.*
In de Gen.	*In Librum Aristotelis de Generatione et Corruptione Expositio.*
In de Trin.	*Super Boetium de Trinitate.*
In Metaphys.	*Sententia Libri Metaphysicae.*
In Phys.	*Commentaria in Octo Libros Physicorum.*
In Post. Ana.	*Expositio Libri Posteriorum Analyticorum.*
In Sent.	*Scriptum Super Sententiis.*
Quod.	*Quaestiones de Quolibet.*
SCG.	*Summa Contra Gentiles.*
ST.	*Summa Theologiae.*

Introduction

The topic which concerns us in this dissertation is that of substantial change as explained in the writings of St Thomas Aquinas. St Thomas wrote about this topic in a number of his writings throughout his career. The general purpose of this dissertation is to attempt to give a systematic exposition of his account of this topic and also an explanation and defence of this account.

By substantial change, in general, is meant the change of one substance into another substance. St Thomas held that there exist different substances and that one substance is able to change into another substance. The explanation he gives as to how this occurs is what concerns us. The explanation of how substantial change occurs amounts to an explanation of the process of substantial change. Since this phenomenon is something which really occurs, it is important to be able to give an adequate and coherent explanation of it. Examples of such substantial changes include the generation of a living thing from the reproductive materials of its parents, the death of a living thing, the change of food into the flesh of a living body and the change which occurs in chemical reactions, such as when oxygen and hydrogen combine to produce water. It will be argued that St Thomas's account of substantial change is indeed a coherent account of this phenomenon and that this account is able to stand up to various difficulties and objections which can be raised against it. Therefore, this topic has importance primarily because it deals with a commonly occurring phenomenon and the desire to explain adequately and coherently this phenomenon. The explanation St Thomas gives, following Aristotle, is a hylomorphic explanation, in that it involves the postulation of the two *per se* principles of nature, namely prime matter and substantial form, and one *per accidens* principle, namely privation.[1]

[1] However we can say that this topic also has importance because of its theological implications. While this dissertation will not be considering these implications, nonetheless a defence of the hylomorphic explanation of substantial change will be important in giving a defence of transubstantiation, insofar as both explanations involve the *per se* principles of prime matter and substantial form. Transubstantiation is a term used by the Catholic Church to describe the change of bread and wine into the Body and Blood of Jesus Christ in the sacrament of the Holy Eucharist.

While this topic has importance, it is not one which has received much treatment in contemporary philosophical literature. While there are some writings which consider hylomorphism and the principles of nature, there is not much treatment of the actual process of substantial change and how this occurs.[2] It is one of the central aims of this dissertation to examine the process of substantial change and in particular to examine the question regarding the origin of the new substantial form in the newly generated substance. St Thomas uses the term eduction to explain the origin of the new substantial form, and it is an aim of this dissertation to investigate more deeply what is meant by eduction.

In order to have some preliminary understanding of what is meant by the process of substantial change, we can consider change in general. In very general terms, change is a transition from one state, let us call it State A, to another state, State B. The essence of change is what occurs between State A and State B. What occurs between the two states is the transitional process itself, which is the heart and essence of change and it is this transitional process itself which we seek to explain.[3]

If change is to occur, two general conditions must be met. There must be something which changes and that something must have the capacity to change. In the case of substantial change, that something which changes is a substance, which then changes into another substance.[4] That substance must also have the capacity or potency to change. Change therefore is the transition of something from potency to act, that is, the transition from potentially being something to actually

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[2] Recent examples of defenders of St Thomas's hylomorphism include Joseph Bobik, *Aquinas on Matter and Form and the Elements* (South Bend, IN: University of Notre Dame, 1998); William Wallace, *The Modelling of Nature: Philosophy of Science and Philosophy of Nature in Synthesis* (Washington, DC.: CUA Press, 1996); David Arias, *Rediscovering the Principles of Nature: An Explanation of St Thomas Aquinas's Hylomorphic Doctrine and Defence of this Doctrine against Some Ancient and Modern Objections*, Doctoral Dissertation, University of St Thomas, Houston, 2011; Matthew A. Kent, *Prime Matter according to St Thomas Aquinas*, Doctoral Dissertation, Fordham University, New York, 2005; J.E. Brower, *Aquinas's Ontology of the Material World: Change, Hylomorphism and Material Objects* (Oxford, UK: Oxford University Press, 2014).

[3] *Cf.*, D.Q. McInerny, *The Philosophy of Nature* (Lincoln, Nebraska: The Alquin Press, 2001), pp. 157-8.

[4] In one sense, the substance can be said to be the something which changes, but in another sense it is the prime matter of the substance which is changed by having its potency actualised by a new substantial form. The prime matter undergoes a transition from potentially having a form to actually having that form.

being something.[5] This transition from potency to act, or in other words the transitional process itself, is the heart and essence of change and it is the explanation of how this occurs which concerns us. As already stated, the explanation given by St Thomas for substantial change is a hylomorphic explanation, in that it involves the postulation of three principles, namely prime matter, as the potential principle in a substance, substantial form, as the actuating principle, together with the privation of that form in the matter.

Regarding the methodological approach of this dissertation, two points should be made. Firstly, the approach of this dissertation will be to focus on what St Thomas himself has said regarding substantial change and to attempt to give an exposition, explanation and defence of his account. The dissertation will not be a comparison of St Thomas's explanation with other possible explanations. While such a comparative exercise would be useful, it is intended rather to focus on the account of St Thomas as found in a number of his writings. However the dissertation does not seek to be a merely exegetical examination of St Thomas's account, which could be seen as having only historical value. Rather, there will be an attempt to engage modern scientific and philosophical considerations in an attempt to show that St Thomas's account is indeed coherent and plausible in the light of these other considerations. Further, while the focus of the dissertation will be on the writings of St Thomas himself, other sources will be considered to better understand and explain his teaching and to give further insight into that teaching. Some of the other sources considered include the *Cursus Philosophicus Thomisticus* by the important Thomistic commentator John of St Thomas (1589-1644), as well as more recent Thomistic philosophers such as Hugon, Wallace, Wippel and Woodbury.[6]

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[5] "Movere enim nihil aliud est quam educere aliquid de potentia in actum." *ST* I, q, 2, a.3. (Unless otherwise indicated, the Latin texts of the works of St Thomas which are quoted or referred to are taken from *Opera Omnia,* available at the website entitled "Corpus Thomisticum: S. Thomae de Aquino: Opera Omnia." Ed. Enrique Alarcon. Fundación Tomás de Aquino, 2013, http://www.corpusthomisticum.org/iopera.html.)

[6] Austin Maloney Woodbury SM (1899-1979) a Catholic priest, philosopher and theologian, was one of the most prominent Australian Thomists of the 20th century. He attained doctorates in both philosophy and theology from the Angelicum in Rome, studying under Fr Garrigou-Lagrange OP. In 1945 he established the Aquinas Academy in Sydney, where he taught and wrote extensively on all major philosophical topics. His unpublished manuscripts were widely circulated and the collection of his works is held at the State Library of NSW, Sydney, Australia.

In regards to the general methodological approach of the dissertation, it is maintained that the explanation St Thomas gives of substantial change throughout his career, as found in his various writings, demonstrates a high degree of consistency, in that his explanation does not undergo any significant change. Important works in which he examines the topic of substantial change in more detail include the early *De Principiis Naturae* (1252-53) and the later Commentary on the *Physics* (1268-70) and the Commentary on the *Metaphysics* (1271-73).[7] The conclusions reached in this dissertation will therefore be conditional on there being this doctrinal unity in St Thomas's teaching on this topic throughout his career.

Secondly, it should be noted that the hylomorphic explanation of substantial change is a philosophical explanation, which should not be equated with a modern scientific explanation of the same phenomenon. Indeed the notion of substance itself has a philosophical meaning which goes beyond an exclusively scientific understanding of this term. It was stated above that it is the aim of this dissertation to give an adequate explanation of the phenomenon of substantial change, and we will contend that a modern scientific explanation of this phenomenon is not an adequate explanation. Rather, a hylomorphic explanation, which is a philosophical explanation, is needed to give such an adequate explanation.[8]

The modern scientific method of explaining phenomena such as substantial change is one which focuses on giving a quantitative description of the world. In other words, it focuses on the quantifiable and measurable aspects of reality and largely abstracts from consideration of other

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[7] The dates for these works are taken from J.P. Torrell, *Saint Thomas Aquinas: The Person and His Work*, vol. 1, rev. ed. (Washington, D.C.: The Catholic University of America Press, 2005).

[8] A recent attempt to show the relevance and importance of the Aristotelian philosophy of nature in explaining reality is a work by Simpson *et al*., in which the authors claim that Neo-Aristotelianism is a burgeoning branch of contemporary philosophy and give the following summation of this: "Given the ambiguous and incomplete picture of reality painted by our best physical theories, the shift from physical reductionism in the philosophy of science toward a stronger appreciation for the integrity of the special sciences, and the resurgent interest in metaphysics in contemporary analytic philosophy, neo-Aristotelian philosophers today are invigorated by the prospect of achieving a unified *metaphysical* account of reality, enhanced by the insights of a rich philosophical tradition and informed by contemporary science." W.M.R. Simpson, R.C. Koons and N.J. Teh (eds.), *Neo-Aristotelian Perspectives on Contemporary Science* (New York: Routledge, 2018), p. 3.

aspects.[9] Such a focus certainly gives important information about reality, but it would be incorrect to say that it gives the only valid information about reality. This is because the objects given us in our experience are far richer than those described by the modern physical sciences with their emphasis on the quantifiable aspects of reality.[10] The modern scientific view focuses on the material cause of things, and more particularly on matter as quantifiable, while St Thomas argues that to give an adequate explanation requires consideration of all the four causes of things, material, formal, efficient and final.[11]

While modern physico-mathematical sciences use our experience of reality selectively and focus on a narrow consideration of that reality, our common experience of this same reality exposes us to other aspects. Philosophical knowledge of reality is based on such a wider experience as given in common experience. The intellect is able to come to understand other aspects of reality which are not under the narrow consideration of the physical sciences. For example, it is able to consider the being itself of this reality, the different ways of being, such as substance and accident, act and potency, matter and form and the notion of change itself. In grasping the being of things, the

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[9] St Thomas distinguishes three possible approaches to the study of corporeal things, namely physical, mathematical and metaphysical. This arises from the three levels of formal abstraction of the mind regarding material things, giving rise to different formal objects for the physical, mathematical and metaphysical sciences. *Cf.*, *ST* I, q. 85, a. 1 ad 2; *In de Trin*. q. 5; *In Metaphys*., Bk. 6, *lectio*. 1. In the Aristotelian-Thomistic understanding, the physico-mathematical sciences would be regarded as intermediary sciences whose subject matter is given in the material world but whose formal object is mathematical.

[10] As Feser states regarding scientism: "The second main problem facing scientism, I have said, is that science cannot in principle provide a complete description of reality. Indeed, it cannot in principle provide a complete description even of physical reality. The reason, paradoxical as it sounds, has to do precisely with the method that has made the predictive and technological achievements of modern physics possible. Physics insists upon a purely quantitative description of the world, regarding mathematics as the language in which the "Book of Nature" is written (as Galileo famously put it). Hence it is hardly surprising that physics, more than other disciplines, has discovered those aspects of reality susceptible of the prediction and control characteristic of quantifiable phenomena. Those are the only aspects to which the physicist will allow himself to pay any attention in the first place. Everything else necessarily falls through his methodological net." E. Feser, *Scholastic Metaphysics: A Contemporary Introduction* (Piscataway, NJ: Transaction Books, 2014), pp. 12-13.

Also Armour states, commenting on the philosophy of Charles De Koninck: "Our scientific picture of the world is, however, rather of a world stripped down from this rich environment and it is this simplified world to which the various facets of the human intellect are peculiarly well adapted. Mathematical physics deals, literally, with abstractions and there is a tendency to take these abstractions for the whole of reality. The result is what De Koninck meant by the expression 'hollow universe'." L. Armour, "The Philosophy of Charles De Koninck," in *The Writings of Charles De Koninck*, vol. 1 (Notre Dame, IN: University of Notre Dame Press, 2008), p. 7.

[11] *Cf.*, *DPN*, ch. 4.

intellect grasps the primary way of being, namely as substance. This consideration of the unity of individual things as substances is something which escapes the modern scientific outlook which tends to focus on quantifiable constituent parts rather than on the substantial unity.[12] Furthermore the modern scientific view can give no adequate account of this substantial unity without consideration of the notion of substantial form and therefore of the formal cause.

While the intellect comes to apprehend subsisting things as substances, each constituting a genuine unity, it is able to come to understand that changes which are experienced by the senses require that there be some subject or matter which undergoes the change and that there be different forms which this matter takes on. The philosophical consideration of change therefore leads to the grasp of the principles of change as matter and form and further to a consideration of these as potency and act respectively. Indeed, the grasp of the notions of potency and act, which are metaphysical principles, is more basic than the grasp of change itself, since it would not be possible to understand change without these prior notions, nor could the notions of matter and form be understood without such prior notions.[13] The philosopher of nature gives an explanation of change in terms of matter and form, but this also involves use of metaphysical notions of potency and

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[12] As Dewan states: "We have a strong tendency to reduce things to a *mechanical* character. We have a tendency toward a *particle* theory, i.e. to think of each distinctive being as made up of "a lot of little beings (substances!)." The bear, one might say, is an assemblage of "molecules" or some other sort of small item. "Mr. Smith is a bundle of events." This kind of picture is a formula for permanently setting aside the being of things, a technique for evading "substance." If we are to have a grasp of substance, we must allow the unity of substance to dominate the multiplicity of parts." L. Dewan, *Form and Being: Studies in Thomistic Metaphysics* (Washington, D.C.: CUA Press, 2006), p. 115.

[13] As St Thomas states: "Et ideo omnino impossibile est aliter definire motum per priora et notiora, nisi sicut philosophus hic definit. Dictum est enim quod unumquodque genus dividitur per potentiam et actum. Potentia autem et actus, cum sint de primis differentiis entis, naturaliter priora sunt motu: et his utitur philosophus ad definiendum motum. Considerandum est igitur quod aliquid est in actu tantum, aliquid vero in potentia tantum, aliquid vero medio modo se habens inter potentiam et actum." *In Phys*., Bk.3, *lectio* 2 (vol. 2, p. 105). Commenting on this text Dewan states: "My interest in this text is that it makes clear that the very definition of motion, used in the science having as its subject mobile being, uses *notions intelligibly prior* to the notion of motion. These are presented as differences of being. Obviously, being as being is meant. The notion of being which is being employed can hardly be conceived as limited to the mobile, since mobility is a posterior intelligible. We are witnessing the role of metaphysical considerations at the very origins of physical thought." *Ibid*., p. 53. Elsewhere he states: "Thomas sees the principles, precisely as known first of all and to all, as having the properly metaphysical character. This does not make the beginner a finished metaphysician, but it does mean that the principles of metaphysics are precisely those very first known principles, not some newly constructed conception of being resulting from the study of physics. If we did not start with metaphysical principles, no particular science would ever provide them." *Ibid*., p. 56.

act.[14] Indeed, it is not possible to do any particular science without using metaphysical principles which are adapted or contracted to that particular science.[15] The notions of matter and form, as used by the philosopher of nature, are really the metaphysical notions of potency and act respectively as contracted or adapted to that particular science.[16]

Given these preliminary observations, this dissertation will deal with its topic in five chapters. The first chapter will consider some considerations preliminary to the investigation of substantial change. It will consider what is meant by substance, the argument that there are many different substances, and will also consider evidence of substantial change. There will then be examined the possible explanations of substantial change, namely annihilation/creation, transubstantiation and a substratum theory. St Thomas's explanation is identified as a substratum theory, and more particularly as a hylomorphic version of a substratum theory. The substratum will be regarded as the matter or subject of the change and as the permanent principle common to the old and the new substance, and the change will be explained through a change in the form in the underlying matter, with one form replacing the other. According to the hylomorphic substratum theory, substantial

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[14] As Dewan states: "To repeat, both the Aristotelian physicist and the metaphysician are interested in the analysis of natural changeable substances into form and matter. The physicist locates in matter and form the *principles* of the movements or changes (and rests) found in things. The metaphysician, on the other hand, keeps his eye fixed on substance as a primary *unit* or "indivisible." He then *sizes up* the "ingredients" or components of composite substance, from the viewpoint of being. It is *the composite* which properly has being (and so it is what we mean primarily by "a being"). As such, it is called "the *subsisting* thing." The matter, just in its own nature, is a *being potentially* or is *a being in potency*. Form is that by virtue of which the matter has definiteness and being. It is the composite which *is*." *Ibid.*, p. 114.

[15] This follows from what St Thomas says about the relation between the particular sciences, such as the natural sciences, and metaphysics, in that metaphysics considers being in common rather than particular ways of being. *Cf.*, *In Metaphys.*, Bk. 6, *lectio* 1, n. 1147.

[16] Each of the particular sciences has its own proper principles, but these principles are adaptations or contractions of more general common principles. *Cf., In Post. Ana.*, Bk. 1, *lectio* 18. Matter and form are examples of such proper principles used in the philosophy of nature which are contractions of the common principles of potency and act. The principles of potency and act are proper principles of metaphysics. The philosophy of nature is a subalternate science to metaphysics and uses some of its principles. The natural philosopher can take on the role of the metaphysician, just as a geometer can prove his own principles by taking on the role of a metaphysician. Geometry has its proper principles, but it relies on common principles from metaphysics such as whole, part and equal, unequal: "...the proof of the principles cannot be drawn from geometry qua geometry. The same also applies to other sciences. For no science proves its own principles, as we have explained above. And he says, "from geometry qua geometry," because it may happen that a science proves its own principles, insofar as that science assumes the principles of another science, as a geometer proves his own principles insofar as he assumes the role of first philosopher, i.e., of metaphysician." *Ibid*, Bk. 1, *lectio* 21. (The English translations of the *Expositio Libri Posteriorum Analyticorum* are from *Commentary on the Posterior Analytics of Aristotle* trans. F.R. Larcher, http://dhspriory.org/thomas/english/PostAnalytica.htm.)

change is a formal change, in that it involves one form replacing another in the underlying substratum of prime matter.

The second chapter will examine the three principles of change, namely matter, form and privation, beginning with accidental change and then arguing by way of analogy to substantial change. The two *per se* principles, prime matter and substantial form and the *per accidens* principle of privation will be examined and also a defence made of the unicity of substantial form in substances. At the end of the chapter, five difficulties or objections will be raised, which will then be answered in subsequent chapters. The fifth difficulty will be said to be the most difficult to answer, namely how to explain the origin of the new substantial form in the prime matter. This difficulty will in fact be the principal problem or object to be addressed in this dissertation.

The third and fourth chapters will examine the process of substantial change and in particular will attempt to answer this principal problem. The third chapter will consider the notion of mutation or change, beginning with accidental change and then proceeding to substantial change. The question and difficulty regarding the origin of the new substantial form in a newly generated substance will be addressed. Three possible explanations will be examined, including the explanation of eduction which is put forward by St Thomas. The fourth chapter will examine in detail the process of eduction by which a new substantial form is produced. In particular the role of dispositions in prime matter will be examined. The role of the efficient and final causes as extrinsic causes will also be examined briefly. This fourth chapter will constitute the central part of the dissertation, since, as stated, the focus of the dissertation will be to explain the process of substantial change, which process involves the transition from the prime matter potentially having a substantial form to actually having such a form.

The fifth and final chapter will consider the other objections raised at the end of chapter two in light of some modern authors and replies will be given to these objections. Although these objections are not exhaustive, they are significant because they raise particular difficulties for the hylomorphic theory. In addressing these difficulties the key concepts of the theory are clarified and

the theory itself strengthened. Further objections both philosophical and arising from contemporary science can no doubt be raised and will be raised elsewhere, but is it contended that the theory is robust and is explanatory of substantial change. The conclusions of this dissertation are, therefore, based at least partially on the elucidations of the particular objections raised.

Chapter 1: Substantial Change: Some Preliminary Considerations.

Substantial change, in general, can be said to mean the change of one substance into another substance. Even when described in this most general way, this description indicates three things, namely that there are such things as substances, that there are different substances, and that they do change one into another. St Thomas accepted that substantial changes occur and consequently also would accept these three implications. In this chapter we propose to examine some preliminary considerations concerning the question of substantial change and in doing so we will need to examine these three implications entailed by the general description given. We will first consider what St Thomas means by the word substance. Secondly, we will argue that there are in fact different substances. Thirdly, we will argue that there is evidence that one substance changes into another substance. We will also give some examples of such substantial changes. Having done this, we will then outline three possible explanations of how such changes could be explained, namely annihilation/creation, transubstantiation and the substratum theory. St Thomas' explanation will be identified as a substratum theory, and more particularly as a hylomorphic version of the substratum theory.

1. The Two Senses of 'Substance'.

When examining the question of substantial change, we will need to examine what is meant by the term 'substance'. When St Thomas uses the term 'substance' in his writings, he uses it in a number of different senses.[17] In the Commentary on the *Metaphysics,* Book 5, Lecture 10 he comments that Aristotle has four senses in which the word substance may be used, namely as a particular thing (first substance), as form, as parts of things which limit and render them divisible and as the quiddity or essence. These senses can be reduced to two. He states:

> Then he reduces the foregoing senses of substance to two. He says that from the above-mentioned ways in which the term substance is used we can understand that it has two meanings. It means the ultimate subject in propositions, and thus is not predicated of something else. This is first substance, which means a particular thing [hoc aliquid] which

[17] *Cf.*, J. F. Wippel. *The Metaphysical Thought of Thomas Aquinas* (Washington, D.C.: The Catholic University of America Press, 2000), pp.198-208.

> exists of itself and is capable of existing apart because it is distinct from everything else and cannot be common to many. ..... And the form and species of a thing also "is said to be of this nature," i.e., substance. In this he includes the second and fourth senses of substance; for essence and form have this note in common that both are said to be that by which something is. However, form, which causes a thing to be actual, is related to matter, whereas quiddity or essence is related to the supposit, which is signified as having such and such an essence. Hence "the form and species" are comprehended under one thing—a being's essence.[18]

The two senses of substance St Thomas discusses here are firstly what he terms 'first substance' or a particular thing (*hoc aliquid*) and secondly the essence and form of the thing. If we consider the first sense of substance as a *hoc aliquid*, we note a particular characteristic of substance is that it exists of itself (*per se subsistens*) and is capable of existing apart.[19] This characteristic of substance is meant to distinguish a substance from an accident, which only inheres in a substance and is not capable of existing of itself but only in another, that is, it exists only in a substance as its subject of inherence. Hence, for example, a particular man would be a substance in the sense of being a *hoc aliquid*, whereas his whiteness would be an accident of this substance. Thus, a particular man would also be the ultimate subject in propositions, in that things are predicated of a particular man, such as that he is white in colour, whilst a particular man would not be predicated of another subject.[20] Substance in this first sense, as referring to an individual existing thing, could also be termed the *suppositum* or *hypostasis*.[21]

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[18] *In Metaphys*., Bk. 5, *lectio* 10, n. 903-4. (The English translations of the *Sententia Libri Metaphysicae* are taken from the *Commentary on the Metaphysics*, trans. J. P. Rowan, http://dhspriory.org/thomas/english/Metaphysics.htm.)

[19] In the *In Metaphys*., Bk. 5, *lectio* 10 St Thomas gives a number of examples of substance in the first sense: "...primus est secundum quod substantiae particulares dicuntur substantiae, sicut simplicia corpora, ut terra et ignis et aqua et huiusmodi. Et universaliter omnia corpora, etiam si non sint simplicia, sicut mixta similium partium, ut lapis, sanguis, caro, et huiusmodi. Et iterum animalia quae constant et huiusmodi corporibus sensibilibus, et partes eorum, ut manus et pedes et huiusmodi, *et Daemonia*, idest idola, quae in templis posita colebantur pro diis. Vel Daemonia dicit quaedam animalia rationabilia secundum Platonicos, quae Apuleius sic definit: *Daemones sunt animalia corpore aerea, mente rationalia, animo passiva, tempore aeterna*. Haec enim omnia praedicta dicuntur substantia, quia non dicuntur de alio subiecto, sed alia dicuntur de his. Et haec est descriptio primae substantiae in praedicamentis."

[20] A particular man, such as Socrates, cannot be predicated as an attribute of a subject, but is always a subject. For example, we cannot say 'White is Socrates' but only 'Socrates is white.'

[21] *Cf.*, *ST* I, q. 29, a. 1- 2.

St Thomas also refers to the two senses of the term substance in a number of other texts. In *ST* I, q. 29, a. 2 he states:

> According to the Philosopher (*Metaph*. v), substance is twofold. In one sense it means the quiddity of a thing, signified by its definition, and thus we say that the definition means the substance of a thing; in which sense substance is called by the Greeks *ousia*, what we may call *essence*. In another sense substance means a subject or *suppositum*, which subsists in the genus of substance.[22]

A similar distinction of the two senses of the word substance is made in the *De Potentia* q. 9, a. 1: "...substance may be taken in two ways. In one sense it is the ultimate subject which is not predicated of another: and this is the individual in the genus of substance; while in another sense it is the form or nature of a subject." [23]

1.1. Substance as *hoc aliquid* or *suppositum*.

This understanding of a substance as a *hoc aliquid* which exists *per se* or of itself and not in another is also brought out in the definition of a substance. In the *De Potentia*, q. 7, a. 3, St Thomas states that a substance is: "...a thing to whose quiddity it belongs to exist not in something (else)."[24] A substance is a type of thing which has a nature or quiddity to which it belongs to exist in itself or to subsist, whilst an accident has a quiddity to exist in another, namely in a substance. Similarly in *ST* III, q. 77, a. 1 ad 2 St Thomas states that the definition of a substance is that: "it belongs to the quiddity or essence of substance to have existence not in a subject."[25]

St Thomas adds some further precision to his definition of a substance as a *hoc aliquid* when he compares a substance to a part of a substance. He states in *ST* I, q. 75, a. 2 ad 1:

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[22] The English translations of the *Summa Theologiae* are from *The Summa Theologica*, trans. English Dominican Fathers, http://dhspriory.org/thomas/english/summa/.html.

[23] The English translations of the *Quaestiones Disputatae de Potentia* are from *On the Power of God*, trans. English Dominican Fathers, http://dhspriory.org/thomas/english/QDdePotentia.htm. Also *SCG*, Bk. 4, ch. 49; *ST* III, q. 17, a. 1 ad 7; *ST* III, q. 17, a. 2 ad 3.

[24] "substantia est res cuius quidditati debetur esse non in aliquo."

[25] "quidditati seu essentiae substantiae competit habere esse non in subiecto."

> "This particular thing" [*hoc aliquid*] can be taken in two senses. Firstly, for anything subsistent; secondly, for that which subsists, and is complete in a specific nature. The former sense excludes the inherence of an accident or of a material form; the latter excludes also the imperfection of the part, so that a hand can be called "this particular thing" in the first sense, but not in the second. Therefore, as the human soul is a part of human nature, it can indeed be called "this particular thing," in the first sense, as being something subsistent; but not in the second, for in this sense, what is composed of body and soul is said to be "this particular thing."

A substance considered as a *hoc aliquid* can be taken in two senses. Firstly, something can be taken as a *hoc aliquid* simply because it subsists, or secondly because it subsists in a complete nature. The example St Thomas gives is that of a hand, which is normally a part of a man. Should the hand be separated from the body, it would indeed be a *hoc aliquid* in the first sense, in that it would be something subsistent, but it would not be a *hoc aliquid* in the second sense because a hand is only a part of a body and is not complete in a specific nature. A similar case is made for the human soul, in that while it can exist apart from the body which it animates and therefore it is a *hoc aliquid* in the first sense given above, it is not complete in a specific nature but only a part of a specific nature, in this case human nature.[26] It is therefore a *hoc aliquid* or *suppositum*, but not in the full sense of the term, which would apply only to the second sense.[27] An accident is said to not be a *hoc aliquid* in the first sense because it does not subsist or have existence *per se* but only in a substance as its subject of inherence.[28]

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[26] A further elaboration of this is found in the *In de Anima*, Bk. 2, *lectio* 1: "The second distinction alluded to is that of substance into matter, form and the compound of both. Matter is that which is not as such a 'particular thing' but is in mere potency to become a 'particular thing'. Form is that by which a 'particular thing' actually exists. And the compound is 'the particular thing' itself; for that is said to be a 'particular thing' (i.e. something you can point to) which is complete in being and in kind; and among material things only the compound is such. For although immaterial substances are not compounds of matter and form, still they are particular things, having actual existence in themselves, and being complete in their own nature. Not so the rational soul; for though it has the existence in itself which belongs to a 'particular thing', it is not a complete nature by itself; it is rather a part of a specific nature. Hence it is not in all respects a 'particular thing'." (The English translations of the *Sententia Libri de Anima* are from the *Commentary on Aristotle's De Anima* trans. K. Foster, S. Humphries, http://dhspriory.org/thomas/english/DeAnima.htm.)

[27] Even though the human soul is not a *hoc aliquid* in the full sense, it differs from the example of a hand since it can subsist without the body for an indefinite time, unlike the hand which very soon decays.

[28] It should be noted that a part *qua* part is not a *hoc aliquid* that is complete in its species. However, some parts of a substance, after the corruption of the substance, may be able to exist as a *hoc aliquid* complete in its species. For example, after the death of a man and the further corruption of his body into simpler substances, such as certain molecules and atoms, these former parts of a man may be able to exist as a *hoc aliquid* and complete in their species. However, for our purposes here, it is sufficient to note that in so far as a part is a part of a whole substance it is not a substance as St Thomas defines it.

It should be noted that substance, considered as a *hoc aliquid* or *suppositum* does not include the accidents inhering in the substance. Rather, the *suppositum* is the composite of prime matter and substantial form. A fuller discussion of the distinction between substance considered as *suppositum* and accidents is made in Chapter 2, n. 2.1.

In the Disputed Questions *De Anima,* Article 1 St Thomas also gives a good statement of his teaching of substance as a *hoc aliquid*:

> "A particular thing," properly speaking, designates an individual in the genus of substance. For the Philosopher says, in the *Categories* [V, 2a 10], that first substances undoubtedly signify particular things; second substances, indeed, although they seem to signify particular things, rather signify the specific essence (*quale quid*). Furthermore, an individual in the genus of substance is capable not only of subsisting of itself, but is also a complete entity belonging to a definite species and genus of substance. Wherefore the Philosopher, in the *Categories* [V, 3a 28], also calls a hand and a foot, and things of this sort, parts of substances rather than first or second substances. For although they do not exist in another as a subject (which is characteristic of a substance), they still do not possess completely the nature of a species. Hence they belong to a species or to a genus only by reduction.[29]

We may also say that for St Thomas natural bodies are substances, as opposed to artefacts or artificial bodies. As he states in the Commentary on the *De Anima*, Book 2, Lecture 1:

> The next distinction is between physical or natural bodies and artificial bodies. Man and wood and stone are natural bodies, but a house or a saw is artificial. And of these the natural bodies seem to be the more properly called substances, since artificial bodies are made out of them. Art works upon materials furnished by nature, giving these, moreover, a merely accidental form, such as a new shape and so forth; so that it is only in virtue of their matter, not their form, that artificial bodies are substances at all; they are substances because natural bodies are such. Natural bodies therefore are the more properly called substances, being such through their form as well as through their matter.

At this stage of our investigations we can simply make the observation that when St Thomas refers to substances, he means natural bodies as opposed to artefacts.[30] He argues that an artefact can only

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[29] The English translations of the *Quaestio Disputata de Anima* are from *The Soul*, trans. J.P. Rowan, http://dhspriory.org/thomas/english/QDdeAnima.htm.

[30] The distinction between substances and artefacts will be examined in Chapter 2, n. 3.2.2. A good examination of the question why artefacts are not substances can be found in C. M. Brown. *Aquinas and the Ship of Theseus: Solving Puzzles about Material Objects* (London: Continuum, 2005), pp. 98-103.

be called a substance in an improper sense by virtue of the fact that it is made up of a substance, namely a natural body. For example, we can say that a bed made out of wood is a substance in an improper sense only because it is made up of wood, which is a substance in the proper sense. An artefact, like a bed, is a substance only in virtue of its matter, or what it is made of, which is a natural body. It is not a substance by virtue of its form, which is an accidental form imposed on the substance by the artificer. While the difference between natural bodies and artificial bodies is an interesting and important question for consideration, for our purposes it is sufficient to note that for St Thomas natural bodies, that is, non-man made bodies, exist and are regarded as substances.

Considering what St Thomas says about substance in the first sense in which he uses this word, we may say that a substance is "a subsistent being complete in the nature of some species." Given this general description we can say that our world is populated by many substances, such as individual men, animals, plants and minerals. Each of these things satisfies the general definition, firstly in that they each subsist and further they are complete in the nature of some species.

1.2. Substance as Essence, Form, Quiddity or Nature.

Substance in the second sense can be said to refer to the essence, form, quiddity or nature of a thing. These terms are often used interchangeably, although St Thomas does distinguish them. In the *De Ente,* for example, he states that essence can be said to mean quiddity, form or nature.[31]

[31] "And because that by which a real thing is constituted in its proper genus or species is what is signified by the definition expressing what the real thing is, philosophers sometimes use the word "quiddity" for the word "essence." This is what the Philosopher often calls *what something was to be,* i.e., that by which it belongs to something to be what it is. It is also called form, in the sense in which the word "form" signifies the full determination of each real thing, as Ibn-Sînâ says in the second book of his *Metaphysics.* Further, it is given another name, nature, taking the word "nature" in the first of the four ways given by Boethius in his book *On the Two Natures*. In this way, whatever can in any way be grasped by the intellect is called a nature. For a real thing is not intelligible except through its definition and essence. The Philosopher, too, says in the fifth book of the *Metaphysics* that every substance is a nature. But the word "nature" taken in this way appears to signify the essence of a real thing according as it has an ordering to the thing's proper operation; and no real thing lacks a proper operation. The name "quiddity," however, is taken from the fact that what is signified by the definition is the essence. But it is called essence from the fact that through it and in it a real being has existence". *De Ente,* ch. 1. (The English translations of the *De Ente et Essentia* are from *Aquinas on Being and Essence,* trans. J. Kenny, http://dhspriory.org/thomas/english/DeEnte&Essentia.htm.) It should be noted that by 'form' here is meant the *forma totius* and not the *forma partis*. The former is the whole essence, that is, both prime matter and substantial form. The latter is only a part of the essence, that is, the

In order to understand the meaning of substance in the second sense, we may examine a text from the *De Potentia*, q. 9, a. 1in which St Thomas states:

> ...the Philosopher (*Metaph.* v) says that substance may be taken in two ways. In one sense it is the ultimate subject which is not predicated of another: and this is the individual in the genus of substance: while in another sense it is the form or nature of a subject. The reason for this distinction is that several subjects may have a common nature; thus several men have in common the nature of man. Hence the need of distinguishing that which is one from that which is multiple: for the common nature is signified by the definition which indicates what a thing is: so that this common nature is called the essence or quiddity. Wherefore whatsoever a thing contains pertaining to the common nature is included in the signification of the essence, whereas this cannot be said of all that is contained in the individual substance. For if whatsoever is in the individual substance were to belong to the common nature, there would be no possible distinction between individual substances of the same nature. Now that which is in the individual substance besides the common nature is individual matter (which is the principle of individuation) and consequently individual accidents which determine this same matter. Accordingly the essence is compared to the individual substance as a formal part thereof, for instance, humanity [humanitas] in Socrates. Hence in things composed of matter and form, the essence is not quite the same as the subject, and consequently it is not predicated of the subject: for we do not say that Socrates is his humanity.

In this text, St Thomas refers to the two senses of substance found in the *Metaphysics*, Book 5. Substance in the first sense is an individual in the genus of substance. As we have seen above, this is a *hoc aliquid*, which could be referred to as a 'first substance', *suppositum* or hypostasis. In the second sense, substance can be said to mean the common nature which is shared by several individuals. The example he gives is human nature, which is shared by or common to several individual men. This common nature is what can be called the essence or quiddity. It is this common nature which is signified by the definition of the thing. The essence connotes only what is included in the definition of the species.[32] Thus, the definition of 'man' would signify the common nature or essence of man. The concept and by extension its definition could be referred to as 'second substance' to distinguish it from 'first substance'. This concept would signify the essence which the individual shares in and contains.

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substantial form. *Cf., De Ente,* ch. 2; J. Bobik. *Aquinas on Being and Essence: A Translation and Interpretation* (Notre Dame, IN: University of Notre Dame Press, 2004), p. 47.

[32] *Cf., ST* I, q. 3, a. 3.

St Thomas however states that the individual substance or *suppositum* contains, in addition to the common nature or essence, also 'individual matter' and also individual accidents.[33] This individual matter, elsewhere called 'signate matter,' is the principle of individuation which individuates the common nature or essence, giving rise to the individual substance or *suppositum.*[34] For this reason St Thomas states that the essence is to be considered as the formal part of the individual substance or *suppositum* and therefore is not the same as the *suppositum*. The example he gives is the humanity of Socrates. 'Humanity' would signify the essence and therefore only the formal part of Socrates, excluding the individual matter. By 'formal part' St Thomas states elsewhere that "the principles whereby a thing is defined are regarded as the formal constituent in regard to the individualising matter."[35] Essence as so signified is not the same as the individual substance or *suppositum* and therefore we cannot say that 'Socrates is his humanity'. This is in contrast to simple substances, namely angels, whose essence would be the same as their *suppositum*, since they are immaterial and therefore lack individual matter. There would in this case be only a logical distinction between the two.[36]

The process whereby the mind attains what is common to a number of singulars, namely the essence, while leaving out of consideration what is not common to them, is termed abstraction. This abstraction of the essence may be of two types, namely with precision and without precision. If the consideration expressly excludes or prescinds from the non-common characteristics, it is said to be abstraction with precision. On the other hand, if it does not expressly exclude or prescind from such non-common characteristics, it is abstraction without precision.

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[33] It should be noted that *suppositum* or individual substance can be considered in two ways, namely as including the accidents or as excluding them. The normal way St Thomas uses *suppositum* is as excluding the accidents, since the *suppositum* is what stands under and supports the accidents. In this sense it is referred to as a *hypostasis. Cf., De Potentia,* q. 9, a. 1.

[34] *Cf., In de Trin.,* q. 4, a. 2.

[35] *ST* I, q. 3, a. 3.

[36] *Cf., De Potentia,* q. 9, a. 1.

In the case of the essence being abstracted with precision, the essence as so abstracted excludes or prescinds from the individual or signate matter. The essence would then be regarded as only a part of the singular thing. Hence in the example above, 'humanity' as abstracted from Socrates, would be the essence as abstracted with precision, since it excludes the individual matter in Socrates. For this reason, we cannot say that Socrates is his humanity, since he cannot be equated with what is only a part of him. Rather, we say that Socrates has his humanity. For this reason, this type of abstraction can be referred to as an 'abstraction of the form' (*abstractio formae*).[37]

While the essence as abstracted with precision would exclude or leave out individual or signate matter, it does however include both the matter and the form taken in the abstract. Therefore, 'humanity' or human nature would include both matter and form considered in the abstract, since what makes someone human is that he has both matter and form. However, humanity does not include the individual matter or form which is found in a particular man such as Socrates. Since the essence or nature connotes only what is included in the definition of the species, 'humanity' would connote all that is included in the definition of man, since it is by this that man is man. The definition of man would include both the matter and the form, but not this particular individual matter or form.[38] The matter included in the definition is referred to by St Thomas as 'common matter' (*materia communis*) in distinction to individual or signate matter (*materia signata*).[39] Thus, 'humanity' would include in its definition flesh and bones (as common matter) but not this flesh or these bones (as individual or signate matter).[40]

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[37] *Cf., In de Trin*., q. 5.

[38] *Cf., ST* I, q. 3, a. 3. "But abstraction may also take place with precision. It then explicitly cuts off or excludes or prescinds from the non-common characteristics. What is common to all individual men now appears as 'humanity,' taken in the abstract as the form or perfection that makes individuals men. It is not exactly the substantial form. This is isolated in natural philosophy, and it is received into a really distinct subject, physical matter. "Humanity," on the other hand, includes both the physical matter and form, but as taken in the abstract. Its subject is the man, while the subject of the substantial form is the physical matter. Humanity or human nature, therefore, is conceived as the formal part of the concrete man. Since it is conceived as a part, it cannot be predicated of the individual." J. Owens. *An Elementary Christian Metaphysics* (Milwaukee: The Bruce Publishing Company, 1963), p. 63.

[39] *Cf., In de Trin*., q. 5.

[40] *ST* I, q. 3, a. 3.

In the case of an essence abstracted without precision, such an abstraction does not exclude anything from what it abstracts, but rather it includes all, though only implicitly and indeterminately. For this reason it may also be termed an 'abstraction of the whole' (*abstractio totius*). This type of abstraction, while attaining the essence which is common to many, does not expressly exclude the non-common characteristics.[41] The concept 'man' would be an example of a concept attained by abstraction without precision, since this concept is formed by an abstraction of the common nature from what is not common or individual but without excluding it or prescinding from it. Thus, for example, the intellect can abstract from individual men the common nature or essence of 'man' without excluding any of the individual, non-common characteristics in each of the men. It is for this reason that the concept 'man' can be predicated of individuals since the essence so abstracted and signified is identified with the individual. It is therefore permissible to say that Socrates is a man.[42]

We have been considering the essence as abstracted by the intellect, either with or without precision. But it should be noted that the essence first really exists in the individual substance or *suppositum* and it is from that *suppositum* that the essence is abstracted by the mind to form the universal concept. Therefore we can speak of an individual essence and a universal essence. Hence, the essence exists in the individual, particular *suppositum* and it also exists in the intellect as a universal concept. Hence an individual man, Socrates, would possess the essence or nature of man. The intellect would abstract this essence or nature and form the concepts 'humanity' (with precision) or 'man' (without precision), which are universals. As a universal in the mind, the

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41 Owens *op. cit*., p. 63.

42 "But the essence can also be abstracted without precision. Abstracted in this second way it excludes nothing in the thing, but contains the individual designation implicitly and indeterminately. So considered it can be predicated of the thing in complete identity, even though it itself focuses the mind's consideration only on the nature that is common and timeless. A man therefore is his own essence when the essence is abstracted without precision. Essence and thing are here identical." Owens *op. cit*., pp. 132-3.

essence or nature can be termed a 'second substance', as opposed to the individual existing thing or *suppositum*, which is a 'first substance.'[43]

The essence, as it exists in the *suppositum* and considered as a part of it, is really distinct from it. Socrates, for example, possesses or has a human nature or humanity as a part of him. This nature is really distinct from him as a *suppositum*. It is the *suppositum* which has existence or being properly speaking and the essence is the principle by which the *suppositum* is constituted, and existence is predicated of the *suppositum* in as much as it exists in it.[44] For St Thomas, nature is an intrinsic principle of motion which in material things consists of prime matter and substantial form.[45] This nature, as we have seen, is sometimes called the essence.[46]

2. Argument for there being Many Different Substances.

We have seen what St Thomas means by a substance. We now have to examine the justification for distinguishing between different kinds of substances. We can say that this justification lies firstly in the different sensible accidents or properties we experience regarding these different substances. Secondly, it lies in the different operations of these different substances which we experience.

Regarding the different sensible accidents or properties we experience, if a thing or substance has specifically diverse properties from another thing, we are justified in saying that one thing is different in kind or species from another. Especially is that the case where the properties are

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[43] Since the essence is a part of the *suppositum* or first substance, it should not be identified with second substance or the universal concept. As Wippel states, the distinction between first substance and second substance: "is only a distinction between an individual (first substance) and a universal (genus or species) of which that individual is a member. The distinction between substance as subject and substance as nature or quiddity, on the other hand, is that which obtains between a whole and a formal part." Wippel, *op. cit.*, p. 207, n. 35.

[44] As St Thomas states: "Now being pertains both to the nature and to the hypostasis; to the hypostasis as to that which has being…and to the nature as to that whereby it has being. For nature is taken after the manner of a form, which is said to be a being because something is by it; as by whiteness a thing is white, and by manhood a thing is man." *ST* III, q. 17, a. 2.

[45] *ST* III, q. 2, a. 1.

[46] Essence can be said to be the same as nature, but considered as a potentiality to being. Cf., Maurer, A. *On Being and Essence* (Toronto: The Pontifical Institute of Medieval Studies, 1968), p. 32, n. 13.

constant, invariable and permanent.[47] For example, we would be justified in saying that water is a different substance than oxygen because the accidents or properties of water are very different from those of oxygen. While water is a liquid which is non-flammable, oxygen is a gas which is flammable. We would also be justified in saying that a man is a different substance than a plant, because a man has very different accidents of quality, such as his shape or form. Further, in these examples, these properties and qualities are constant and on the whole invariable and permanent. Water and oxygen display their properties in a constant and permanent way, in that these properties are always or almost always found with these substances.

As Kane states regarding this matter:

> ...through experience we know that the world consists of many types of substances with sensible properties which are abruptly distinct and clearly different. By means of its sensible properties a changeable being manifests to us the nature of its substance. If there were no intrinsic reason for a substance to have certain accidents, or necessary connection between a substance and any of its accidents, then definite types of substances would not be found in different and changing environments. In nature we do not find the typical human head joined to the body of a dog, but to the human body. The malformations which occur among various organisms are contingent and exceptional, whereas the typical forms recur as a rule through many generations. As a changeable being appears and acts sensibly, so it is. Each definite and stable type in the world requires as its sufficient intrinsic reason a certain kind if substance. As a changeable being is, so is it apt to appear and to act sensibly. The specific nature of an observable substance is manifested to us through its sensible properties or accidents which are abruptly distinct and clearly different from other types. Clearly distinct types, such as a man, a horse and an oak tree, exhibit different properties and activities, which are not merely impressed upon them from without but proceed from within the substances themselves. Therefore, these different types are different in substance, that is, they are individuals of distinct species. Hence changeable being is one specifically, but consists of groups of substances which differ in specific nature.[48]

As Kane points out, we are justified in saying that there are different kinds of substances on account of the very different sensible accidents or properties we experience of these different substances. This warrants us placing these different substances into different species. Further, as

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[47] E. Hugon, *Cursus Philosophiae Thomisticae: II Philosophia Naturalis* (Paris: P. Lethielleux, 1935), pp. 118-120.

[48] W.H. Kane, 'The First Principles of Changeable Being," *The Thomist* (1945), pp. 36-37.

Kane points out, these differences are not one - off but are stable through many generations, giving greater reason to distinguish these substances as truly different in kind.

The different accidents or properties of a substance make manifest the essence or nature of that substance and flow from that nature. That is, there must be an intrinsic reason or some intrinsic principle within the thing which is the reason for it having these properties and not others and for having them in a constant and invariable way.[49] The intellect is able to apprehend that substances are different in kind and have different natures based on the different accidents which manifest the different natures from which these accidents flow.[50] Of all the accidents, that of quality is most obvious to us, and especially the form or shape of the substance, which is a sub – species of quality. As we have seen in the example given above of a man and a plant, the very different outward form or shape of these two living things is most obvious to us and warrants us making the judgement that these substances are different in kind and have different natures.

Apart from the differences in accidents which we perceive in different substances, there are also the differences in operations. In other words, different substances act in different ways which follow from the fact that they are different in kind and possess different natures. As St Thomas states in *SCG*, Book 2, Chapter 73:

> For each thing's proper operation is a consequence and a manifestation of its species. Now, just as the proper operation of an animal is sensation, so the operation proper to man is understanding, as Aristotle says in *Ethics* I. It is therefore necessary that just as this

[49] As Connell also states on this point: "And so we must hold that properties depend upon roots in their subject for their existence; that is where we must look for the ground of their constant association with one another. Stated another way, we are forced to admit that a constant set of properties which inheres in a substance also stems from it, which is to say that the subject is not only passively related to the properties but actively as well; it is active not in the sense that the substance is an agent that acts to produce the property, but in the sense that the substance has *an actual root* of the property within it. The determinate existence and character of a property can depend upon only a determinate interior of the substance, not on an interior that is featureless or bare. From this we may conclude that substances are many in kind, for different sets of properties imply different sets of roots and so different interiors." R.J. Connell. *Substance and Modern Science* (Houston, TX: Center for Thomistic Studies, 1988), p. 92.

[50] The judgement that substances are different in kind and have different natures is an act of the intellect. However, we can say that the substances are sensible *per accidens.* For a fuller discussion of this refer to Chapter 2, Section 2.

> individual is an animal because it possesses the power of sensation, as Aristotle remarks in *De anima* II, so is he a man in virtue of that by which he understands.[51]

St Thomas is here arguing that the different operations of things which we experience are a consequence and manifestation of the fact that they are different kinds or species of things. The Scholastic dictum "*agere sequitur esse*" expresses this well, that is, that a thing's mode of acting or operating flows from its particular way of being. An inanimate thing, such as a mineral, has different operations from that of an animate thing. In the genus of animate things, plants have only vegetal operations, animals have vegetal and sentient operations, and men have vegetal, sentient and rational operations. Because we experience these very different operations and ways of acting we are justified in making the judgement that the things which exhibit these different operations are indeed different substances with different natures.[52]

3. Examples and Evidence of Substantial Change.

Given what has been said thus far, that different kinds of substances exist, we next need to examine whether substantial changes occur. That is, do we experience substances changing into other substances? We could say that we do in fact experience such changes. We may put forward the following examples of substantial changes: The generation of a living thing, such as the generation of a horse from the reproductive materials of its parents; the death of a living thing, such as a man dying and his now lifeless body becoming a corpse; the change of food into the flesh of a living body, as occurs in the process of nutrition; the change which occurs in chemical reactions, such as when oxygen and hydrogen combine to give water; and the burning of wood to give ash.

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[51] The English translations of the *Summa Contra Gentiles* are taken from *On the Truth of the Catholic Faith*, trans. A.C. Pegis *et al*, http://dhspriory.org/thomas/english/ContraGentiles.htm.

[52] Connell states the following: "When we discussed whether compounds are aggregates, we argued that a characteristic set of properties is rooted within the substance itself. The substance is not just a passive carrier of the properties, it is also the causal source from which the properties stem. But if properties are rooted in substance, then activities or operations are even more so and for the same reason: operations cannot be directly connected to other operations and properties apart from a substance." *Op. cit.*, p. 115.

The generation of a living thing is one of the most cited examples St Thomas gives of substantial change.[53] In the case of the generation of an animal, the sperm and ovum, as individual and independent substances, combine and are changed so that a new substance is generated. We can say that the sperm and ovum are different substances with very different properties and operations from the zygote that is generated.

The death of a living thing can also be said to be an example of substantial change. The corpse of a man can be said to be a different substance than a living man since the operations of a living man cannot be found in a corpse, such as thinking and self locomotion or movement. Such a change, however, may not be at first sight apparent, since the corpse immediately upon death may have a very similar appearance to a living man.

In the case of nutrition, through the process of digestion, a piece of food, such as an apple, which is an independent substance, changes into the living thing which ingests it. The properties of an apple and that of a man who ingests it are very different and therefore it could be claimed that a substantial change has occurred.

Finally, it can be said that chemical reactions result in the generation of new substances. For example, when oxygen and hydrogen combine to produce water, two flammable gases combine to give a non flammable liquid. The properties of these two gases and those of water are so different that we can be said to be justified in saying that a substantial change has occurred.

The general argument for saying that a substantial change has occurred in the above instances can be set out in the following figure one syllogism:

> When a new substance results which has specifically different properties than the previous substance there is a substantial change.
>
> Some changes are such that a new substance results which has specifically different properties than the previous substance.
>
> Therefore some changes are substantial changes.

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53 *Cf.*, *In Metaphys*., Bk. 7, *lectio* 6; *DPN*, ch.1; *ST* I, q. 118, a. 1.

The major premise of the argument follows from the definition of a substantial change as one in which one substance changes into a new substance. The evidence for such a change is that the properties or accidents of the new substance are specifically different from the previous substance. This justifies us in saying that the new substance is different in kind or species from the previous substance, since the properties are derived from the substance and follow from it. In fact, as stated above, these different properties are the result of some intrinsic principle in the thing which causes it to have these properties.

The proof of the minor premise is that we do indeed experience changes in which new substances result which have specifically different properties. The examples given above can be put forward as examples of such changes. For example, the change from wood to ash after the application of heat is a change in which one substance, wood, changes into another substance ash, which has very different properties than the wood. Similarly, the change from the substances of oxygen and hydrogen, which are flammable gaseous substances, to that of water, which is a non flammable liquid, is also an example of such a change, since the fixed and permanent properties of the two gases are not found in water.

4. Accidental Change Compared with Substantial Change.

We have thus far been considering what is meant by substantial change, being a change in which one substance changes into another substance. The evidence of such a change is that the new substance has specifically different properties or accidents than the previous substance has, and that since these properties are caused by the substance and manifest it, a change in these specific properties indicates a change in substance.

In order for us to examine more fully substantial change, we may compare it with accidental change. An accidental change is one in which the accidents of a thing change without there being a change in the substance. Hence accidental change is a less radical and fundamental change than is a substantial change. In the Commentary on the *Physics*, Book 1, Lecture 12 St Thomas states the following:

> He says, therefore, first that since 'to come to be' is used in many ways, 'to come to be simply' [*fieri simpliciter*] is said only of the coming to be of substances, whereas other things are said to come to be accidentally [*fieri secundum quid*] . This is so because 'to come to be' implies the beginning of existing. Therefore, in order for something to come to be simply, it is required that it previously will not have been simply, which happens in those things which come to be substantially. For when a man comes to be, he not only previously was not a man, but it is true to say that he simply was not. When, however, a man becomes white, it is not true to say that he previously was not, but that he previously was not such.[54]

St Thomas is here making a distinction between a change which is a substantial change, which he says is to come to be simply (*fieri simpliciter*) and an accidental change, which he says is to come to be in a qualified way (*fieri secundum quid*). The example he gives helps to elucidate the distinction. He states that when a man comes to exist this is an example of a substantial change. Here we see a change from the reproductive materials of his parents to a new human person. At one point in time a man does not exist; only the reproductive materials of his parents exist. At another point in time a man simply exists.

St Thomas compares this example of substantial change with an example of an accidental change. In this example, if a man changes colour, such that, for example his face should turn white due to illness or fright, we could say that such a change is accidental or incidental because the man remains the same man throughout the change, and only the colour of his skin changes. Colour would be an example of the accident of quality. The same substance, the man, remains throughout the change, while only the accident of quality, specifically the accident of colour, is changed.[55] We could multiply many other examples to illustrate the same point. A man may change his weight, increasing from 70kg to 80kg, whilst remaining the same man or substance. Similarly, he may change his posture, from sitting to standing or change the place in which he is located, from being

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[54] *In Phys*., Bk. 1, *lectio* 12, n. 107. (The English translations of the *Commentaria in Octo Libros Physicorum* are from the *Commentary on Aristotle's Physics*, trans. R.J. Blackwell *et al*, http://dhspriory.org/thomas/english/Physics.htm.)

[55] St Thomas in *Quod*., IX, q. 3 ad 2 defines an accident as follows: "accidens vero est res, cuius naturae debetur esse in alio" (a thing to whose nature it belongs to exist in something else). A substance, on the contrary, is defined as follows: "Substantia est res cuius naturae debetur esse non in alio" (A substance is a thing to whose nature it belongs not to exist in another). *Cf. ST* III, q. 77, a. 1. Hence we may regard an accident as something which has existence only in a substance as its subject, in that it can have no existence apart from a substance. We may describe an accident as a modification of a substance. The substance is then the subject of such modifications.

in Sydney to being in Melbourne. Neither of these changes would effect a change in substance, since the same man remains throughout the change.

St Thomas uses the term *generatio* or generation to refer to the coming to be of a thing. While both substantial and accidental changes can be called types of generation, he makes a distinction by saying that substantial change is *generatio simpliciter* whilst accidental change is *generatio secundum quid*.[56] For a man to be generated or come into being is for a new substance to come into existence, whereas for a man to change his colour is to come to be only in a qualified sense, namely the coming to be only of the accident of colour.

Apart from generation as substantial change, St Thomas states that corruption is also a substantial change. In the *DPN*, Chapter 1 he states:

> There is a twofold corruption opposed to this twofold generation: *simpliciter* and *secundum quid*. Generation and corruption *simpliciter* are only in the genus of substance, but generation and corruption *secundum quid* are in all the other genera. Also, because generation is a change from non-existence to existence, contrarily, corruption should be from existence to non-existence. However, generation does not take place from just any non-being, but from the non-being which is being in potency; for example a statue comes to be from bronze which is a statue in potency and not in act.[57]

Corruptio simpliciter would be the going out of existence of a substance. Hence St Thomas states that it is the change from existence to non-existence, that is, from the existence of a substance to its non-existence. *Corruptio secundum quid* would be the going out of existence of an accident, with the subject of that accident, namely a substance, remaining. If an example of *generatio simplex* or *simpliciter* is that of the generation of a living thing from the reproductive materials of its parents, an example of a *corruptio simpliciter* would be the death of a living thing. The death of a man would lead to a corpse, and in turn there would be further corruption of the corpse into other

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[56] The distinction between *generatio simpliciter* and *generatio secundum quid* is also made in *In Phys.*, Bk. 5, *lectio* 2.

[57] The English translations of the *De Principiis Naturae* are taken from *The Principles of Nature to Brother Sylvester*, trans. R.A.Kocourek, http://dhspriory.org/thomas/DePrincNaturae.htm.

substances over time. An example of a *corruptio secundum quid* would be the loss of the whiteness of a man, if for example he became white due to illness or fright and returned to normal colour after he recovered.

St Thomas also notes that there is a mutual relationship between generation and corruption. He states: "generatio unius [est] corruptio alterius" that is, the generation of one thing is the corruption of another.[58] This principle follows from the definitions of generation and corruption, since in both cases a new substance comes into existence and the original substance ceases to exist. The generation of a man from the reproductive materials of his parents occurs because the reproductive materials cease to exist and therefore undergo corruption. Likewise, the generation of a corpse and the other substances which result after its decay occurs because the man ceases to exist and therefore undergoes corruption.

5. Possible Explanations of Substantial Change.

Having examined in a general way what St Thomas means by substantial change, and distinguished this from merely accidental change, we now examine the possible explanations for such changes. We can say there are three possible explanations to explain substantial changes, namely annihilation/ creation, transubstantiation and a substratum theory.

5.1. Annihilation / Creation.

According to this explanation, when one substance changes into another substance, the first substance is annihilated such that it goes out of existence, and a new substance comes into being from nothing. To come into being from nothing or *ex nihilo* is what is meant by the term creation. Since the new substance comes into being *ex nihilo*, there is also absolutely nothing in the new substance from the previous substance, that is, there is a complete discontinuity between the two substances.

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[58] *ST* I, q. 72 ad 5; *ST* I-II, q. 113, a. 6 ad 2.

In the Commentary on the *Physics,* Book 1, Lecture 14 St Thomas examines the view of some ancient philosophers who denied the possibility of substantial change. He states their reason for this as follows:

> The weakness of their understanding forced them to hold this position because they did not know how to resolve the following argument, according to which it seemed to be proven that being is not generated. If being comes to be, it comes to be either from being or from non-being. And each of these seems to be impossible, i.e., that being comes to be from being or that it comes to be from non-being. It is clearly impossible for something to come to be from being, because that which is does not come to be, for nothing is before it comes to be. And being already is, hence it does not come to be. It is also clearly impossible for something to come to be from non-being, for it is always necessary that there be a subject for that which comes to be, as was shown above. From nothing, nothing comes to be. And from this it was concluded that there is neither generation nor corruption of being.

St Thomas argues firstly that a new substance cannot exist before it comes into being, for nothing exists before it comes into being. Also, a new substance cannot come into being from nothing, and as proof for this he invokes the principle *ex nihilo nihil fit*, that is, that from nothing, nothing comes to be. Rather, there is a need for some subject from which something comes to be. Applying this principle, we could say that if the first substance is annihilated, then it would be impossible for a new substance to be generated *ex nihilo*.

This principle of *ex nihilo nihil fit*, however, only applies in the natural order. Hence elsewhere he will qualify this principle by saying that "per naturam ex nihilo nihil fit."[59] In the natural order, a particular agent cannot bring something into being from nothing. However God is capable of bringing something into being from nothing, that is, God alone is capable of creation. St Thomas defines creation as "the emanation of all being from the universal cause, which is God."[60] Since God is the universal cause of all being, there does not need to be any pre-existing subject which is pre-supposed from which He creates. He goes on to state in *ST* I, q. 45, a. 5:

> ...to create can be the action of God alone. For the more universal effects must be reduced to the more universal and prior causes. Now among all effects the most universal is being itself: and hence it must be the proper effect of the first and most universal cause, and that

[59] *De Potentia* q. 3, a. 8.

[60] *ST* I, q. 45, a. 1.

> is God. Hence also it is said (De Causis prop., iii) that "neither intelligence nor the soul gives us being, except inasmuch as it works by divine operation." Now to produce being absolutely, not as this or that being, belongs to creation. Hence it is manifest that creation is the proper act of God alone.

This being the case, the annihilation / creation explanation of substantial change would require the creative action of God at each instance of such a change. This would deny the existence of true secondary causes to bring about such changes, and would imply occasionalism, that is, on the occasion of certain secondary causes acting to bring about a substantial change, God would first annihilate the original substance and then create the new substance.

5.2. Transubstantiation.

A second possible explanation of most substantial changes is that of transubstantiation. This is the term used by St Thomas to refer to the change of the bread and wine at Mass into the Body and Blood of Christ. In *ST* III, q. 75, a. 4 St Thomas examines the question whether bread can indeed be converted into the Body of Christ. He begins by saying that such a change is not like natural changes but rather entirely supernatural and can only be effected by God's power. He then gives the following reason for this:

> For it is evident that every agent acts according as it is in act. But every created agent is limited in its act, as being of a determinate genus and species: and consequently the action of every created agent bears upon some determinate act. Now the determination of everything in actual existence comes from its form. Consequently, no natural or created agent can act except by changing the form in something; and on this account every change made according to nature's laws is a formal change. But God is infinite act, as stated in the First Part (Q.7, A. 1; Q. 26, a. 2); hence His action extends to the whole nature of being. Therefore He can work not only formal conversion, so that diverse forms succeed each other in the same subject; but also the change of all being, so that, to wit, the whole substance of one thing be changed into the whole substance of another. And this is done by Divine power in this sacrament; for the whole substance of the bread is changed into the whole substance of Christ's body, and the whole substance of the wine into the whole substance of Christ's blood. Hence this is not a formal, but a substantial conversion; nor is it a kind of natural movement: but, with a name of its own, it can be called *transubstantiation*.

His argument is that natural or created agents can only act according to the substantial form they have, which determines their species or kind. This being the case, it can only act by changing the

form in something, since it only acts by virtue of its own form. Therefore natural changes are "formal changes" (conversio formalis). This is a type of change in which there is a common subject or matter of the previous substance and the new substance, with only a change of the form in that subject. This will fall within the third explanation of substantial change which will be discussed below.

However St Thomas states that transubstantiation differs from natural changes because in such changes there is a change of the "whole substance" (tota substantia) of one thing into the whole substance of the other, namely, the whole substance of bread is changed into the whole substance of the Body of Christ. There is therefore not only a change in the form in some common subject or matter, but a change of the whole substance, namely of the matter and the form. Hence this type of change is most properly called a "substantial conversion" (conversio substantialis) and not a formal conversion (conversio formalis). By "whole substance" St Thomas here means substance in the first sense discussed above, that is, a *hoc aliquid* or *suppositum*, which consists of the composite of prime matter and substantial form.

St Thomas states that transubstantiation is only possible by divine power, which is infinite, such power being necessary to change the whole substance or essence of a thing. However, since natural substantial changes involve only a change in the form, which is a constituent of the essence and not the whole essence, such changes can be effected by natural agents.

We notice also that both transubstantiation and annihilation/ creation are similar in that in both of these explanations for substantial change there is no common subject or matter between the previous substance and the new substance. However in the case of natural substantial changes or transmutations there is a common subject or matter belonging to both the previous and the new substances.[61] In *ST* III, q. 75, a. 8 St Thomas does however state that transubstantiation and natural transmutations have two things in common:

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[61] *ST* III, q. 75, a. 8.

> Again, this conversion has something in common with natural transmutation in two respects, although not in the same fashion. First of all because in both, one of the extremes passes into the other, as bread into Christ's body, and air into fire; whereas non-being is not converted into being. But this comes to pass differently on the one side and on the other; for in this sacrament the whole substance of the bread passes into the whole body of Christ; whereas in natural transmutation the matter of the one receives the form of the other, the previous form being laid aside. Secondly, they have this in common, that on both sides something remains the same; whereas this does not happen in creation: yet differently; for the same matter or subject remains in natural transmutation; whereas in this sacrament the same accidents remain.

The first similarity is that in both transubstantiation and natural transmutation one extreme, namely a substance, passes into another (transit in aliud). That is, in both cases there is a term from which the change occurs and which changes or converts into another term. This however is not the case in creation, since non-being does not pass over into being. This is because non-being simply does not exist and cannot be a term which passes into or converts to something else. In the case of creation, nothing is presupposed to the divine action, unlike natural changes.[62] Hence St Thomas states that creation is not change properly speaking. As he states in *ST* I, q. 45, a. 3 ad 2:

> Creation is not change, except according to a mode of understanding. For change means that the same something should be different now from what it was previously. Sometimes, indeed, the same actual thing is different now from what it was before, as in motion according to quantity, quality and place; but sometimes it is the same being only in potentiality, as in substantial change, the subject of which is matter. But in creation, by which the whole substance of a thing is produced, the same thing can be taken as different now and before only according to our way of understanding, so that a thing is understood as first not existing at all, and afterwards as existing.

St Thomas states that change requires that the same something be different now from what it was previously. In the case of accidental change, this same something is the substance, with only a change in the accidents such as quantity, quality and place. In the case of substantial change this same subject is prime matter, which is being in potentiality. In the case of creation however there is no same something which is different now than it was previously because there is nothing presupposed to the creative action since it is *ex nihilo*. We can only speak of creation as a change

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[62] *Cf.*, *ST* I, q. 45, a. 2.

according to our understanding (secundum intellectum). St Thomas will say elsewhere that creation in the creature is only a certain relation to the Creator as to the principle of its being.[63]

The second similarity noted above between transubstantiation and natural transmutations is that in both transubstantiation and natural transmutations something remains the same. In the case of the former it is the accidents of bread and wine which remain the same, whilst in the latter it is the subject or matter which is common to both substances. In transubstantiation there is no common subject or matter since the whole substance, both matter and form, is changed. Only the accidents remain the same and therefore there is a certain similarity with natural transmutations. The accidents which remain the same therefore have a certain resemblance to a common subject.

However, St Thomas does state elsewhere that there is also something else which is common to the matter and the form of the bread and wine and of the Body and Blood of Christ, namely that they have in common the "nature of being [natura entis]."[64] God, who is the author of being, is able to change whatever there is of being in one thing into that of another. The bread, in so far as it is a being, can be said to have an entitative potency or a potency on the level of being to become the Body of Christ, even though it lacks a natural potency. This entitative potency could be referred to as an obediential potency. However, because there is a transition from this entitative or obediential potency of bread to its actualisation as the Body of Christ, the essence of change is retained, namely that change is the transition from potency to act. Given the common accidents and the common nature of being between the bread and the Body of Christ, substantial change could be used analogously when applied to transubstantiation.[65]

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63 *ST* I, q. 45, a. 3.

64 *ST* III, q. 75, a. 4 ad 3.

65 For a detailed examination of the problem of the lack of a common subject in transubstantiation see S. L. Brock "St Thomas and the Eucharistic Conversion" *The Thomist* 65 (2001), pp. 529-65.

5.3. Substratum Theory.

We have examined above two possible explanations of substantial change. However we have seen that St Thomas argues that annihilation / creation and transubstantiation can only be effected by the divine power of God and do not occur naturally. Only natural transmutations are brought about by natural agents and these are the substantial changes which interest us since they include most of the substantial changes which we experience. As we have seen, the explanation St Thomas gives for such changes is that there is some subject or matter which is common to the previous substance and the new substance, and that the change can be explained through a change in the form in this matter, with one form replacing another in this common matter. This is why he refers to this type of change as a "formal change."

It is because this explanation relies on the notion of a common subject or matter that we could call this type of explanation of substantial change a 'substratum theory', in that it holds that there is a common substratum or subject for the forms which change in it. This common substratum is not necessary in the other two possible explanations of substantial change. We can say that the term 'substratum' simply refers to something which is common to both substances or to some common continuant in the change.

However, there are several possible variants of the substratum theory. We could generally divide them into hylomorphic and non-hylomorphic theories. Hylomorphic theories rely on the concepts of matter and form in their explanation of substantial change, whilst non-hylomorphic theories do not. St Thomas' explanation would be called hylomorphic, and the terms he uses for such changes are generation and corruption. In subsequent chapters we shall examine St Thomas' hylomorphic explanation in more detail and also defend his hylomorphic version of the substratum theory.

Chapter 2: The Hylomorphic Explanation and the Three Principles of Change.

In the previous chapter we examined three possible explanations for substantial changes given by St Thomas. The explanation for natural substantial changes, which according to St Thomas are the most common, was termed a substratum theory, in that it held that in such natural changes there is some matter or subject which is common to the previous substance and the new substance. While this common matter remains throughout the change, there is a change in the form in this matter, such that St Thomas refers to this type of change as a "formal change." Since this explanation involves both matter and form, this type of substratum theory may be called hylomorphic. In this chapter we propose to examine St Thomas' hylomorphic explanation of substantial change in more detail, especially examining the three principles of change, namely prime matter, substantial form and privation.

1. Two Types of Change, Accidental and Substantial.

We have already seen in Chapter 1 that St Thomas makes a distinction between accidental changes and substantial changes. An accidental change is one in which the same substance remains throughout the change, there being only a change in the accidents of the substance. This type of change is also referred to as a type of generation or coming into being of a thing, namely a *fieri secundum quid*. This type of generation is distinguished from a substantial change, which is a generation of a new substance and is referred to as a *fieri simpliciter*.[66]

In the example given of a man becoming white, the same man, a substance, remains throughout this change, with only a change in the accident of quality, specifically that of colour. Therefore there is only a *fieri secundum quid* in that a man becomes white, but does not simply become a man. However a man coming to exist would be a *fieri simpliciter* because it refers to the man, a substance, coming to exist rather than exist in a certain way or as such.

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[66] *In Phys*., Bk. 1, *lectio* 12.

2. The Three Intrinsic Principles of Change: Accidental Change.

Having made this distinction between accidental and substantial change, we can begin to give some explanation of how such changes occur. The order of proceeding in this undertaking adopted by Aristotle and followed by St Thomas is to begin by examining accidental changes. This is because the principles of change are more easily seen in accidental changes.[67] In the *Physics*, Book 1, Chapter 7 Aristotle gives the example of a *fieri secundum quid*, namely a non-musical man becoming musical. For example, a man may wish to acquire the skill of playing the piano, but before doing so he simply lacks that skill. In that sense he is non-musical. When he learns the skill of playing he is musical.[68] Commenting on this text St Thomas states:

> And since in any production there is that at which the coming to be is terminated and that to which the coming to be is attributed, the latter of which is twofold, i.e., the subject and the opposite, it is then clear that there are three things in any coming to be, namely, the subject, the terminus of the production, and the opposite of this terminus. Thus when a man becomes musical, the opposite is the non-musical, the subject is the man, and musical is the terminus of the production. And in like manner, shapelessness and lack of figure and lack of order are opposites, while bronze and gold and stone are subjects in artificial productions.[69]

St Thomas, following Aristotle, argues that an accidental change, such as a non-musical man becoming musical, requires three things, namely the subject and two opposites. In our example, the man would be the subject, and the two opposites would be non-musical and musical. St Thomas refers to the opposites as termini of the change, such that one terminus of the change would be the man as non-musical and the other terminus would be the man as musical. We could refer to the terminus at the end of the change as the *terminus ad quem* and the terminus at the beginning of the

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[67] We may add here a distinction St Thomas makes between a principle and a cause. Principle, taken in a general way, means something first from which something takes its origin. He states that in general a principle means "everything from which a change begins." All causes are principles but a cause has a more restricted meaning, namely "a cause is that from which the existence of another follows." That is, in the case of a cause, the 'something first' contributes something to the existence of the posterior. Matter and form are principles which are also causes, while privation is a principle but not a cause, except *per accidens*. *Cf*., *DPN*, ch. 3.

[68] 'Musical' can be said to refer to the skill of being musical, as opposed to the simple playing of a musical instrument, since someone may be able to play an instrument without having the skill. Further, 'non-musical' refers to the absence of the skill of playing but not the absence of the ability to play, in that a man has a natural ability or power to acquire the musical skill.

[69] *In Phys*., Bk.1, *lectio* 12, n. 109.

change as the *terminus a quo*. By *terminus ad quem* is meant the term to which the change proceeds or in which it terminates, whilst the *terminus a quo* is the term from which the change proceeds or begins. Hence, the *terminus ad quem* would be the man as musical, in that the change terminates in a man who has now acquired musical skill, whilst the *terminus a quo* would be the man as non-musical, since he begins by not having the musical skill. In the other example given, some metal or stone which is used to carve a statue is first without the form or shape of the statue and then acquires the form of a statue. In this example, the stone would be the subject, the stone as lacking the form of a statue or the stone as non-formed would be the *terminus a quo*, and the stone as possessing the form of the statue or the stone as formed would be the *terminus ad quem*.

We notice that in this analysis of accidental change, there is some subject or substratum which underlies the two opposites or termini of the change. St Thomas notes that one opposite does not change into another opposite. Non-musical does not in fact become musical, as was supposed by some of the ancient philosophers. Rather, it is a subject, man, which is non-musical, which becomes musical. As he states:

> Rather each of the contraries changes some third thing which is the subject of both of the contraries. For heat does not make coldness itself to be hot, but makes the subject of coldness to be hot. And conversely, coldness does not make heat itself to be cold, but makes the subject of heat to be cold. Therefore, in order that other things can come to be from the contraries, it seems that it is necessary to posit some third thing which will be the subject of the contraries.[70]

Therefore in order that we can say that there is a change, it is necessary that there be some common subject which has changed from one opposite to another opposite. As St Thomas states elsewhere: "For change means that the same something should be different now from what it was previously."[71]

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[70] *In Phys.*, Bk. 1, *lectio* 11, n. 90.

[71] *ST* I, q. 45, a. 2. As we have seen, this is why creation is not a change, since there is no common subject that undergoes the change between two opposites, and why transubstantiation is not a natural change since both prime matter and substantial form change, such that there is no common substratum of the change which is in the substance, only the accidents remaining the same.

The common subject of an accidental change is a substance.[72] As we have seen in Chapter 1, St Thomas defines a substance as "...a thing to whose quiddity it belongs to exist not in something." [73] A substance is a thing which exists in itself or which subsists, as opposed to an accident, which exists only in a substance and cannot subsist. In the examples already considered, a man is the subject of the opposites of musical and non-musical, and the stone would be the subject of the opposites of the absence of the form or figure of a statue and the possession of that form or figure. The subject, as a substance or *suppositum*, remains the same throughout the change, with only a change in the accidents inhering in it, such as the qualities of being musical or of shape or figure.

2.1. Excursus: Our Knowledge of Substance and Accidents.

At this point it would be useful to make a brief excursus in order to examine how we come to attain knowledge of substance and accidents. We have said that we can come to understand, through accidental change, that a substance remains the same whilst the accidents change. How our intellect comes to apprehend the substance is together with and through the accidents. This is because the accidents reveal and manifest the substance to the intellect as being their source and basis.

The intellect first apprehends the *whole being*, a composite of substance and accidents, without clearly distinguishing the substance from the accidents. It apprehends a particular unified whole, a particular shaped, coloured and extended being. We could say therefore that there is, at first, a confused and indistinct knowledge of the substance in so far as the intellect grasps the whole being, which is a composite of substance and accidents. It is only afterwards, through its experience of changes in certain phenomena, that the intellect comes to understand that there is a foundation and basis of such changing phenomena which is unchanging and which underlie it. That

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[72] By 'substance' here we refer to the first sense of substance, namely substance understood as *suppositum*. The subject of inhesion of accidents is the *suppositum* because only this has existence simply and is a *hoc aliquid*. *Cf*. A. Woodbury, *Metaphysics - Ontology*, unpublished manuscript, p. 378.

[73] *De Potentia*, q. 7, a. 3.

is, only afterwards does it come to a more explicit understanding of substance and accident, which understanding before was implicit. As Woodbury states:

> But by this apprehension the intellect knows the whole being, without yet distinguishing that of it which is the substance, from that of it which consists in accidents; in other words, the intellect, though indeed it already knows the substance, nevertheless knows it only as confused with the phenomena. But afterwards, the intellect distinguishes the accidents (e.g. the shape, colour etc) from the subject which is affected by these phenomena. This distinction is obtained chiefly from a deduction regarding the changes which occur in these phenomena according as this whole is changed according to its shape, colour, size, hardness, heat etc. For these changes are not understandable unless it be admitted that there is underlying them some permanent subject, which is the substance. For together this whole abides as regards what is fundamental in it, but is changed as regards these phenomena. Wherefore the intellect understands these phenomena as affections which arise and perish in another as in a subject abiding beneath these changes. Which signifies that the intellect distinguishes these phenomena from their subject as accidents from the substance, and acquires together the distinct concepts of substance and accidents (e.g. of plasticine and the shape of plasticine, of an apple and the colour of an apple, of water and the heat of water) and immediately knows the substance and the accidents to be in the real order.[74]

While a more explicit distinction can be said to be deduced by the intellect through the experience of changes in the accidents, it can be said that the distinction between substance and accidents is already attained at the level of simple apprehension, that is, before the stage of deduction which is at the level of reasoning. The intellect immediately grasps the notion of substance as something which has existence *per se*, and that this has as its opposite being which is not *per se*. That is, in the initial grasp of the whole being of a thing, the concept of being is understood as complex and not simple, in that the intellect immediately apprehends being *per se* and not *per se*, that is, it immediately grasps the concepts of substance and accident as the first division of being. It is only later, however, especially with the observation of accidental changes that a more explicit

[74] A. Woodbury. *Metaphysics*, p. 334. Also as Alvira states: "In the first place, *the substance-accident composite is known through the intelligence on the basis of the data provided by the senses*. Sense knowledge always refers directly to the accidents of a thing; in contrast, the intelligence grasps, through the accidents, their source and basis, which is the substance. This, of course, is possible because the accidents are not like a veil that hides the substance: on the contrary, the accidents reveal the substance. Since its proper object is *being*, the intellect is not limited to grasping the more peripheral aspects of things, so to speak, but knows "everything that is", i.e., the entire *being* with all its real characteristics. Thus, the intellect perceives *being* as a whole, composed of substance and accidents and which is not merely the result of putting together various aspects of the thing. The distinction between substance and accidents can only be grasped through the intellect. It cannot be obtained through the external or internal senses because these faculties perceive only the accidents." T. Alvira, L. Clavell, T. Melendo. *Metaphysics* (Manila: Sinag-Tala Publishes, Inc., 1991), p. 56.

knowledge of the distinction between substance and accident is made through a deduction at the level of reasoning.

The explicit distinction between substance and accidents is only grasped by the intellect and not by the senses, either external or internal. This is because the senses have as their proper or *per se* object the accidents or phenomena and not the substance. [75] The intellect however not only grasps the real distinction between substance and accidents, but also comes to know the nature or essence of the substance as revealed and manifested by the accidents. The being of the accidents depends on the being of the substance and can be said to be caused by the substance. Therefore the accidents can be said to manifest the nature or essence of the substance which is the cause of these accidents.

St Thomas distinguishes at least three kinds of accidents, which can be referred to as proper accidents, inseparable accidents and separable accidents. Proper accidents are those caused by the intrinsic principles of a thing's species. These are accidents which belong to the species or kind and flow from the essence of a thing and therefore can be said to be properties common to all individuals of the same species. Inseparable accidents are also caused from the intrinsic principles of an individual but only in so far as they follow from its individual principles. These accidents follow from the specific way the principles are present in an individual. The separable accidents are more transient accidents which need not be present in an individual.[76] St Thomas teaches that

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[75] The substance can be said to be *per accidens* sensible. In sensing certain attributes or accidents of a man, we can say that the man himself is sensed, but only *per accidens* and not properly speaking. What is sensed *per se* are the proper and common sensibles, such as his colour, shape etc. The intellect apprehends that there is a man and this apprehension is rooted in what is sensible *per accidens*. *Cf*., *In de Anima*, Bk. 2, ch. 13. As Dewan notes regarding our knowledge of substances: "...*substantial natures* and *substantial being* are not *objects of sense*, are not sensible. Or rather, they are only "sensible" if this word is used in a *wide* sense, to include *what immediately occurs* to the *intelligence* on the basis of experience of sensible things in sense cognition. We *see* and *hear* that-which-is-colored and that-which-is-sounding, a particular sensible unity. But the *substance* 'dawns on' the mind, the intellect, because of such sensible experience." *Op. cit*., pp. 117-118.

[76] *Cf*., *In Sent*., Bk. 1, d. 17, q. 1, a. 2, ad 2; *De Anima*, q. 12, ad 7. Alvira states that we can distinguish four groups of accidents according their origin: "a) *accidents which belong to the species*: these are accidents which spring from the specific principles of the essence of a thing, and are therefore properties common to all individuals of the same species (e.g., the shape of a horse, the powers of understanding and willing in man); b) *accidents which are inseparable from each individual*: these accidents stem from the specific way the essence is present in a given individual, for instance, being tall or short, being fair or dark-complexioned, being a man or a woman—these are all individual characteristics which have a permanent basis in their subject; c) *accidents which are separable from each individual*: these accidents, such as being seated or

all these accidents can be said to be caused by the essence of the substance, and hence by its intrinsic principles. Especially is this the case with regard to the proper accidents, which flow more immediately from the essence, and to a lesser degree also with regard to the inseparable accidents.[77]

The fact that we experience the proper accidents, which belong to a species, as remaining during accidental changes justifies the apprehension that the same substance with its essence also remains as underlying and causing these accidents. If such accidents are experienced as having changed, we would apprehend that there has been a change also in the substance. We should keep in mind that the intellect apprehends at the same time and immediately *both* the substance and the accidents as a whole being, and not simply the accidents.

If we continue with the example given above, the same particular man, as a substance, remains after the change from non-musical to musical, and we are justified in saying this because the proper accidents belonging to the species 'man' remain throughout the change, although the quality of 'musical' (a separable accident) changes, thereby enabling the apprehension that the same

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standing, walking or studying, stem from the internal principles of their subject, but they affect it only in a transient manner; d) *accidents which stem from an external agent*: some of these may be violent, that is, they are imposed upon the subject against the normal tendency of its nature (e.g., a viral disease); others, in contrast, may actually be beneficial to the subject which receives them (e.g., instruction received from another person)." *Op. cit*., pp. 48-49.

[77] As Wippel states: "In sum, we have seen that throughout his career Thomas holds that a substance serves as a receiving or material cause for the accidents which inhere in it. Hence the subject is in potency to such accidents, and the accidents may be regarded as its secondary acts or secondary forms. In itself this poses no great difficulty. But Thomas refers to certain accidents as being "created" or "caused" from or by the principles of their substantial subject, or as being "educed" or "flowing from" or "resulting from" the same. This is repeatedly said to be true of proper accidents. i.e., those which follow from a thing's essential or specific principles, though some texts suggest that it applies to other accidents which follow from a things individual principles—but only, I would suggest, if those accidents are inseparable from that individual." And further on he continues: "As regards the kind of accidents which necessarily follow from the essence of a given substance, once that substance is brought into being by its extrinsic efficient cause, its proper accidents are also automatically given. The substantial subject need not be prior to them in time, but only in nature. But since Thomas regards them, and especially the powers of the soul, as distinct from the essence of the substance or soul, he holds that the subject may be regarded as their proximate cause, and even as their proximate active or efficient cause in some sense. To view the subject or soul as a mere receiving cause of such accidents is not sufficient. And if the subject or soul serves as a proximate efficient cause for the coming into being of such accidents or powers, it fulfils this same function in accounting for their continuing existence. Perhaps we can best express this by saying that the subject or soul exercises a kind of instrumental efficient causality regarding such proper accidents. As Thomas sees things, they, like their substantial subject, will continue to depend on some extrinsic principal efficient cause as well, as least upon God, for their continuing existence." *Op. cit*., pp. 274-5.

substance remains. The man would retain the proper accidents of his operative powers of understanding and willing, as well as the figure of a man, while changing in the separable accident of the habit of being musical. Similarly in the case of the stone, such as marble, the proper accidents belonging to the species 'marble' remain during the change, such as its colour and hardness, with a change in the quality of shape or form, thereby enabling the apprehension that the same substance remains.[78]

In addition to the apprehension of substance through our experience of accidental changes in things other than ourselves, we can also argue that we can also come to apprehend substance as really distinct from accidents through our experience of our own internal acts, such as our acts of thinking and willing, as well as passing emotions and feelings, such as of anger or fear. The intellect at first apprehends, in a confused and general way, the whole being of these transient internal acts and the self or ego as the basis and foundation of such acts. Later, the intellect then comes to apprehend that there is a permanent self or ego as the subject of such transient acts and therefore comes to understand these as accidents inhering in it.[79]

2.2. Some Doctrines Denying the Existence of Substance.

We have argued from both our experience of accidental changes in things and our experience of changes in our internal psychic acts that there exists a real distinction between substance and accidents and that accidents inhere in substance as in their subject of inhesion. We can briefly consider two empiricist arguments denying the existence of substance. Empiricists, since they

[78] We may say that it is the accident of quality which determines a substance to be of this or that sort or kind, and this accident arises from the essence of the substance, or more precisely from its form. Therefore each species of substance has a certain set of qualities, such as definite shape or figure, colour and operative powers. As Alvira states: "By virtue of its essence, each substance has its own way of being (it is of this or that kind). By virtue of their specific essences diverse substances also possess, over and above these primary or basic determining elements, certain accidental characteristics which complete their distinguishing features... Quality *is an accident which intrinsically affects the substance in itself*, making it to be in one way or another. This characteristic makes quality different from the other categories, since none of the other accidents "qualifies" or "shapes" the substance. Quantity, for instance, limits itself to giving extension to the substance; relation affects the substance only in reference to other beings distinct from it. The other accidents, as we have already noted are more external." *Op. cit*., pp. 63-4.

[79] A. Woodbury. *Metaphysics - Ontology, op. cit.*, p 333. This matter will be addressed also in section 3.2.2 i) below.

admit no other source of knowledge beyond the senses, assert that there is no other reality underlying the phenomena, or at least that, if such a reality exists, it remains utterly unknown to us.

John Locke proposed that the accidents inhere in some substratum of which "he knows not what", that is, that the substratum beneath the phenomena is held to exist, but it remains unknown to us.[80] According to Locke, the idea of substance in general is that of a substratum or support for accidents. The intellect is said to know only the accidents, since only these are sensed by our senses. The existence of the substance, considered as a substratum of such accidents, is derived only by an inference. We realise that the accidents cannot subsist in themselves, and therefore there must be some substratum in which they inhere and which is their cause, and this substratum is what we call substance. However according to Locke, this substance is unknown to us and its existence is only inferred by us.[81]

We can see that this explanation differs from the explanation given above, where we argued that the *whole being* of a thing, both the substance and the accidents, is grasped immediately by the intellect. The intellect immediately apprehends a particular coloured and shaped being, that is, *both* the substance with its accidents. It does not simply apprehend the being of the accidents, as Locke contends. Therefore, the intellect immediately and at the same time apprehends the substance as well as its accidents, albeit in a confused way initially. It is only afterwards, especially through the

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[80] "1. The mind being, as I have declared, furnished with a great number of these simple ideas, conveyed in by the senses as they are found in exterior things, or by reflection on its own operations, takes notice also that a certain number of these simple ideas go constantly together; which being presumed to belong to one thing, and words being suited to common apprehensions, and made use of for quick dispatch, are called, so united in one subject, by one name; which, by inadvertency, we are apt afterward to talk of and consider as one simple idea, which indeed is a complication of many ideas together: because, as I have said, not imagining how these simple ideas can subsist by themselves, we accustom ourselves to suppose some substratum wherein they do subsist, and from which they do result, which therefore we call substance. 2. So that if anyone will examine himself concerning his notion of pure substance in general, he will find he has no other idea of it at all, but only a supposition of he knows not what support of such qualities which are capable of producing simple ideas in us; which qualities are commonly called accidents." J. Locke. *An Essay Concerning Human Understanding* ed. J.W. Yolton, vol. 1 (London: J.M. Dent & Sons Ltd, 1961), pp. 244-5.

[81] It can be added here that Kant also accepted the empiricist understanding that the knower receives impressions from what is experienced by the senses, namely the phenomena. The thing-in-itself (*ding an sich*) or *noumenon* remains unknown to us. However, unlike the Empiricists, he held that the notion of substance is an a priori category in the mind. The judgement that there is a substance is a synthetic a priori judgement, which is the result of the combination of the a priori form and the phenomena of sense experience.

experience of accidental changes in things, that the intellect more explicitly infers that there is a distinction between substance and accident. From the beginning the intellect apprehends what the substance is and knows the substance, even though the explicit theoretical and philosophical understanding of a substance as a substratum underlying the accidents is only attained afterwards by a deductive inference.

There is also the problem in Locke's explanation in that it suggests that, since the accidents do not reveal or manifest the substance, but rather veil or hide it, that the being of the accidents is not dependent on the being of the substance. If the being of the accidents did depend on that of the substance, it would in some way reveal the substance as its cause, since the cause is revealed in its effects. Therefore the implication seems to be that the substance and accidents are independent beings which are united to form a whole. The accidents are seen as independent beings which happen to inhere in another independent substance or substratum. However, on the contrary, we may argue there is in fact *only one being*, the being of the particular existing thing. The being of a particular tree is one being, that of the substance and its accidents. However the being of the substance is more fundamental, since it has being in itself, while the accidents have being only in a substance as in its subject of inherence. Nonetheless, neither the substance nor the accidents have being independent of each other.[82]

[82] There are only two exceptions to this. The first is that of God, Who is absolutely simple and has no accidents. The second is the Sacrament of the Holy Eucharist, in which, according to Catholic theology, the accidents of bread and wine have their own being, sustained by God in a miraculous way, and do not inhere in their own substance or any other substance. These accidents have an existence therefore which is independent of the Body and Blood of Christ which underlies these accidents. As Alvira states, on the question of the dependence of the being of accidents on the substance: "A *being* is a certain whole which is composed of a substance and certain accidents. These are elements which form a certain unity, and do not exist separately. No accident exists without its substance, and no substance exists without its accidents. These realities lie in different levels, however, since the accidents depend on the being of the substance and not the other way around. Therefore, the composite is by virtue of the act of being (*actus essendi*) of the substance in which each of the accidents also shares. Each thing has but one act of being. Thus, the entire substantial and accidental reality of a being "is" by virtue of a single act of being, which, properly speaking, belongs to the substance. A being has *esse* in accordance with the manner determined by its specific essence, which is the essence of the substance. This substantial perfection, in turn, gives rise to a wide range of accidental perfections in conformity with that specific manner of being. Hence, every man is a single being which possesses the act of being according to his human essence or nature. From that degree of perfection of being, his accidental perfections arise: for instance, a certain bodily make-up, a complex of sense and motor powers, as well as spiritual operations." *Op. cit*., pp. 53-4.

Another empiricist argument is the so-called "bundle theory" of David Hume, who went further than Locke and denied that there is a substance or substratum underlying qualities. Rather, a substance is identified with a bundle of qualities or properties.[83] The understanding of substance as an underlying and permanent substrate of changing qualities or properties is regarded as an illusion, by which the mind imagines there to be some underlying and permanent substratum.[84]

However, as Connell points out, this understanding of Hume's has the effect of making all qualities and properties to be substances, regarded as things which subsist:

> Suppose for the moment that Hume is right: qualities do not require a substratum, and qualities are real; they exist outside the knower but not in a substratum. From this we obviously get his position that qualities cannot be properties or accidents as we have defined them. To restate his position: if qualities exist, and if they do not exist in a substratum, *then they exist in themselves and not in another as in a subject*. Thus because there is no third alternative (something either exists or does not exist in a subject), Hume has turned qualities into substances. Without realizing it, he has actually endorsed the notion of substance first delineated by Aristotle and, contrary to his words, he has actually denied the reality of properties as such. In sum, Hume has turned all qualities and thus all realities into substances.[85]

A further difficulty is that Hume's theory fails to account for the unity of these qualities, that is, it fails to explain *why* the qualities are in fact united together the way they are to give us the

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[83] As Hume states: "We have, therefore, no idea of substance, distinct from that of a collection of particular qualities, nor have we any other meaning when we either talk or reason concerning it. The idea of substance as well as that of a mode is nothing but a collection of simple ideas that are united by the imagination, and have a particular name assigned them, by which we are able to recall, either to ourselves or others, that collection. But the difference betwixt these ideas consists in this, that the particular qualities, which form a substance, are commonly referred to as an unknown something, in which they are supposed to be closely and inseparately connected by the relations of contiguity and causation." *A Treatise of Human Nature*, ed. Selby-Bigge (Oxford: The Clarendon Press, 1975), p. 16. There are contemporary versions of the bundle theory which are more sophisticated. There are reductionist or de facto reductionist accounts of substance in terms of properties. Further, the properties could be conceived of as universals or as individuals, i.e., property instances which are sometimes called 'tropes.' *Cf*., H. Robinson "Substance", *The Stanford Encyclopedia of Philosophy* (Spring 2014 Edition), Edward N. Zalta (ed.), http://plato.stanford.edu/archives/spr2014/entries/substance/.

[84] "When we gradually follow an object in its successive changes, the smooth progress of the thought makes us ascribe an identity to the succession…When we compare its situation after a considerable change the progress of the thought is broken; and consequently we are presented with the idea of diversity: In order to reconcile which contradictions, the imagination is apt to feign something unknown and invisible, which it supposes to continue the same under all these variations; and this unintelligible something it calls a *substance, or original and first matter*." *A Treatise of Human Nature*, ed. P.H. Nidditch (Oxford: Clarendon Press, 1978), p. 220.

[85] *Substance and Modern Science*, pp. 19-20.

experience of a single, united thing. The explanation we have considered above is that the substance is the cause of the accidents and therefore would be also the principle of unity of the accidents.[86]

As Feser argues, comparing what he calls Locke's "bare substratum theory" and Hume's "bundle theory", the correct understanding is a third position. Speaking of the example of a lump of gold, he argues:

> The Scholastic view is that it is (contra the bare substratum theorist) *the gold itself*, rather than a bare substratum, that is the bearer of its accidents; and that (contra the bundle theorist) the accidents *presuppose* the existence of the gold itself, so that the gold cannot intelligibly be constructed out of its accidents. The mistake both of these competing views make is to suppose that there is something more fundamental than the gold, to which it is reducible. The substratum theory strips away all the accidents of the gold and identifies the gold with whatever it is that is left. Since there doesn't seem to be anything left, the bundle theorist takes the stripped off accidents and identifies the gold with them instead. But what the gold really is is substance and accidents together. The substratum theorist is like someone who peels away every layer of an onion and thinks that what an onion "really" is is what is left after all the layers are removed. The bundle theorist is someone who arranges the peeled away layers into a pile and says at that is what an onion "really" is. Of course, what an onion really is is what you had before the layers were stripped off. And what a lump of gold really is is what we have before we abstract the accidents of the gold from the substance. As with form and matter, that the substance and accidents of the gold are really distinct doesn't entail that they can exist apart from one another (short of a miracle anyway).[87]

If we consider a particular thing which is sensed, such as a lump of gold, our intellect can abstract and consider the thing as a substance, considered as the substratum or subject of accidents which

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[86] More specifically, it is the substantial form which is the principle of unity, as will be examined below in section 3.2.2 i). As Connell states regarding this problem with Hume's explanation: "But given what he has said, Hume ought to have tried to account for our observations, since our sensations themselves are the first ground for our recognizing that in some way the set of properties we observe in a stuff is not separable. That there is some principle of their unity in reality cannot be questioned; we cannot say their union is only noetic." *Substance and Modern Science*, pp 19-20.

A similar problem occurs with so-called "event ontologies", such as taught by Bertrand Russell, who held that material objects are really groups of events, so that events become metaphysically more fundamental than substances. As Feser argues, this type of theory suffers from the same fundamental problems as the "bundle theory" in that it replaces substances with bundles of events. This theory also fails to explain how these events constitute a unity. *Scholastic Metaphysics*, pp. 197-8.

[87] Feser. *Scholastic Metaphysics*, p. 194. Feser refers to a miracle as a possible explanation of the accidents existing without the substance. This is in fact the teaching of St Thomas regarding the sacrament of the Holy Eucharist, in which, by divine power, the accidents of the bread and wine remain even though the substance of both changes into the Body and Blood of Jesus Christ. *Cf.*, *ST* III, q. 75, a. 5.

inhere in it, but in fact the substance never exists apart from its accidents. As Feser notes, the substance is always with its accidents even though these are really distinct from it. As we stated above, the substance and the accidents together constitute a real unity or a whole being, and it is this whole being which is apprehended by the intellect.

2.3. The Three Intrinsic Principles of Change – Continued.

To return from our excursus in the preceding two sections to an analysis of accidental change: we saw that such change can be seen as a transition in a subject from the *terminus a quo* to the *terminus ad quem*. Change can thus be seen as a transition in a subject from one state to another state. The starting point of the change or the original state is the *terminus a quo* or the terminus from which the change begins, and the conclusion of the transition or the new state is the *terminus ad quem.* In the example we considered, a subject, man, undergoes a transition from the state of being non-musical to the state of being musical. We also saw that the two states or termini could be regarded as opposites, as non-musical is the opposite of musical.

Thus far we have seen that in the case of accidental changes, an explanation of such changes requires something which undergoes the change, which is the subject of the change, and that the change is the transition from one terminus or state to another. We can add, however, that there is also required that the subject which undergoes the change have the capacity or potency to change. For a man to become musical or for a stone to become a statue requires that the man and the stone, as subjects of the change, have the capacity or potency to change.[88] For a man to become musical or a stone to become a statue is to take on an accidental way of being, since the qualities of musical and figure or shape are accidents which inhere in a substance. However, a man would not be able to become musical nor a stone become a statue unless they possessed a potency to do so. That is,

[88] While we use the term potency to apply both to a man having the potency to become musical and a stone having the potency to become a statue, it should be noted that a man would have a natural potency to become musical, whereas a stone would not have a natural potency but only an obediential potency to become a statue. A statue is a work of art which a stone has no natural potency to attain.

unless they possessed potencies to take on these ways of being.[89] Once the potency or capacity has been actualised, the subject can be said to be in act with respect to that potency. For example, once a man, who has a potency to become musical, actually becomes musical, then that potency is actualised. Therefore, the *terminus ad quem* of the change can be said to arise in virtue of the actualisation of a potency which was in the subject. It is for this reason that change can be described not only as the transition from one state, namely the *terminus a quo*, to another state, namely the *terminus ad quem*, but also as the transition from potency to act. According to St Thomas, the essence of change can be said to be the transition of something from potency to act.[90]

The actualisation of a potency can be said to be the result of a form as an intrinsic principle of this actualisation. That is, once the change has been completed and the *terminus ad quem* has been attained, we can say that the subject is now in act with respect to that potency and that the potency as now actualised is the result of the subject possessing a form. Regarding the form as an intrinsic principle of actualisation, in the *DPN*, Chapter 1 St Thomas states:

> ...everything from which something has existence whether that existence be substantial or accidental, can be called form... Also, because form causes existence in act, we say that the form is the act. However, that which causes substantial existence in act is called substantial form and that which causes accidental existence in act is called accidental form.[91]

According to this definition of form, it is form which confers existence on a thing, either substantial form which confers substantial existence, or accidental form which confers accidental

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89 Potency is a real principle in a thing and is distinct from non-being. As Connell states: " Because that which comes to be cannot come to be from any antecedent whatsoever, but only from certain antecedents, we see that potentiality is not equivalent to non-existence. Gilbert Ryle would have us believe that there is no "third realm" and that we must admit existence and non-existence but nothing that is neither of these in the full sense of each term. Yet that is precisely what a potentiality qua potentiality is; neither an actual existence nor a pure non-being. Plainly wood can become a wall stud but gelatine cannot, and so the potentiality we assign to the thing is not a fiction, a nothingness. In Ryle's view, to say that something is "able to be dissolved" is to say the equivalent of a conditional proposition: if sugar, for example, is placed in water under appropriate conditions, then it will dissolve. But this only pushes the problem back a step, for we still must ask why it is that we can formulate the conditional proposition about sugar and not about glass marbles. Thus we must admit that potentiality is a real property or characteristic of something that actually exists insofar as the latter can be something that it is not yet. *Substance and Modern Science*, p. 242.

90 *Cf*., *ST* I, q. 2, a. 3: "Movere enim nihil aliud est quam educere aliquid de potentia in actum."

91 *DPN*, ch. 1, n. 5.

existence.[92] The conferring of existence is a type of act and hence form is said to be an act. In the examples we have considered, it is the accidental form of 'musical' which causes the man to be musical and the accidental form of a statue which causes the stone to be a statue. It is the shape or form of the statue which actualises the stone as the subject or matter to be a statue. Hence the potency the stone has for such a form is actualised by the possession of that form. Similarly, the potency a man has to play the piano is actualised by acquiring the skill of being able to play the piano, which skill is an accidental form.

In addition to the subject of the change, which possesses a potency or capacity, and the form, St Thomas states there is also a third requirement to explain change, namely privation. In the example of the change of a man from non-musical to musical, the privation would be the absence of the accidental form of 'musical' in the man. The man, at the beginning or *terminus a quo* of the change, would first lack the quality of being musical. This privation or lack of the accidental form is essential to explain the change, since if the man already possessed the form of 'musical' he would already be in act with respect to that potency and there could therefore be no change, which is the transition from potency to act. The privation in this case can be said to be 'non-musical', in so far as the subject lacks the accidental form of 'musical'. The *terminus a quo* of a change must therefore always have the subject with a privation of the form which is to be acquired at the *terminus ad quem* at the completion of the process of change.

We notice that privation is always the absence of a form or actualisation in a subject. It is not simply non-being or nothing, but the non-being *in some subject*. We could say therefore that it is

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[92] It should be noted that while St Thomas speaks of the form as conferring existence, this is in the order of essence as an intrinsic formal cause. There is still the need for an efficient cause which is extrinsic to the form and which in its turn actualises the form itself. This extrinsic efficient cause is the *esse* considered as the act of being, which St Thomas holds is the cause of all acts, even of forms. *Cf*., *ST* I, q. 3, a. 4. As Alvira states: "It is important to note, however, that in corporeal substances, the form does not have the act of being in itself, but only insofar as it gives actuality to matter. The complete essence, composed of matter and form, is what has the act of being (*esse*), not the isolated constituent principles. Thus, the horse is, and not its form or matter separately." And elsewhere he states: *"Esse" is the act of all other acts of a being*, since it actualizes any other perfection, making it be. Human activity, for instance, which is "second act," has its basis in operative powers, which constitute "first act" in the accidental order. Along with other accidental perfections, these powers receive their actuality from the substantial form, which is the first act of the essence. The entire perfection of the essence, however, stems in turn from *esse*, which is therefore quite fittingly called the ultimate act and the act of all the acts of a being (*ens*)." *Op. cit*., pp. 94, 109.

not non-being *simpliciter* but only non-being *secundum quid*; a relative non-being rather than an absolute non-being. It is not simply that the opposite non-musical changes to the opposite musical, but rather that some subject who is non-musical becomes musical. If musical could arise from non-musical *simpliciter* or absolutely considered, this would be in violation of the principle *ex nihilo nihil fit*. Rather it is always that some subject which lacks a certain way of being or actualisation, and which has the potency to acquire that way of being, then acquires that way of being. On this point St Thomas states:

> Also, we should note that, although generation is from non-existence, we do not say that negation is the principle but that privation is the principle, because negation does not determine a subject. Non-seeing can be said even of non-beings, for example we say that the dragon does not see and we say the same of beings which are not apt to have sight, as stones. But privation is said only of a determined subject in which the habitus is apt to come to be; for example blindness is said only of those things which are apt to see. Also, because generation does not come to be from non-being *simpliciter*, but from the non-being which is in some subject, and not in just any subject, but in a determined subject, because fire does not come to be from just any non-fire, but from such non-fire as is apt to receive the form of fire; therefore we say that privation is the principle, and not negation.[93]

We note here that St Thomas states that a thing comes to be or is generated not simply from non-being *simpliciter*, which is a mere negation, but from non-being in some subject, which is a privation. Further, he adds that this privation must also be in a determined subject, which can be understood as a subject which has the potency or capacity to be actualised by a certain form. In his example, the form of fire can only arise in a subject which is capable of receiving that form. In the example we have been considering, the privation non- musical can only be found in a subject, such as a man, which has the capacity to become musical and not in a subject such as a stone which does not have that capacity.

St Thomas also notes that privation may be said in a number of senses.[94] For example, we can speak of a privation as a deprivation or lack in something which a subject is not naturally fitted to have. In the example given above, a piece of marble may have a deprivation of the form of a statue,

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93 *DPN*, ch.2, n. 11.

94 *In Metaphys*., Bk 5, *lectio* 20 gives four senses of the word privation.

and hence a privation, but this is not a natural privation, since by nature the marble was not meant to have the figure of a statue, which is only imposed on it by art. On the other hand, we could speak of a man having the privation of blindness, which is a natural privation, since man by his nature is naturally fitted to have sight.

By way of summary, St Thomas states that in order to explain accidental change, three principles are needed, namely the subject which undergoes the change, the accidental form which is acquired at the *terminus ad quem*, and the privation which is found in the subject at the *terminus a quo*. He makes a further distinction between the subject, form and privation by saying that the subject and form are *per se* principles of generation or change, whilst privation is a *per accidens* principle. The subject and the form can be said to be *per se* principles because they are intrinsic principles which are constitutive of a thing itself. A statue, for example, has its subject, such as marble, and its artificial form, namely its quality of being shaped, as constitutive principles of the statue itself. The privation, on the other hand, is the mere absence of a form in the subject and is not a constitutive principle of a thing. It is therefore a *per accidens* principle in that it happens to be found in some subject but without having a constitutive role which causes the being of a thing. St Thomas states that the subject and the form are principles of both the coming into being or generation of a thing as well as its being, whilst privation is a principle only of the coming into being of a thing.[95]

On a point of terminology, we have been using the term 'subject' as referring to that which undergoes an accidental change. However sometimes St Thomas uses the term 'matter' as referring to the subject of such a change. Subject would be more precise, since it refers to something which exists, that is a *hoc aliquid* or *suppositum*, which is the proper substratum of accidental forms. Matter in the more precise usage of the term can be said to apply to prime matter, which is the

[95] "Privation differs from the other principles, because the others are principles both in existence and in becoming. For in order that a statue come to be, it is necessary that there be bronze and, further, that there be the shape of the statue. Again, when the statue already exists, it is necessary that these two exist. But privation is a principle in becoming and not in existing, because until the statue comes to be it is necessary that it not be a statue. For, if it were, it would not come to be, because whatever comes to be is not, except in successive things, for example in time and motion. But from the fact that the statue already exists, the privation of statue is not there, because affirmation and negation are not found together, and neither are privation and habitus. Likewise, privation is a *per accidens* principle, as was explained above, but the other two are *per se* principles." *DPN*, ch. 2, n. 12.

substratum of substantial forms. However, as long as one is aware of this difference in usage of these two terms, both could be used to mean the substratum in accidental changes and also in substantial changes.[96]

3. The Three Intrinsic Principles of Change: Substantial Change.

The three principles of change have so far been seen as necessary to explain accidental change. However St Thomas argues, by way of analogy, that since these three principles are found to be necessary to explain accidental changes, they can also be said to be necessary to explain substantial changes. In the case of the subject or matter we saw that, in the case of accidental change, the matter is a substance which remains throughout the change and is identifiably the same substance. When a man becomes musical, the same man remains throughout the change, with only a change in his quality of being able to play an instrument. Similarly, when a piece of stone becomes a statue, the same stone remains throughout the change with only a change in the shape or form of the stone.[97]

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[96] As St Thomas states on this point: "Both that which is in potency to substantial existence and that which is in potency to accidental existence can be called matter**:** for example sperm is the matter of man and man is the matter of whiteness. But these differ, because that which is in potency to substantial existence is called the matter from which, but that which is in potency to accidental existence is called the matter in which**.** Again, properly speaking, that which is in potency to substantial existence is called prime matter, but that which is in potency to accidental existence is called the *subject*. Thus we say that accidents are in a subject; but we do not say that the substantial form is in a subject. In this way matter differs from subject because the subject is that which does not have existence by reason of something which comes to it, rather it has complete existence of itself (*per se*); just as man does not have existence through whiteness. But matter has existence by reason of what comes to it because, of itself, it has incomplete existence. Hence, simply speaking, the form gives existence to matter; the accident, however, does not give existence to the subject, rather the subject gives existence to the accident; although sometimes the one is used for the other, namely matter for subject and conversely." *DPN*, ch. 1, n. 2 - 4.

[97] It should be noted that when a man becomes musical, that is, when he acquires the skill of being musical, such as the skill of playing a musical instrument, this is not identical to the way a piece of stone acquires the figure of a statue. The skill of being musical is an operative habit which perfects a natural capacity a man has to perform a certain activity. When a piece of stone acquires the figure of a statue, there is no perfecting of a capacity to perform an activity but simply the acquiring of a certain shape or figure. Since actions are attributed to the *suppositum*, that is in this example the man, it could be argued that the art of being musical is an intrinsic and essential principle of the activity in a person in which the art is found. While it could be said that the capacity to play an instrument is something which flows from the nature of man, that capacity is regulated artificially by the art of music, which is something acquired by study and practice. It is acquired by an extrinsic cause, such as a teacher, who imparts the art to the student. As Grenier states: "Singing and dancing are vital motions which, as such, or as regards their substance, flow from nature. But they are directed by art as regards their mode, in as much as they are artificially regulated. And, from this point of view, they do not derive from a principle that is intrinsic to corporeal nature, but from a principle that is acquired through knowledge, and which has not its root or source in nature. Such a principle is said to be in

St Thomas argues that in the case of a substantial change, however, a new substance comes into being from a previous substance, such that the same substance does not remain throughout the change. Hence, if we rule out the annihilation/creation and the transubstantiation explanations to explain most substantial changes, there must also be a subject or matter which is common to the previous substance and the new substance. There would not be a common subject or matter if the previous substance was annihilated and a new substance was created, or the whole substance, matter and form, of the previous substance was changed into the new substance, as occurs in transubstantiation. Further, by argument from analogy, substantial change will require a change in the substantial form which actualises this common matter. Whilst accidental change involved a substance losing or gaining an accidental form, substantial change involves the loss of a substantial form and the gaining of a new one in some type of common matter.

3.1. Prime Matter as a *per se* Principle.

If there must be some common subject or matter, the question arises what is the nature of this matter which underlies substantial change. In the Commentary on the *Physics,* Book 1, Lecture 13 St Thomas gives his argument from analogy to derive an answer to this question:

> He says that the nature which is first subject to mutation, i.e., primary matter, cannot be known of itself, since everything which is known is known through its form. Primary matter is, moreover, considered to be the subject of every form. But it is known by analogy, that is, according to proportion. For we know that wood is other than the form of a bench and a bed, for sometimes it underlies the one form, at other times the other. When, therefore, we see that air at times becomes water, it is necessary to say that there is something which sometimes exists under the form of air, and at other times under the form of water. And thus this something is other than the form of water and other than the form of air, as wood is something other than the form of a bench and other than the form of bed. This 'something', then, is related to these natural substances as bronze is related to the statue, and wood to the bed, and anything material and unformed to form. And this is called primary matter.
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> This, then, is one principle of nature. It is not one as a 'this something', that is, as some determinate individual, as though it had form and unity in act, but is rather called being

man intrinsically, because it is inherent in man; but it is extrinsic to nature, i.e., the first principle of motion, and is referred to nature not essentially, but accidentally, because it does not flow from nature." H, Grenier. *Thomistic Philosophy: Philosophy of Nature* (Charlottetown: St Dunstan's University, 1950), p. 53.

> and one insofar as it is in potency to form. The other principle, then, is the nature [ratio] or form, and the third is privation, which is contrary to the form. And how these principles are two and how they are three was explained above.[98]

St Thomas states that the subject or matter underlying substantial change can be referred to as "prime matter." The argument given for the existence of prime matter is an argument from analogy. In the example of accidental change given, wood, a substance, is the common matter or subject which can be actualised or determined by different accidental forms of quality. It could take on the accidental form of a bed or of a bench. St Thomas then gives an example of a substantial change, namely the change of the element of air which changes to the element of water. Assuming for the moment that such a change is indeed a substantial change, he argues that there also must be some subject or matter which is common to the air and the water, just as wood is common to a bed and a bench which is made of that wood. This common subject is what he terms prime matter.

However, he argues that this prime matter "is not a this something (*hoc aliquid*) that is, as some determinate individual." The reason for this is that it is only in accidental changes that the common subject or matter of the change is a *hoc aliquid* or particular individual thing or substance. In the example given of a piece of wood becoming a bed, the wood is a *hoc aliquid* or particular substance which remains identifiably the same throughout the change. There is only a change in the accidental form of its shape or figure that results when the carpenter makes the bed. This however cannot be the case in substantial changes, since such a change results precisely when there is a change in the substance, such that the identifiably same substance does not remain throughout the change. In the example given, the air does not remain as air when it is changed into water. It rather ceases to exist as air and becomes water. If the air remained as air throughout the change, then there would not be a substantial change but merely an accidental change.

Therefore the prime matter, as the common subject or matter in the substantial change cannot be a *hoc aliquid* or particular individual substance which remains identifiably the same throughout the

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98 *In Phys.*, Bk. 1, *lectio* 13, n. 118.

change. Rather, St Thomas argues that prime matter remains the common subject or matter only in so far as it is a principle of a substance, and that this principle is "in potency to form" (in potentia ad formam). The prime matter is in potency to the new substantial form of the new substance. To understand why this is the case, we have to note that in the case of accidental changes, such as a piece of wood becoming a bed or of a man becoming musical, such change can only be explained if we say that the wood and the man have a potency or capacity to become a bed or musical respectively. Wood has a real potency or capacity to become a bed, something which water, as a liquid, does not have. Similarly man has a capacity or potency to learn to play a musical instrument whilst a rock does not have this potency or capacity.

If a piece of wood has a real capacity or potency to become a piece of furniture like a bed, it is however only a potency or capacity which exists *in* a substance or a *hoc aliquid*, that is, an individual existing thing. A piece of wood has the capacity or potency in it as an individually existing substance, and this same substance remains throughout the change, with only its potency or capacity being actualised by the new accidental form of the bed. Hence the potency exists *in* the common subject or matter of the change, which in the case of an accidental change, is a substance. The common subject of the change first has a potency and then this potency is actualised by an accidental form.

However, in the case of substantial change, there is no identifiably same substance which is the common subject of the change, in which there is a potency which is then actualised. Yet the common subject or matter of the change, namely prime matter, must have a potency or capacity to become, with the new substantial form, the new substance, otherwise it would not be able to do so. However, in the case of prime matter, the common subject is not a particular existing substance or supposit, as in the case of accidental change, but rather it is a principle of a substance. More specifically it is called a principle which is "in potency to form." Prime matter is a co-principle with substantial form, which together constitute a particular existing substance or supposit. Hence in the example given above of air changing into water, the air would possess prime matter

considered as a principle that is "in potency to form", in this case it would be in potency to the form of water. This principle would be actualised first by the substantial form of air and then, after the change, by the new substantial form of water. Therefore the prime matter would be the common matter underlying the change, however this matter would in itself be a principle which is in potency to the new form. While the prime matter of air is currently actualised by the substantial form of air, its potency is actualised with respect to that form. However it remains in potency with respect to the new substantial form of water. When its potency is actualised by the form of water it still remains in potency to other substantial forms. In other words, the substantial form which currently actualises prime matter never fully exhausts its potency, such that it always remains in potency to form.

A distinction can be made between 'prime matter' and 'second matter', second matter referring to a substance which exists in itself as an independent particular thing.[99] Hence in the case of an accidental change, the substance which is the common subject of the change is second matter. In the case of a substantial change, the matter underlying the change is a principle which is in potency to form and is given the particular name of prime matter in order to distinguish it from the second matter which is the subject of accidental change.

In the *DPN*, Chapter 1 St Thomas also describes the nature of prime matter. There he states:

> Both that which is in potency to substantial existence and that which is in potency to accidental existence can be called matter....But these differ, because that which is in potency to substantial existence is called the matter from which**,** but that which is in potency to accidental existence is called the matter in which. Again, properly speaking, that which is in potency to substantial existence is called prime matter, but that which is in potency to accidental existence is called the *subject*. Thus we say that accidents are in a subject; but we do not say that the substantial form is in a subject.
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> In this way matter differs from subject because the subject is that which does not have existence by reason of something which comes to it, rather it has complete existence of itself (*per se*); just as man does not have existence through whiteness. But matter has existence by reason of what comes to it because, of itself, it has incomplete existence. Hence, simply speaking, the form gives existence to matter; the accident, however, does

[99] Grenier. *Philosophy of Nature*, p. 21.

> not give existence to the subject, rather the subject gives existence to the accident; although sometimes the one is used for the other, namely matter for subject and conversely.[100]

In this text St Thomas describes prime matter as "that which is in potency to substantial existence" (quod est in potentia ad esse substantiale). This potency to substantial existence differs from a potency to accidental existence which is found in something which already exists, that is, a subject. The word "subject" is therefore used here in a more specific way to mean a particular thing which exists of itself, that is, a substance. For example, a man is a subject who exists of himself and who has a potency to the accidental existence of whiteness. This is why an accident can be said to be in a subject because the subject exists in itself. Prime matter, on the other hand, is said not to exist in itself or *per se*, that is, it is not a substance as is the subject of accidents. Rather it has an "incomplete existence" (esse incompletum) in that it only exists when it is actualised by a substantial form. Hence St Thomas states that "form gives existence to matter." An accidental form does not give existence to a substance but merely modifies it in some way. Prime matter, as a principle, has an incomplete existence, that is it has no existence in itself or *per se* but is only "that which is in potency to substantial existence." For this reason we can say that prime matter in itself is pure potency without any actuality. It should be noted that when St Thomas states that "form gives existence to matter" this should not be understood to mean that prime matter has existence as an individual substance or supposit but only as a principle in an individual supposit. It is only the composite substance, which results from the union of the two co-principles of prime matter and substantial form, which *per se* has existence. The existence of prime matter is the existence of a principle which exists only through and under a substantial form, and further this principle always remains in potency to a new substantial form and therefore to a new substantial existence.

St Thomas makes this clear in another text in the *DPN*, Chapter 2 and adds an additional important point:

> Notice, likewise, that, although prime matter does not have in its nature [ratione] any form or privation, for example neither shaped nor shapeless is in the definition [ratione] of

[100] *DPN*, ch. 1, n. 2 – 4.

> bronze, nevertheless, matter is never completely without form and privation, because it is sometimes under one form and sometimes under another. Moreover, it can never exist by itself [per se]; because, since it does not have any form in its definition, it cannot exist in act, since existence in act is only from the form. Rather it exists only in potency. Therefore whatever exists in act cannot be called prime matter.[101]

In this text St Thomas repeats what he said above that prime matter cannot exist *per se* because it lacks substantial form, and "existence in act is only from the form." Prime matter "exists only in potency" (est solum in potentia); it is only a being in potency and never a being in act. St Thomas also makes it clear that while prime matter never exists *per se* since in itself it lacks a form, it is never completely without a form, "because it is sometimes under one form and sometimes under another." Prime matter must always be actualised by a substantial form, even though in itself or *per se* it lacks a form.[102] As we have already stated, to say that prime matter is actualised by a form does not mean that all its potency is actualised or exhausted; it always remains in potency to other forms. Further, as St Thomas states, even when actualised by a substantial form, prime matter never exists in act, for "whatever exists in act cannot be called prime matter." Rather, it always remains a principle which exists in potency. Only the composite of prime matter and substantial form has actual being; prime matter has non-actual being since it is potential being.

On this point in the Commentary on the *Sentences* St Thomas states:

> ...prime matter is that into which all natural bodies are ultimately reduced and must be without any form. Every subject that has a form is analysable into form and the subject of form. Therefore, because all knowledge is through form, prime matter is knowable, as the Philosopher says in *Physics* I, according to analogy alone, insofar as we say that prime matter is that which is to all bodies as wood is to bed. And although prime matter so taken does not have any form as part of its essence, it is never separated from all form, as Avicenna proves in his *Metaphysics*. Indeed when it loses one form, it acquires another,

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101 *DPN*, ch. 2, n. 17.

102 This negative way of describing prime matter is seen in Aristotle's definition of prime matter as: "...that which in itself is neither a particular thing nor of a certain quantity nor assigned to any other of the categories by which being is determined."*Metaphys*., Bk. 7, ch. 3, 1029. R. McKeon. *The Basic Works of Aristotle* (New York: Random House, 1941).

> insofar as the corruption of one is the generation of the other. Therefore prime matter so taken cannot be for any duration prior to the bodies formed from it.[103]

St Thomas argues for first matter in itself as pure potency in a number of other texts.[104] Further, he often uses the expression "potentia pura" when referring to prime matter.[105] First matter in itself or in its essence is pure potency and without any form.[106] It is, as we have seen, "that which is in potency to substantial existence" or "in potency to form." We could also say that prime matter is a potency, since in its essence it is pure potency. It is not something which has a potency, but rather it is a potency. In *ST* I, q. 48, a. 3 St Thomas states:

> Now the subject of privation and of form is one and the same viz., being in potentiality, whether it be being in absolute potentiality, as prime matter, which is the subject of substantial form, and of privation of the opposite form...

We notice that St Thomas refers to prime matter as a "being in absolute potentiality" (ens in potentia simpliciter), which is the subject of substantial form. Considered in itself or in its essence, prime mater is "being in absolute potentiality", that is, it is pure potency. We can add here that even when prime matter is under a particular substantial form which actualises some of its potency, it remains in potency to other forms. That is, it remains a "being in potentiality" (ens in potentia) and exists only as a being in potency even when a subject of a substantial form. In *ST* I, q. 77, a. 6

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[103] *In Sent*., Bk. 2, d. 12, q. 1, a. 4. The English translation of the *Scriptum super Sententiis* is taken from *Thomas Aquinas: Selected Writings* trans. R. McInerny (London: Penguin Books, 1998).

[104] *Cf*., *In Sent*., Bk. 1, d. 39, q. 2, a. 2 ad 4; *In Sent*., Bk. 2, d. 34, q. 1, a. 4; *De Veritate*, q. 8, a. 6; *SCG*, Bk. 1, ch. 17; *SCG*, Bk. 1, ch. 43; *De Potentia*, q. 1, a. 1 ad 7; *De Potentia*, q. 3, a. 2; *ST* I, q. 5, a. 3 ad 3; *ST* I, q. 7, a. 2 ad 3; *ST* I, q. 115, a. 1 ad 2; *In Metaphys*., Bk. 11, *lectio* 9. See Wippel, *op. cit*., p. 312ff for a good treatment of texts which support this position.

[105] *Cf*., *ST* I, q. 115, a. 1 ad 2 ("…materia prima, quae est potentia pura, sicut Deus est actus purus."); *SCG*, Bk. 1, ch. 17.

[106] When we refer to prime matter in itself or in its essence as pure potency, we do not mean only prime matter considered in the abstract or as a universal idea. Whether considered universally or as a real principle in a substance it is always pure potency without any act in itself. Indeed the universal consideration only follows and is derived from individual substances and their essential principles. Prime matter, as an essential principle in a substance, cannot exist or be thought of outside material substance and therefore apart from its co-principle, substantial form. As St Thomas states: "Also, because all knowledge and every definition comes by way of the form, prime matter cannot be defined or known in itself but only through the composite." *DPN*, ch. 2, n. 14. Also: "…matter and form are spoken of in relation to each other, as is said in the second book of the *Physics*. They are also spoken of in relation to the composite, as the part to the whole [substance] and as the simple to the composed." *DPN*, ch. 4, n. 30. I wish to acknowledge Dr Don Boland, in private correspondence, for alerting me to these texts and their relevance for this question.

St Thomas also states that the subject of substantial form is "being only in potency" (ens in potentia tantum) and in the Commentary on the *Physics* he states that: "matter according to its substance is potency for substantial being" (materia secundum suam substantiam est potentia ad esse substantiale).[107]

By way of summary, we can say that prime matter is only a principle of a substance and has no separate, independent existence. It begins to exist only when the composite begins to exist, which occurs when the substantial form actualises it. In itself, prime matter is pure potency, without any actuality in its nature.

What is implicit in this argument for prime matter as in itself pure potency is the unicity or oneness of substantial form, that is, that a substance has only one substantial form and therefore only one substantial form can actualise prime matter at a time. It is only on this basis that the above argument for prime matter as pure potency can be understood, since it involves one substantial form being replaced by another in prime matter as the common substratum of this change. The specific role of the substantial form, as well as arguments for the unicity of substantial form, will be examined in section 3.2 below. Since this argument for prime matter is from the reality of substantial change, we may refer to this argument as the *Argument from Substantial Change*.

3.1.1. Two Alternatives to Prime Matter as Pure Potency.

We may say that there are only two possible alternatives to the substratum being prime matter considered as pure potency. Either there is some type of rudimentary secondary matter which is the substratum of substantial change or there is no substratum at all.

If we consider the first alternative, it should be rejected for three reasons. The first reason is on account of the *Argument from Substantial Change* given above. If substantial change involves one

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[107] *In Phys*., Bk. 1, *lectio* 15, n. 131. *Cf., De Spir. Creat*., a. 1("[I]d communiter materia prima nominatur quod est in genere substantiae, ut potentia quaedam intellecta praeter omnem speciem et formam…"); *In de Gen*., Bk. 1, *lectio* 6 ("illud ex quo aliquid generatur, est potentia ens.") Kent, in his study of prime matter, defines it as: "a potential to receive the substantial forms of a variety of substances successively." He concludes that prime matter is a potential or potency and is not simply something which has a potency. *Op cit*., p. 361.

substantial form being replaced by another in prime matter, then this prime matter cannot be some rudimentary type of secondary matter. If it were some type of secondary matter, then this matter would have its own substantial form, in which case a substance would have more than one substantial form, that is, the substantial form of the whole substance as well as the substantial form of this rudimentary secondary matter. But it is essential to this argument that a substance has only one substantial form. In fact, if this rudimentary matter had its own substantial form, then the form of the whole would be an accidental form and not a substantial form.

The second reason for prime matter not being some rudimentary secondary matter is because of what can be termed the *Argument from Limitation*. Regarding this argument Feser states:

> One problem with the suggestion that some rudimentary kind of secondary matter can do the job of prime matter is that it seems a non-starter with respect to the argument from limitation. Such secondary matter would have some substantial form or other - that's why it is secondary rather than primary - and whatever that substantial form is, we need an explanation of why it is limited in just the ways it is. Hence suppose it is suggested that the rudimentary sort of secondary matter in question consists of particles of the form *F*. What is it that limits *F* to the spatiotemporal locations these particles happen to be? To appeal to some even more rudimentary sort of secondary matter to answer the question would just raise the same problem over again, while to appeal to prime matter would defeat the whole purpose of positing the rudimentary sort of secondary matter in question.[108]

Elaborating on this point in regard to an atomistic account of some rudimentary type of secondary matter as underlying all material things, as an alternative to prime matter as pure potency, Feser states:

> The atomist position and its modern variants basically amount to the idea that a kind of secondary matter underlies all change - secondary matter having just those properties that atoms (or some other sort of fundamental particle) are supposed to have. But we saw above that this sort of view won't work. Again, there is no empirical evidence for particles that are incapable of substantial change - even quarks can undergo such change. More importantly, there could be no such particles. If a fundamental particle is of such-and-such a form (with its unique causal powers etc.), specifically, rather than some other form, then we have limitation and thus something less than pure actuality. The form is limited to *this* particle, and *that* one, and does not exist where there are no such particles (e.g. in the ancient atomists' void); the particles are also limited to being actually of *this* sort rather than that. But what is limited in its actuality is limited by potency. Hence such fundamental material particles would be compounds of act and potency; and being

[108] Feser. *Scholastic Metaphysics*, pp 172-3.

> *fundamental* there would be no yet more basic substances out of which they could be composed. But for a thing to be fundamental in that sense while being composed of act and potency is just for it to be composed of substantial form and prime matter. Hence even the atoms themselves, or whatever fundamental particles the contemporary inheritors of the atomist idea would put in the place of atoms, would be compounds of substantial form and prime matter. That there must be such compounds at some level of material reality is thus for the Scholastic an unavoidable truth of metaphysics.[109]

To more fully understand this argument, we need to consider what St Thomas said above about the form, whether accidental or substantial, as a determiner of the being or existence of a thing in the order of essence, and similarly as that which determines the kind of existence of a thing. In the *DPN* Chapter 1 text we saw above, St Thomas refers to form as a determiner of actual existence and therefore as an act. It is what actualises the matter to be a being and to be a certain kind of being. If this is the case, then the matter is the potential or *limiting principle* vis- á- vis the form as an actual principle. With this in mind, Woodbury sets out the argument from limitation as follows:

> Act is not limited nor multiplied save by potency wherein it is received.
>
> But the specific act of every body is limited and multiplied.
>
> Therefore the specific act of every body is limited and multiplied by potency: which is to say that every body is constituted by a specific act, which is called substantial form, and by a potency wherein that specific act is received, which is called primary matter.[110]

Regarding the major premise, this is based on the fundamental metaphysical principle of St Thomas that no act is found to be limited except by potency.[111] Act is what confers perfection, for

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[109] *Ibid*., pp. 183-4. While Feser argues that some fundamental particle must be composed of prime matter and substantial form, a similar line of argument can be applied if we were to say that the fundamental second matter was some form of energy. Again, this energy would in turn be a certain type or kind as determined by its form and this form would also need a limiting and potential principle, namely prime matter. As Wallace notes: "In his *Physics and Philosophy* (New York 1958) Werner Heisenberg writes: "The matter of Aristotle is certainly not a specific matter like water or air, nor is it simply empty space; it is a kind of indefinite corporeal substratum, embodying the possibility of passing over into actuality by means of the form." Later he suggests that "the matter of Aristotle, which is mere 'potentia,' should be compared to our concept of energy." *Op. cit*., p. 9, n. 5.

[110] A. Woodbury. *Natural Philosophy*, unpublished papers, p. 39.

[111] St Thomas teaches this in a number of places. For example, in *Comp. Theol*., Ch. 18 he states: "No act is found to be limited except by a potency that is receptive of the act; thus we observe that forms are limited in accordance with the potency of matter. Hence, if the first mover is an act without any admixture of potency, as not being the form of any body or a force inhering in a body, it must be infinite." (The English translation of the *Compendium Theologiae* is from *Compendium of Theology,* trans. C. Vollert,

according to St Thomas, something is perfect in so far as it is in act.[112] Act is also that which confers oneness. This being the case, in things which are limited in their perfection and which are multiplied, there must also be a principle of limitation to perfection and of manyness. If this were not the case, then a contradiction would be involved, since that which would be the cause of perfection and oneness would at the same time be the cause of limitation to perfection and manyness, which are opposite to each other.[113]

Regarding the minor premise, this is evident from facts, for in every body its specific act is limited. Thus, the perfection of man or 'man-ness' in Peter is limited to less than what man can be, for man can be found also in James and John. Further, the specific act of man is multiplied in Peter, James and John and is not found only in Peter. If the perfection of man was found only in Peter, it would be an unlimited perfection and would be singular.

Related to this second reason from limitation, the third reason could be called the *Argument from the Principle of Individuation*. This argument is that what makes something to be specifically such or of a certain species, for example to be a man, a horse or a cat is different from what makes it to be this particular thing, for example this man, Peter, or this horse Prancer or this cat Felix. Therefore, a thing must be composed of two principles, namely a principle whereby it is *specifically* such a thing, which in the case of substances is referred to as the substantial form, and a principle whereby it is *individually* this thing, which in the case of substances is called prime matter.[114] As Phillips states regarding this argument:

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http://dhspriory.org/thomas/english/Compendium.htm.) *Cf.*, *SCG*, Bk. 1, ch. 43; Bk. 1, ch. 28; Bk. 2, ch. 52; *De Ente*, ch. 5-6.

112 *ST* I, q. 4, a. 1.

113 For a fuller defence of the principle that act is limited by potency see J. Gredt, *Elementa Philosophiae Aristotelico-Thomisticae* (Barcelona, Spain: Editorial Herder, 1951), pp. 41-43.

114 A. Woodbury. *Natural Philosophy*, pp. 39-40. Wippel argues that this type of argument for prime matter is an application of St Thomas' metaphysics of participation. He states: "Thus a subject participates in an accident and matter participates in form because the accidental or substantial form, being common of itself, is determined (limited) to this or to that subject. Hence his metaphysics of participation is intended to apply to his understanding of the matter-form composition of material entities. If we may develop this a bit, according to Thomas it is the substantial form of a material entity which accounts for the fact that the latter enjoys this kind of being rather than any other. Hence its form accounts for its belonging to its given species

> Again, if we consider a whole species instead of an individual body, we shall be led to the same conclusion: for it is clear that in order that one and the same specific nature may be found in several individuals, it must be differentiated in them in some way, i.e. there must be something which is added to the specific nature in each of them. If each were simply the specific nature, and nothing more, they would not be different individuals. Now, the nature itself is a definite determined thing, i.e., a perfection or an act; and therefore the individual must possess an element which is different from this act, and at the same time is capable of receiving it. Such a capacity, however, is what we mean by potency, and so the individual is composed of two elements, an actual one and a potential one, i.e. form and matter.[115]

Feser also notes that there is no empirical evidence for some rudimentary type of second matter which underlies all things. Even quarks, which are considered by many to be the smallest subatomic particles, are thought to be able to change into other quarks.[116] If this is the case, there must be some substratum which is more fundamental which underlies this change, which brings us back to our original problem.[117] However, apart from this empirical evidence, he argues that there is a problem with this reasoning based again on the argument from limitation. He states:

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and, therefore, for that which it has in common with other members of the same species. At the same time, no such entity exhausts its kind of being. If it did, there could be no other beings of the same type. To account for the fact that this particular being only shares in but does not exhaust its specific kind of being, Thomas appeals to another principle within its essence, its matter. It is matter which receives and limits or restricts the form principle to this particular subject." And again elsewhere he adds: "Accordingly, Thomas finds it necessary to distinguish between that whereby a given material being belongs to its kind or species, and that whereby it is only an individual instance of that kind or species. As he sees things, the first point is accounted for by a principle of actuality within such a thing's essence—its substantial form. The second finds its explanation in the presence of a distinct principle of potentiality within the same essence—prime matter. Because the receiving and potential principle limits the form or act principle, we may also say that the former, the matter, participates in the latter, the form." He gives a number of texts in which St Thomas refers to this limiting function of prime matter. For example in the *De Ente*, ch. 4 he states: "...prime matter receives a form by limiting it to individual existence" (materia prima recipit formam contrahendo ipsam ad esse individuale). *Op. cit*., pp. 304, 311.

115 R.P. Phillips. *Modern Thomistic Philosophy: An Explanation for Students, vol. I: The Philosophy of Nature* (London: Burns Oates & Washbourne Ltd, 1948), p. 46.

116 Bobik notes that L. Lederman, *The God Particle* pp. 325-326 points out that a quark of one type can be transformed into a quark of another type, e.g., a u-quark becomes a d-quark, and vice versa. J. Bobik. *Aquinas on Matter and Form*, p. 253.

117 As Wallace states, scientists generally now no longer speak of some rudimentary particle, such as a quark, but rather of something yet more basic, such as mass-energy, which more closely approximates prime matter as we have described it: "Surprisingly, scientists have come to develop a similar conception in recent years. No longer do they attempt to identify one final substance, a single super-quark, for example, that is the ultimate building block of the universe. Instead their emphasis is on delineating factors that are conserved in all the transformations that take place in the world of nature. Such conservation principles have been known and investigated for some time. They have been successively formulated as the conservation of matter, energy, mass, and finally, after Einstein's discovery of mass-energy equivalence ($E = mc^2$), mass-energy. Perhaps the last name, mass-energy, comes the closest to conveying the Aristotelian idea of protomatter as

> Again, suppose it is suggested that the rudimentary sort of secondary matter in question consists of particles of the form F. Just by virtue of the fact that it is of form F – rather than form G, or H, or any other form - we already know that any such particle is limited to the extent of being just the sort of thing it is rather than some other sort of thing. It is limited to being this rather than that. Its actuality is therefore less than pure actuality. But being less than pure actuality, it is simply not the sort of thing that could exist necessarily. It is rather the sort of thing that could at least in principle be generated or corrupted. But in that case there must be something that underlies its potency for being generated or corrupted. And once again, to posit some even more rudimentary sort of secondary matter as the substrate of this potential generation or corruption would raise the same problem over again, while to appeal to prime matter would defeat the whole purpose of positing the rudimentary sort of secondary matter in question.[118]

The second possible alternative to prime matter is that there is no substratum at all. As seen in Chapter 1, this would entail an annihilation/creation explanation, such that nothing of the original substance remains after the change, meaning that it is entirely annihilated and the new substance would then be created *ex nihilo.* As seen above, St Thomas argues that finite causes cannot bring about the annihilation and creation of a thing, but rather this is only possible by divine causality. As Oderberg states, this can be said to be confirmed by the first law of thermodynamics:

> Creation and annihilation, strictly speaking, are out of nothing and into nothing, respectively. In physics it is a fundamental truth that energy can neither be created nor destroyed (the first law of thermodynamics), and this simply reflects the metaphysical truth that since all changes in nature require natural causes, and since those causes are finite, and since finite causes cannot create something out of nothing or turn something into nothing, a natural substantial change is not a series of creations and annihilations. Positively speaking, a substantial change is an actualization of the potentiality which some substance has with respect to some new substance: walls can be turned into rubble but not into fish. It is the potentiality which stretches across the change, becoming actualized by it, and so there cannot have been pure annihilation and creation when one substance is turned into another.[119]

Further to this, Feser gives two other reasons, namely that when one substance changes into another there is the appearance of continuity and not of discontinuity that annihilation would seem

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the basic stuff of the universe. Whatever quarks may be, or leptons and hadrons in their various forms, it seems generally agreed that all are manifestations of mass-energy, the ultimate matrix to which science seems to have come in identifying the material cause of the universe." *Op. cit.*, pp. 8-9. There is also modern string theory, which seeks to replace the particles of particle physics with one-dimensional objects called 'strings'.

118 Feser. *Scholastic Metaphysics*, p. 173.

119 D. S. Oderberg. *Real Essentialism* (New York: Routledge, 2007), p. 74.

to entail. Secondly, the fact that when one substance changes into another there are constraints on what things the new substance becomes. This suggests that there is some substrate which is common to both the old and new substance and that it is this which constrains what the new substance can be.[120]

3.2. Substantial Form as a *per se* Principle.

We have seen when examining accidental change that the accidental form confers an accidental way of existence to an already existing subject or substance. For example, the accidental form of quality, namely of the habit of musical, makes a man, a substance, to exist as musical. Similarly, the accidental form of quality, such as form or figure makes a piece of stone, a substance, to exist as a statue. Further, the accidental form, since it confers a particular way of existing on a substance, can be said to be a type of act, for to exist in a particular way is a type of act. This act or actualisation caused by the accidental form is only possible because the subject or substance has a potency or capacity to be actualised.

St Thomas proceeds also by way of analogy to argue that where accidental forms confer an accidental way of existing on a substance which already exists in itself, a substantial form confers a substantial way of existing on a substance which previously did not exist. It does so by actualising the prime matter, which as we have seen, is in itself pure potency without any actuality. As St Thomas states in the *DPN* Chapter 1:

> But, just as everything which is in potency can be called matter, so also everything from which something has existence whether that existence be substantial or accidental, can be called form; for example man, since he is white in potency, becomes actually white through whiteness, and sperm, since it is man in potency, becomes actually man through the soul. Also, because form causes existence in act, we say that the form is the act.

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120 "For instance, if what appears to be change is really the annihilation of one thing and the sudden creation of another, with nothing that continues through the change, then why is there even the *appearance* of continuity? Why is the hydrogen and oxygen always replaced with water rather than with something else — a bird, a plane. Superman, or nothing at all? With no persisting substrate of change, things would be inherently "loose and separate" in Hume's sense, so that nothing would be more likely to appear after an annihilation than anything else. And yet that is not in fact the way the world works. Each stage of an apparent change evidently *constrains* what might follow, which points to something that does persist. But that in turn entails prime matter, for the reasons we've seen." *Scholastic Metaphysics*, p. 174.

> However, that which causes substantial existence in act is called substantial form and that which causes accidental existence in act is called accidental form.[121]

In this text, St Thomas begins by saying that form is that which confers existence, whether it be accidental or substantial existence. Since the conferring of existence is an act, form can be said to be an act. A substantial form confers substantial existence, that is it makes a thing exist as a substance, whereas an accidental form confers an accidental existence on an already existing substance. Since prime matter is in itself pure potency, the role of the substantial form is to actualise this potency so as to confer substantial existence on a substance which previously did not exist, that is, to make it simply exist as a substance. It is only by the union of the two principles of prime matter and substantial form that substantial existence results. To exist as a substance is to exist simply or to have *esse simpliciter*, and hence the generation or coming to be of a substance is referred to as a *fieri simpliciter*.

The differences between accidental forms and substantial forms are well summarised in the following text in *ST* I, q. 77, a. 6:

> The substantial and the accidental form partly agree and partly differ. They agree in this, that each is an act; and that by each of them something is after a manner actual. They differ, however, in two respects. First, because the substantial form makes a thing to exist absolutely, and its subject is something purely potential. But the accidental form does not make a thing to exist absolutely but to be such, or so great, or in some particular condition; for its subject is an actual being. Hence it is clear that actuality is observed in the substantial form prior to its being observed in the subject: and since that which is first in a genus is the cause in that genus, the substantial form causes existence in its subject. On the other hand, actuality is observed in the subject of the accidental form prior to its being observed in the accidental form; wherefore the actuality of the accidental form is caused by the actuality of the subject. So the subject, forasmuch as it is in potentiality, is receptive of the accidental form: but forasmuch as it is in act, it produces it. This I say of the proper and "per se" accident; for with regard to the extraneous accident, the subject is receptive only, the accident being caused by an extrinsic agent. Secondly, substantial and accidental forms differ, because, since that which is the less principal exists for the sake of that which is the more principal, matter therefore exists on account of the substantial form; while on the contrary, the accidental form exists on account of the completeness of the subject.

St Thomas here notes two differences between accidental and substantial forms. The first difference is that a substantial form makes a thing to exist simply or absolutely, that is it confers

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121 *DPN*, ch. 1, n. 5.

esse simpliciter to a thing. This is because its subject is "something purely potential" or more literally "being only in potency" (*ens in potentia tantum*), that is prime matter. Accidental form only modifies an actually existing thing, and makes a thing to be such, (*esse tale*), such as to have a certain colour or to be a certain weight. The second difference is that prime matter, as the subject of a substantial form, comes to exist only as actualised by a substantial form in a *suppositum*. The subject of an accidental form, on the other hand, exists in itself, since it is a substance, and the accidental form exists only on account of this subject.

Further, St Thomas also holds that not only does the substantial form united to the matter make something exist *simpliciter* as a substance, it also determines the kind or species of the substance. Since prime matter is in itself pure potency, without any determination or actualisation, this determination must be provided by the form. As St Thomas states: "one and the same form, through its essence, makes a human being an actual being, a body, a living thing, an animal, and a human being."[122]

One can reason to this position from an analogy with an accidental form. An accidental form determines an already existing substance to attain certain kinds or species of accidental ways of existing. For example, that it has a sense quality, such as colour, but also that it is a particular colour, such as white, or that it has the accident of form or figure and that it is this particular statue. If the accidental form is able to determine or actualise a substance to attain a certain kind of accidental existence, the substantial form by analogy is able to actualise prime matter in order to give existence to a substance of a particular kind. It is the substantial form of a particular plant which determines it to be a substance of this certain kind or species, and similarly the substantial form of a particular animal which determines it to be a substance of this certain kind or species.

It should be noted that both prime matter and substantial form are not properly speaking beings themselves but rather *principles* of a being. Only the composite substance or *suppositum* has being

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[122] *ST* I, q. 76, a. 6, ad 1.

or existence, and this by means of the immediate union of these two co-principles. However, as Goyette rightly points out, we have a tendency to think of matter and form as beings of some kind:

> Matter and form, in other words, are not *beings* but *principles* of a being. Unfortunately one is tempted to think of both matter and form as beings of some kind, incomplete substances that are perfected by being joined to each other. One is tempted, for example, to think of prime matter as a kind of extended body lacking any specific qualities; and we imagine form as some kind of non-material thing that can give to matter a determinate shape and a particular set of qualities. The problem is that prime matter, by itself, is not a body of any kind and form, by itself, is not a thing. Rather, matter and form are principles by which material beings exist, the one as passive principle and the other as an active principle. Form and matter, then, do not exist independently of each other. Here, however, lies the difficulty. As human beings, whenever we think of something, we cannot help thinking of it as a being of some kind.[123]

St Thomas teaches that, properly speaking, it is the *composite* which exists and not the prime matter or the substantial form. For example, speaking of substantial forms, he states:

> ...forms do not have being, properly speaking, but are rather the principles by which things have being. Hence if the, process of coming to be is the way to being, only those things properly come to be which have being by their forms; and forms begin to be in the sense that they exist in the things generated, which have being by these forms.[124]

From these observations, we can summarise by saying that the substantial form has two main functions. Firstly it is an intrinsic principle of substantial existence, since it is the first act of prime matter, another intrinsic principle, and makes the resultant composite substance exist *simpliciter* or simply and makes it a *hoc aliquid*.[125] Secondly, it is also a principle of specification, in that it makes something exist as the particular kind or species it is.

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123 J. Goyette. "St Thomas on the Unity of Substantial Form," *Nova et Vetera*, 7, (2009), p. 783.

124 *In Metaphys*., Bk. 7, *lectio* 7, n. 1419. *Cf*., *De Potentia*, q. 3, a. 8. In the *De Ente* St Thomas states: "[A] substantial form does not have being in itself, independent of that to which it is united, so neither does the matter to which it is joined. From their union results that being in which the reality subsists in itself, and from them is produced something essentially one." *Aquinas on Being and Essence*, trans. A.A. Maurer, 2nd ed. (Toronto: Pontifical Institute of Medieval Studies, 1968), Ch. 6, para. 2.

125 To be more precise, what makes something exist as an individual *hoc aliquid* or *suppositum* is not simply the substantial form, but the *composite* of the substantial form and prime matter (or more correctly, prime matter as signed by quantity, i.e., quantified matter (see Ch. 4, section 4.2 below)).

3.2.1. The Unicity of Substantial Form.

We have seen thus far that St Thomas argues that prime matter must be regarded as in itself pure potency or as a being only in potency, and more specifically as in potency to substantial form and therefore to substantial existence. Substantial form is regarded as the principle which makes a thing to exist *simpliciter* as a *hoc aliquid* and also determines the kind of thing it is. However St Thomas further holds that a substance can have only one substantial form, which is immediately united with prime matter. As stated above, this is implicit in the *Argument from Substantial Change.* The defence of this thesis of the unicity of substantial form will be of great importance if the defence of substantial change as explained by St Thomas is to be achieved. As Phillips states: "it is one of the main arches of the Thomistic structure."[126]

In the *ST* I, q. 76, a. 3 St Thomas examines the question whether in man there is more than one intellectual soul, which is the substantial form of a man. He responds by giving three reasons why there can be only one soul. In the first argument he states:

> If we suppose, however, that the soul is united to the body as its form, it is quite impossible for several essentially different souls to be in one body. This can be made clear by three different reasons. In the first place, an animal would not be absolutely one, in which there were several souls. For nothing is absolutely one except by one form, by which a thing has existence: because a thing has from the same source both existence and unity; and therefore things which are denominated by various forms are not absolutely one; as, for instance, "a white man." If, therefore, man were 'living' by one form, the vegetative soul, and 'animal' by another form, the sensitive soul, and "man" by another form, the intellectual soul, it would follow that man is not absolutely one.

St Thomas here begins by stating that nothing is absolutely one except by one form, by which a thing has existence. This is the conclusion he wishes to prove, namely that for a thing to be absolutely one it can have only one form. The reason he gives is that a thing has from the same source both existence and unity. This is because, as we have already seen, the substantial form of a thing actuates prime matter in order to give a particular substance, a *hoc aliquid*. That is, the substantial form gives a thing *esse simpliciter* such that it simply exists as a *hoc aliquid*. Because it

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126 *Op. cit.*, p. 131.

is a *hoc aliquid*, a 'this something', it is a unity, in that it is one thing. The argument can therefore be set out as follows: Whatever makes something to be a *hoc aliquid* or particular thing makes it also one or a unity. The substantial form makes something to be a *hoc aliquid* or particular thing. Therefore the substantial form makes something one or a unity.

The major premise in the above argument, namely that whatever makes something to be a *hoc aliquid* makes it also to be one or a unity, is based on the principle that a thing has from the same source both existence and unity. This principle follows from the convertibility of the transcendentals with being, and in particular the convertibility of *aliquid* and *unum*. A particular thing that exists has the transcendental *res* in so far as it is a particular thing and the transcendental *aliquid* in so far as it is divided from all others. A particular thing that exists also has the transcendental *unum* or unity in that it is undivided from itself. [127]

It follows from this that since the substantial form confers *esse simpliciter* and makes something to be a *hoc aliquid* and a unity there cannot be more than one substantial form because a thing would not then be one particular thing but several particular things, which would be a contradiction. As St Thomas states in the *SCG*, Book 2, Chapter 58, in which he deals with the question whether a man has more than one soul:

> Moreover, the principle of a thing's unity is the same as that of its being; for one is consequent upon being. Therefore, since each and every thing has being from its form, it will also have unity from its form. Consequently, if several souls, as so many distinct forms, are ascribed to man, he will not be one being, but several. Nor will an order among forms suffice to give man unity, because to be one in respect of order is not to be one unqualifiedly speaking; since unity of order is the least of unities.

[127] St Thomas gives a full treatment of the transcendentals and their convertibility with being in the *De Veritate*, q. 1, a. 1. In the *In Metaphys*., Bk. 10, *lectio 3* , n. 1974 he states: "Since he [Aristotle] had given the same argument for being and for unity, he now shows that unity and being somehow signify the same thing. He says "somehow'' because unity and being are the same in their subject and differ only in meaning. For unity adds to being the note of undividedness, because what is one is said to be an indivisible or undivided being."

It also follows from this that if the substantial form confers *esse simpliciter* on a thing and makes it exist as a *hoc aliquid*, any other form a thing has can only be an accidental form and not a substantial form. In the Disputed Questions *De Anima,* Article 9 St Thomas states:

> Among all [principles] the act of existing (*esse*) is that which most immediately and intimately belongs to things, as is pointed out in the book *De causis* [IV]. Hence the form which gives matter its act of existing, must be understood to come to matter prior to anything else, and to be present in it more immediately than anything else, because matter receives its act of existing from a form. Moreover, it is proper to a substantial form to give matter its act of existing pure and simple (*esse simpliciter*), because it is through its form that a thing is the very thing that it is. For a thing is not given an act of existing pure and simple through accidental forms, but only a relative one (*esse secundum quid*), such as to be large or colored, and so on. Therefore, if there is a form which does not give to matter its act of existing pure and simple, but comes to matter already possessing an act of existing through some form, such a form will not be a substantial one. From this it is obvious that an intermediary substantial form cannot intervene between a substantial form and matter, as some wished to maintain. For these men held that there exists in matter an order of diverse forms, one of which is arranged under another in accordance with the order of genera; as if one were to say, for instance, that matter is given the act of existing of a substance through one form; the act of existing of a body through another; the act of existing of a living body through still another; and so on.
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> But if this position is adopted, only the first form which gives a thing its act of existing as a substance, would be a substantial one. The other forms, indeed, would all be accidental ones, because it is a thing's substantial form that makes it be a substance (*hoc aliquid*), as we have already shown (Art. 1). Therefore it is necessary to say that a thing has substantiality, exists in the ultimate species, under which there are no other species (*specialissima*), and in all intermediate genera, through one and the same form.

In this text we see St Thomas repeating that the substantial form confers on prime matter *esse simpliciter* and makes a thing to be a *hoc aliquid*. Since the conferring of *esse simpliciter* is the most basic and fundamental of acts, it requires that the substantial form be immediately united with prime matter without any intermediary form. If there was some intermediary form which conferred *esse simpliciter* on the matter then this would be the substantial form and any other form would be an accidental form, which only confers *esse secundum quid*. In the particular question that interests St Thomas in this article, he examines the question whether the human soul, which is the substantial form of a man, immediately informs prime matter or whether there exists an intermediary form which immediately informs matter. If there did exist such a form, then that

would be a substantial form, and the soul would be only an accidental form. But by definition the soul cannot be an accidental form since it is the substantial form of a man.

We note also that St Thomas adds here what we have already seen, namely that the substantial form makes a thing to exist in its ultimate species, that is, it makes the thing to be the *kind* of thing it is. The substantial form makes a thing not only a *hoc aliquid,* but also a thing which is complete in its species. We would expect this to follow since to exist as a *hoc aliquid* which subsists in itself requires it to be some kind of thing, and since it is the function of the substantial form to enable a thing to subsist as a *hoc aliquid*, it follows that it also has the function of making a thing belong to some species of substance.[128]

The argument in the Disputed Questions *De Anima,* Article 9 is given also in *ST* I, q. 76, a. 4 where St Thomas states:

> If, however, the intellectual soul be united to the body as its substantial form, as we have said above, it is impossible for another substantial form besides the intellectual soul to be found in man. In order to make this evident, we must consider that the substantial form differs from the accidental form in this, that the accidental form does not make a thing to be "simply," but to be "such," as heat does not make a thing to be simply, but only to be hot. Therefore by the coming of the accidental form a thing is not said to be made or generated simply, but to be made such, or to be in some particular condition; and in like manner, when an accidental form is removed, a thing is said to be corrupted, not simply, but relatively. Now the substantial form gives being simply; therefore by its coming a thing is said to be generated simply; and by its removal to be corrupted simply. For this reason, the old natural philosophers, who held that primary matter was some actual being---for instance, fire or air, or something of that sort---maintained that nothing is generated simply, or corrupted simply; and stated that "every becoming is nothing but an alteration," as we read, Phys. i, 4. Therefore, if besides the intellectual soul there pre-existed in matter another substantial form by which the subject of the soul were made an actual being, it would follow that the soul does not give being simply; and consequently that it is not the substantial form: and so at the advent of the soul there would not be simple generation; nor at its removal simple corruption, all of which is clearly false.

St Thomas also makes clear that the substantial form of complex natural substances which are made up of material parts is not only the form of the whole but also of each of its parts. As he states in *ST* I, q. 76, a. 8:

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128 *Cf., De Anima*, a. 1.

> As we have said, if the soul were united to the body merely as its motor, we might say that it is not in each part of the body, but only in one part through which it would move the others. But since the soul is united to the body as its form, it must necessarily be in the whole body, and in each part thereof. For it is not an accidental form, but the substantial form of the body. Now the substantial form perfects not only the whole, but each part of the whole. For since a whole consists of parts, a form of the whole which does not give existence to each of the parts of the body, is a form consisting in composition and order, such as the form of a house; and such a form is accidental. But the soul is a substantial form; and therefore it must be the form and the act, not only of the whole, but also of each part.

The substantial form, in this case the human soul, since it gives *esse simpliciter* to a whole *hoc aliquid* must also give existence to each part of the substance. If it was not responsible for giving existence to the parts, these parts would be given existence by their own substantial forms, in which case each of these parts would be substances having their own substantial forms. This is indeed the position of the pluriformists, who hold that a substance can have more than one substantial form. However, as we have seen, according to St Thomas this is impossible since there can be only one substantial form. Further, as St Thomas states, if these parts had their own existence then the function of the form of the whole would be that of an accidental form, which simply gives order and unity to already existing parts, as the accidental form of a house gives order and unity to already existing parts, such as wood or stone. However, as he states, the soul is by definition the substantial form of the body and therefore cannot simply be an accidental form.

We may also add that in the case of living things, if the soul or life principle was regarded as a separate substance from the parts of the body, and these parts are in turn regarded as separate substances, then the role of the soul would be reduced to that of an efficient cause only, which moves parts which already have an independent existence by virtue of their own substantial form. This is in fact the Platonic dualistic account of the relation of the soul to the body, like that of a pilot in a ship. As we have seen in the above text, if the soul were united to the body merely as its motor, that is to say, as an efficient cause, it would not be in each part but only in one through

which it moves the others.[129] Commenting on the understanding of the substantial form as efficient cause Goyette states:

> If the form acts upon the matter, but it does not make the matter to be, the only remaining alternative is that the form acts upon the matter as an agent or moving cause. There is an intrinsic connection between the failure to grasp that form is not a *being*, but rather a *principle* of being, and the misconception of the formal cause as an efficient cause.[130]

He then gives the following relevant text from St Thomas *SCG*, Book 2, Chapter 68 on this point:

> For one thing to be another's substantial form, two requirements must be met. First, the form must be the principle of the substantial being of the thing whose form it is; I speak not of the productive but of the formal principle whereby a thing exists and is called a being. The second requirement then follows from this, namely, that the form and the matter be joined together in the unity of one act of being; which is not true of the union of the efficient cause with that to which it gives being. And this single act of being is that in which the composite substance subsists: a thing one in being and made up of matter and form.

However, having said this, we can nonetheless say that the substantial form is both the form of the parts and of the whole, as St Thomas notes in the above text from *ST* I, q. 76, a. 8 and that it does have the function not only of conferring existence on the parts but also of giving order and unity to these parts in the whole.[131] If it had the function only of giving order and unity to the parts, it would be only an accidental form, but whether or not it does this, provided that it gives existence to the parts, it is a substantial form. Hence in the case of a human body, the soul gives existence to

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[129] St Thomas addressed this issue in the immediately preceding article in *ST* I, q. 76, a. 7 in which he states: "If the soul, according to the Platonists, were united to the body merely as a motor, it would be right to say that some other bodies must intervene between the soul and body of man, or any animal whatever; for a motor naturally moves what is distant from it by means of something nearer. If, however, the soul is united to the body as its form, as we have said, it is impossible for it to be united by means of another body. The reason of this is that a thing is one, according as it is a being. Now the form, through itself, makes a thing to be actual since it is itself essentially an act; nor does it give existence by means of something else. Wherefore the unity of a thing composed of matter and form, is by virtue of the form itself, which by reason of its very nature is united to matter as its act. Nor is there any other cause of union except the agent, which causes matter to be in act, as the Philosopher says, Metaph. viii (Did. vii, 6)."

[130] J. Goyette. "St Thomas on the Unity of Substantial Form" *op. cit*., pp. 784-5.

[131] When we say that the substantial form confers existence, it must be understood that it does so not productively as an efficient cause, which is an extrinsic cause, but rather formally as an intrinsic formal cause. The substantial form itself is able to act as a form and to confer existence formally only by virtue of the act of being (*esse*). As St Thomas states: "...existence [esse] is that which makes every form or nature actual." *ST* I, q. 3, a. 4. Existence, conferred via the substantial form, is conferred on the *suppositum*, which alone exists as the composite of matter and form. Existence belongs to the *suppositum* through the substantial form. As Alvira states: "…in bodily things, the form is act with respect to matter, and it is in potency with regard to the act of being *(esse)*. Matter is doubly potential, first with respect to form and then, through the form, with respect to the act of being." *Op. cit*., p. 78.

each of its parts, such as the hands, feet, internal organs etc, as well as ordering all these parts in the whole and for the good of the whole.

3.2.2. Excursus: Evidence for Substantial Forms and their Unicity.

We have seen that for St Thomas, substances are a unity. This unity is conferred by the single substantial form which immediately actualises prime matter. Substances therefore are not simply a composition or arrangement of other substances with only an accidental unity. The strict unity of substances is safeguarded and explained by the unicity of the substantial form which gives existence to the whole and to each of the parts. A substance has the numerically same intrinsic principle in each of its parts.

A substance can be contrasted with an artefact, such as a machine, which lacks such an intrinsic principle which is numerically the same in the whole and in each of its parts. The unity of an artefact, such as a car, is due not to some natural intrinsic principle found *within* each of its parts, but rather is imposed *extrinsically* on its parts by an external agent, such as the designer of a car. We could say that an artefact, such a car, has an artificial intrinsic principle, if by this is meant a principle which gives unity to the parts to form a whole and which also orders the parts of the car in that whole. That is, this artificial principle is a mere uniting and ordering principle. However, this uniting and ordering principle is not found within each part of the whole, in that it does not confer being or existence to those parts. Rather, this artificial principle is extrinsically imposed on parts *which already exist*, merely giving them a certain unity and order. It is for this reason that this extrinsically imposed principle, as found in artefacts, is referred to by St Thomas as an accidental form, in that it does not confer *esse simpliciter* on the whole and its parts but only *esse secundum quid*, in so far as it gives being to the whole considered as an orderly sum of parts which already exist. On the other hand, a substantial form, as found in natural substances, confers *esse simpliciter* on all its parts and on the whole, and also has the function of uniting and ordering those same parts to produce a whole.

Both an artefact, such as a car, and a substance, such as a man, are made up of quantitative parts which together constitute a quantitative and continuous whole.[132] Further, such a whole could be termed a heterogenous whole, since the parts are of different kinds.[133] Given the distinction between artefacts, which have only an accidental form ordering their parts, and substances, which have a substantial form, we may also distinguish quantitative wholes into either artificial wholes, in the case of artefacts, and natural wholes, in the case of substances.[134] Using this distinction between artificial and natural wholes, Svoboda states:

> For a quantitative whole (and in fact for every whole) it is characteristic that the plurality of its parts is united and ordered by a form. Furthermore, depending on the nature of the form which is the principle of the unity and ordering of the parts of a quantitative whole, *natural whole* and *artificial whole* can be distinguished. A natural whole is generated naturally and the form as principle of its unity and ordering is intrinsic to it; the generation of an artificial whole is caused by an agent extrinsic to it and the given form as principle of unity and ordering of its parts is always extrinsic to it (it is an "external bond"). That is why a natural whole has a "higher degree" of unity than an artificial whole and as a result it is a whole of a "higher degree." An example of a natural whole is a man as a quantitative whole; an example of an artificial whole is a house. The principle of unity and ordering of the integral parts of a man is (along with quantity) the soul, individually proper and immanent to man, and the unity of a man is unity absolutely (*simpliciter*). On the other hand, the unity of a house is merely unity in a certain respect (*secundum quid*); the principle of the unity and ordering of the parts of a house is an external bond, which according to Aquinas is an accidental form (certain composition and connection of the parts of the house).[135]

There are two things we can note regarding these comments. Firstly, regarding the efficient or agent cause, in the case of a natural quantitative whole, such as a man, the cause of the unity and

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132 Regarding the notion of quantitative whole *cf*., *SCG*, Bk. 2, ch. 72; *De Potentia* q. 7, a. 10; *In De Div. Nom*., ch. 4, *lectio* 8.

133 St Thomas distinguishes between homogeneous and heterogeneous wholes, *cf*., *ST* I, q. 11, a. 2, ad 2.

134 *Cf*., *In Metaphys*., Bk. 10, *lectio* 1, "aliquid est totum per naturam, aliquid vero per artem."

135 D. Svoboda. "Thomas Aquinas on Whole and Part," *The Thomist* 76 (2012), p. 302-3. *Cf*., *In Metaphys*., Bk. 10, *lectio* 1, n. 1925-6: "...we must consider that what "is such," i.e., continuous, is not only said to be one but also has something more; i.e., it is a whole having some form or specifying principle, just as an animal is one, and a triangular surface is one. Hence this sense of one adds to the oneness of continuity the kind of unity which comes from the form by which a thing is a whole and has a species. And since one thing is a whole by nature and another by art, he added that "a thing is one to the greatest degree" if it is such by nature and not by force. For example, all those things which are united by glue or by some such bond so as to become a whole are joined by force. But whatever is joined by nature is one to the greatest degree, because it is clearly the cause of its own continuity; for it is such by its very nature."

order of the parts of his body is some intrinsic principle, in the sense that it comes from within him and is not caused by some obviously extrinsic efficient cause, as in the case of an artefact such as a house or a car. In the case of an artefact, the extrinsic cause is the artificer who is responsible for uniting and ordering the pre-existing parts. While we can say that a natural thing has no such obvious extrinsic cause of the unity and ordering of its parts, it does however have an extrinsic efficient cause, such as the parents of the man and ultimately God. However the parents do not act on pre-existing parts in order to impose an order and unity to their offspring, as does a maker of an artefact. In the case of God, He gives the act of being to all existing things, which does not presuppose any pre-existing parts. This act of being is effective via the substantial form, since for St Thomas the *esse* is the act of all forms.[136] In that sense, the extrinsic efficient causality of God is innermost to a thing, since it does not presuppose anything in existence on which it can act.

The second thing to note refers to what has already been said above. Svoboda states that an artificial whole has an extrinsic form, while a natural thing has an intrinsic form. As stated above, it would be more correct to say that the artificial or accidental is also an intrinsic form, but is an intrinsic artificial form, as opposed to an intrinsic natural form, which is found in natural wholes. By saying that an artefact has an extrinsic form, he wishes to highlight that it has an extrinsic agent responsible for the unity of its parts. However, once this agent imposes an accidental or artificial form on the artefact, that form becomes intrinsic to it. In the case of a natural whole, the substantial form is responsible for the unity and order of the whole, and this form is not imposed extrinsically on pre-existing parts, as in the case of an artefact. Further, as we have said above, this substantial form is responsible for the very existence of the parts themselves, unlike the case of an accidental form which presupposes pre-existing parts.

We may say also that a natural substance has an intrinsic principle, namely the substantial form, which is not only a principle of the unity and ordering of its parts, but also of its operations and activities. This intrinsic principle is what St Thomas, following Aristotle, refers to as the primary

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136 *ST* I, q. 3, a. 4.

part of the "nature" of a thing, defining it as "a principle of motion and rest in that in which it is primarily and *per se* and not *per accidens*" and is what distinguishes substances from artefacts.[137] By motion is here meant not only local motion, but any physical or corporeal motion, such as qualitative and quantitative motion or change. The substantial form as an intrinsic principle of motion is seen most clearly in living things, since a living thing is moved not only by another but it moves itself. A horse, for example, is able to move itself and to gallop due to an intrinsic principle within itself, this principle being its substantial form. There is no obviously extrinsic cause of the horse galloping.[138]

A living thing may be compared to an artefact which is capable of motion, such as a car. As we have seen, an artefact such as car has a unity and order of its parts caused by an accidental form imposed on parts already existing. This accidental form could be called an artificial intrinsic principle. The parts of a car are so united and ordered in order to enable it to move and to transport people. However, the car lacks a natural intrinsic principle of motion, such as a horse has. Its motion is caused by an extrinsic cause applied to the car, namely a driver, who has to start the engine, apply pressure on the accelerator and steer the car. Referring to the definition of nature given above, a car, as an artefact, would have a principle of motion which is *per accidens*, while a horse would have a *per se* principle of motion, since its motion is due to its very nature or substantial form and not to some extrinsic cause. As Kent states regarding this point:

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137 ...principium motus et quietis in eo in quo est primo et per se et non secundum accidens. *In Phys*., Bk. 2, *lectio* 1, n. 145. While the nature of a substance consists of both the prime matter and the substantial form, the principle part of nature is the form. As Grenier states: "a) The formality of nature is proper to first matter, i.e., first matter is a nature, because it is the first, substantial, passive principle of motion. b) But since first matter does not exist except by means of form, the formality of nature is also proper to form. Moreover, the formality of nature more properly belongs to form than to matter, not because form constitutes matter as a passive principle of motion, — first matter of itself is such a principle, — but because matter or nature becomes in act through form. c) In a living being, the formality of nature is proper to substantial form, not only in as much as form is the act of matter or nature, but in as much as form is the first active principle of motion. For a living being not only is moved by another and moves others, but it moves itself. Hence the first active principle of such motion is nature, because vital motion and its principle are in the same subject." *Philosophy of Nature*, p. 54.

138 We can refer to no *obviously* extrinsic cause of the horse galloping because there would be an ultimate extrinsic efficient cause of the horse's motion, namely God as first efficient cause.

> But another way of making the very same point is to call attention to the fact that the status of car parts *as* "car parts" is imposed entirely from without. That is, a car part does not have any operation that arises from some unifying principle that is found intrinsically inside the "nature" of all the parts of the car. Instead, one car part performs one activity, and then another part, by happening to be strategically placed next to the first by the car designer, mechanically receives an external stimulus to perform its function, and so on. The car as a whole has no *intrinsic* source of unity – that is, there is no evidence that there is one fundamental "identity principle" that can be found somehow embedded inside the very "nature" of each and every car part. Instead, in their "natures," the car parts appear to be totally separate entities that have been placed next to each other. Hence no *intrinsic* justification for treating the car as a single substance exists.[139]

As we have already stated, we can qualify what Kent states by saying that a car could be said to have an artificial intrinsic principle of unity and of activity or motion and not a natural intrinsic principle of unity and activity. It is the presence of this natural intrinsic principle of activity, namely the substantial form, in the whole and in each of its parts which can be said to be what distinguishes substances from artefacts. The unity of the parts of a substance and the ordering of these parts to operate in a certain way is the result of the presence of the substantial form, which is an intrinsic principle. On the other hand, the accidental form in artefacts, such as cars, is imposed extrinsically and does not arise from within the thing.

It can be argued that the fundamental error of a modern mechanistic and reductionist view of things is to regard natural things as simply aggregates having only an extrinsic accidental unity and the

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[139] *Op. cit*., p. 104. As Feser notes, comparing a natural liana vine to a hammock which may be made from such vines: "Now the difference between that which has such an intrinsic principle of operation and that which does not is essentially the difference between something having a substantial form and something having a merely accidental form. Being a liana vine involves having a substantial form, while being a hammock of the sort we're discussing involves instead the imposition of an accidental form on components each of which already has a substantial form, namely the substantial form of a liana vine. A liana vine is, accordingly, a true substance, as Scholastic philosophers understand substance. A hammock is not a true substance, precisely because it does not qua hammock have a substantial form - an intrinsic principle by which it operates as it characteristically does — but only an accidental form. In general, true substances are typically natural objects, whereas (Aquinas tells us, commenting on Aristotle) "some things are not substances, as is clear especially of artificial things." [139] *Scholastic Metaphysics*, p. 165.

Also Connell states: "Artefacts are not natural because the properties that specify them as artefacts originate from without, and the movements that belong to artefacts are constrained; that is, they are directed in ways that exceed the natural. What is natural originates from within the substance, from its internal structure; or if the natural behaviour is the becoming of another substance, then it is rooted in the substantial material." *Substance and Modern Science,* p. 233. And again elsewhere: "...there is a fundamental difference between the natural and the artefactual, not to mention natural entities that are aggregates. Whatever is artefactual, however, has its origin from outside, supposing in the materials only a capacity to receive the activities directed by human intelligence. This difference between the internal and the external is profound." *Ibid*., p. 235.

denial of any intrinsic nature or principle.[140] Feser comments that the ancient atomists regarded natural things as merely aggregates of some fundamental particles, and thought that the differences among them were therefore only accidental and not substantial. Therefore he states:

> ...for the atomist it is the fundamental particles, and not the many sorts of arrangements into which they can be put, that are the true substances. Modern reductive and eliminative materialists would not endorse the crude mechanical model of combination and recombination of basic particles that the ancient atomists had in view, but they are committed to essentially the same picture of the world, e.g. to the view that "there are just fermions and bosons and combinations of them" (Rosenberg 2011, p. 179). If reductionists, they might say that water (for example) is real but really nothing but the oxygen and hydrogen that make it up, that the oxygen and hydrogen in turn are real but really nothing but the particles that make them up, and so forth. If eliminativists, they might say that only particles of a certain sort are real and that the objects composed of these particles do not strictly exist. Either way, they would appeal to modern physics and chemistry in defense of their position.[141]

We have examined the explanation St Thomas gives for there being three principles in the explanation of substantial change, and also his justification for their being only one substantial form for each substance. We will now examine some observational evidence that substances have one intrinsic principle of unity within themselves, namely that they have one substantial form.

i) Experience of Oneself as a Unity.

The first item of evidence of this is that we experience ourselves as a unity. This type of evidence is the most direct and known to us since it deals with our very selves rather than something outside of ourselves. In my acts of sensing, thinking, willing and performing many other operations, it is I as a singular thing that experience these acts as my own acts. In other words, in the midst of all of my operations, there is an "I" or self that remains constant and underlying throughout these various operations. There is therefore an experience of my unity as one thing or substance and my operations as accidents of this one substance[142]. As Connell states:

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140 Connell. *Substance and Modern Science*, p. 236.

141 *Scholastic Metaphysics*, pp. 177-8.

142 Clarke gives other types of evidence for the existence of oneself as a substance: firstly, the fact that I have memory of past events etc as mine and as my past experience; secondly that I have moral responsibility for my past actions, indicating that there is a perduring subject of such responsibility; thirdly, that I can make

> (In fact, the experience we have of our own unity in the midst of the many operations which we perform and which we recognize as distinct from us yet residing in us—this is the first evidence that we have for the distinction between substance and accident. The same "I" sees, hears, smells, and performs other activities. In other words, that we are substances is something we know by internal experience; we ourselves are the entities which are most obviously substances.)[143]

Consistent with his "bundle theory" of substance, which we have discussed above, Hume rejects that we have an apprehension of our self as one substance underlying our changing experiences. He argues:

> If any impression gives rise to the idea of self, that impression must continue invariably the same, through the whole course of our lives; since self is supposed to exist after that manner. But there is no impression constant and invariable. . . . For my part, when I enter most intimately into what I call *myself*, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch *myself* at any time without a perception, and never can observe anything but the perception.[144]

While it is true that we do not have any independent impression of the self, the self is however apprehended *in and through* our activities. A similar line of reasoning was made above when it was argued that the intellect immediately apprehends the *whole being*, substance and accidents. This is because the substance and accidents always exist together, such that it is not possible to apprehend the being or existence of one without apprehending the being of the other, as if they were independent entities. As Hawkins argues on this point:

> What we are claiming, then, is not that the self is a concrete object to be observed either along with or independently of the variations of our actual experience but that, when we reflect on our experience, we are simultaneously aware of an element of permanence as well as of variations within it. If we cannot think of the self apart from experience, it is equally impossible, for it would be an equally illegitimate abstraction, to think of experiences simply as atomic events in succession. "A sensation of blue occurs" is not an

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promises and pledge fidelity into the future; and finally, my experience of carrying a project through to completion. W. N. Clarke. *The One and the Many: A Contemporary Thomistic Metaphysics* (Indiana: University of Notre Dame Press, 2001), pp. 126-7.

143 R.J. Connell. *Matter & Becoming* (Chicago, Ill: The Priory Press, 1966), p. 83. However, it could be argued that the experience of oneself as a unity is not the first awareness of unity. Rather, our awareness of other things outside oneself as a unity could be said to be prior to the awareness of one's own unity. St Thomas begins from knowledge of external things as his starting point, rather than the subjective experience of oneself.

144 *A Treatise of Human Nature*, ed. D.G.C. Macnabb. (London: Collins, 1962), Bk. I, Pt. iv, s. 6, pp. 301-2.

> adequate translation of "I am aware of blue." The serial self proposed by Hume is merely a succession of abstractions; our experience in the concrete is of an identical self in a succession of actual states. In this sense we claim that an element of permanence in ourselves and in the changing persons and things with which we are in contact is obvious; what is not obvious is the analysis of this concrete unity of change and permanence. The metaphysical doctrine of substance and attribute is put forward as providing the due analysis of the situation.[145]

Further, I have an awareness of what occurs in different parts of my body, such as sensations of touch felt in different body parts, which suggest that these parts constitute a strict unity with myself and that there is one intrinsic principle which accounts for this unity. As Kent states:

> For we can directly experience the inner principle of some of our own activities, such as sensation, inasmuch as we can recognize that these activities seem to involve the same one principle existing simultaneously in various parts of us. After all, each of us has to admit that there seems to be a simultaneous awareness of what we are sensing in different body parts, like the feet and the hands. Now, whatever the source (or "principle") of this simultaneous awareness is, it must be present in more than one body part at once in order to make each of us feel all those body parts as simultaneous parts of one "me." Thus, as we shall eventually discover, the most immediate, and hence strongest, argument for the existence of any particular substantial unity will be the argument that each man himself is such a unity.[146]

St Thomas in *ST* I, q. 76, a. 1 examines the question whether the intellectual principle in man, namely his soul, is united to the body as its form. He argues that the soul is the "first principle of life of those things that live." A body, in so far as it is a body, does not have life, otherwise every body would be a living thing. That it has life is due to some principle of life, called the soul. Since life and its various operations, such as understanding, are acts, the cause of this must be something in act itself, which is the form of the body. He then goes on to say:

> But if anyone says that the intellectual soul is not the form of the body he must first explain how it is that this action of understanding is the action of this particular man; for each one is conscious that it is himself who understands.

Here St Thomas argues that if the soul were not the form of the body, then it would be necessary to explain how each man experiences his act of understanding as his own and is conscious that it is he

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145 D.J.B. Hawkins. *Being and Becoming: An Essay Towards a Critical Metaphysic* (London: Sheed and Ward, 1954), p. 113.

146 *Op. cit.*, p. 113.

himself who understands. In other words, St Thomas is appealing to the inner experience of consciousness as an argument that the soul is indeed a part of a man.

He then goes on to argue against the dualistic Platonic understanding that man is his intellectual soul, such that the soul would be a separate substance from the body and united to it accidentally, like a pilot is to his ship. St Thomas argues that this cannot be the case:

> ...for this reason, that it is one and the same man who is conscious both that he understands, and that he senses. But one cannot sense without a body: therefore the body must be some part of man. It follows therefore that the intellect by which Socrates understands is a part of Socrates, so that in some way it is united to the body of Socrates.

The fact that man is conscious that he both understands and senses indicates that he is a unity or one substance, a union of body and soul, since sensing requires a body. While understanding does not *per se* require a body, the fact that man experiences himself as both understanding and sensing indicates he is one substance. Commenting on this Kent argues:

> After all, if the body and the soul were two distinct substances, i.e., if they did not share any intrinsic principle, then what occurred in the body could at most only be replicated in the soul, just as a captain can only try to reproduce within his imagination what his anthropomorphized ship might be "feeling" as she takes a torpedo hit to the hull. The captain cannot actually feel the ship's "pain" directly. Likewise, a human soul that was a different substance from its body could not directly feel what happened in its body, but would feel at most only an imaginary reproduction of what it would be like to undergo what its body underwent.[147]

An objection could be made against this argument by materialist reductionists who equate sensation and understanding with a physico-chemical activity. In other words, there is no need to bring into consideration a substantial form as an intrinsic principle to explain sensation and understanding. This theory is often described as the "mind-brain identity theory". By this is meant that a mental state, which would include sensation, is identical with a brain state or a process in the central nervous system.[148] Connell however argues that electrical impulses, as occur in nerve cells, cannot be an adequate explanation of sensation:

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147 *Op. cit.*, p. 129

148 Connell, *Substance and Modern Science*, p. 120.

> But if someone still insists that the electrical activities are the sensation, then he has to say that sensation occurs wherever they occur, whether in neural tissue, muscle tissue, or laboratory solutions containing charges separated by a permeable membrane. But if someone argues that an electrical pulse is sufficient to define sensation because it is in the brain, because it is in neurons, which are in some ways different from other cells as well as from inanimate materials, then his argument surreptitiously introduces a hidden difference. Although nerve tissue is indeed different from other tissues, the nature of the electrical phenomenon is not. Hence by pointing to the special character of neurons, an appeal actually is being made to an unseen difference in the tissue itself. And granted that sensation is limited to some organisms, the unseen difference would actually be responsible for what is distinct in sensation. The electrical property would then be employed in the explanation as a kind of false cause, or else as a generic attribute, the undescribed difference in the tissue being the hidden but "true" cause. [149]

Bodily or material phenomena, such as electrical activity, cannot therefore adequately explain the phenomenon of sensation since this electrical activity is the same in all cases. There is need of some "unseen difference" in the tissue which accounts for the sensation itself and also for different types of sensations. The fact that I have different sensations, even though the same electrical impulses are involved, also implies that something else is involved in explaining it.[150]

ii) Corruption of Living Things.

A second piece of evidence supporting the unicity of the substantial form is the fact that upon the death of a living thing the thing begins to corrupt rapidly. This suggests that the soul, as the principle of life of the thing, was also a principle which kept the whole united as one and also kept the various integral parts, such as the organs and muscles, from corrupting. St Thomas, when examining the question whether the soul is in each part of the body, gives this argument as a proof that it indeed is:

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[149] *Ibid*., p. 133-4.

[150] Feser argues that there is no precise correlation between mental states and brain states: "Any given mental state, then, is never had individually, but involves the having of other mental states as well; and it typically also involves there being rational connections between the mental states one has. It is because one believes that catching cold is unpleasant and that getting wet tends to cause colds that one infers that one had better not get wet, and then draws the further inference that since going out in the rain, however pleasant, will cause getting wet, one had better not go out in the rain. So there are *logical relations* between mental states that partially determine precisely which mental states one will have, if one has any at all. But there seem just obviously to be no such relations between neurons firing in the brain." E. Feser. *Philosophy of Mind: A Beginner's Guide* (Oxford: Oneworld Publications, 2010), p. 68.

> A proof of which is, that on the withdrawal of the soul, no part of the body retains its proper action; although that which retains its species, retains the action of the species. But act is in that which it actuates: wherefore the soul must be in the whole body, and in each part thereof.[151]

Upon the death of a living thing, the various parts of it, such as the organs, cease to function and perform the various actions they performed when the soul was still united to the body. Further, after a short space of time these organs begin to corrupt. This suggests that the soul is not only in the whole by way of an accidental form, which is simply uniting and organising parts which are substances themselves which have their own act of existence, but rather is a substantial form which is in each part and gives existence to that part.

This may be compared to an artefact, such as a car, which lacks a substantial form in each of its parts. Evidence for this is that the parts of a car continue to exist even when the car stops running due to a breakdown of the engine. This suggests that the parts have their own act of existence independently of the car considered as a whole and that the form of the car which unites the various parts to give a functioning vehicle is only an accidental form.

It may be argued that organ transplantation is evidence that the organs do in fact have their own act of existence, not unlike car parts. They can be removed from a corpse and transplanted into a living person. This issue will be addressed in more detail Chapter 5. Suffice it to say that the organs need to be removed from the corpse very soon after death and the transplantation carried out as soon as possible, otherwise corruption sets in and the transplantation would not be effective. Further, the organs need to be kept viable by artificial means, such as the maintenance of the correct temperature and other interventions. This suggests that the organs, simply of themselves, cannot exist as independent parts without such external intervention.[152]

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151 *ST* I, q. 76, a. 8. *Cf.*, *SCG*, Bk. 2, ch. 58.

152 *Cf.*, J. Goyette. "Substantial Form and the Recovery of an Aristotelian Natural Science," *The Thomist* 66 (2002), p. 530.

iii) Regeneration from Parts.

A third piece of evidence is the fact that the severed parts of some plants and animals are able to regenerate a whole new plant or animal. For example, a cutting from a plant is able to regenerate a whole new plant which is of the exact same kind as the original plant. Some species of starfish are able to regenerate their whole body from a single severed arm.[153] Further, in the case of some animals, such as earthworms, when their bodies are severed the severed part is able to carry on with certain functions, such as movement and sensation. Commenting on phenomena such as these, St Thomas argues against the view of Plato, whom he holds as arguing that different parts of a living thing have different souls, such that a thing has more than one soul. St Thomas states:

> ...it is manifest that the operations of different parts of the soul appear in the same part of the body, as we see in the case of animals that live after being cut in two, since the same part has the movement, sensation, and appetite by which it is moved; so too, the same part of a plant, after being cut off, is nourished, grows, and blossoms. And from this it is clear that the diverse parts of the soul are in one and the same part of the body. Therefore, there are not distinct souls in us which are allocated to various parts of the body.[154]

The fact that a part of a living thing, such as a plant, can grow to become a new whole plant indicates that in that part there is some principle of the whole plant which enables it to then develop into that plant. It suggests that the form of the whole plant is in the part as well. If the cutting had only a principle or form which was peculiar to that part, then it would not be able to develop into a whole but would remain only that part. The parts of an artefact, such as a car, when separated from the car, can never generate a new car. This is because those parts lack an intrinsic principle which would enable it to achieve this end. Commenting on this phenomenon, Kent states:

> But because a severed plant part can grow the rest of a new plant around itself, the whole of a plant seems to be naturally more basic than any of its parts. After all, within the intrinsic nature of the part, there is a plan for the whole, a plan that indicates that the part is not a self-enclosed substance by itself. So, it is quite reasonable to suppose that, at least before the plant part was severed – i.e., before it started performing activities aimed at the growth of a different whole plant – numerically the same principle of activity was found in

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153 C.H. Edmondson. "Autotomy and Regeneration in Hawaiian Starfishes" *Bishop Museum Occasional Papers* 11 (8), pp. 3-20, http://hbs.bishopmuseum.org/pubs-online/pdf/op11-8.pdf.

154 *SCG*, Bk. 2, ch. 58.

> that part as in the other parts of the original whole plant. And this means, according to our criterion for recognizing a natural substance, that the relationship of the parts of a plant to each other is not one of mere juxtaposition, but one involving an intrinsic, and hence substantial, unity.[155]

iv) The Ordering and Functioning of Parts for the Good of the Whole.

A fourth piece of evidence for the unicity of the substantial form is that the parts of a natural substance are ordered towards the good of the whole. If we take as our example that of a man, he is made up of very many and varied parts, such as his organs, muscles, bones and nerves. All these various parts are ordered in such a way that they benefit the whole man. Further, each part functions in such a way that it is of benefit to the functioning of the whole man. For example, the heart is placed in a particular location in the body which enables its functioning, and also is joined to certain nerves and blood vessels which enable the organ to function. Further, the heart itself has a particular function, namely of pumping blood, which serves to assist the proper functioning of the whole man. In other words, these various parts do not function independently from each other but rather function as parts of a whole organism and for the good of the whole. The fact that there is this ordering of the parts for the good of the whole and a functioning for the benefit of the whole suggests that there must be only one intrinsic principle in each of these parts which does this ordering and enables this functioning, and further, that this principle is something distinct from these various diverse parts.

The ordering and functioning of parts for the good of the whole can be seen also in inorganic things. For example, according to the Bohr model, an atom has a definite ordering of its parts for the good of the whole atom, such as the protons and neutrons in the nucleus and the electrons which orbit it. Further, these different parts have their own particular functions which serve the good of the whole. As Wallace states, commenting on the structure of the sodium atom:

> If the Bohr model tells anything therefore, it is that the organization or formal arrangement of these components, and not the components themselves, makes sodium be what it is. The facts that its nucleus is composed of twelve neutrons and eleven protons and that the atom contains eleven orbital electrons – two in the first shell, eight in the second, and the

[155] *Op. cit.*, p. 122.

> remaining one the valence electron of the third,...—serve to explain the many properties outlined above...This arrangement of the components, it should be stressed, is not an artificial form, like the shape of a chair imposed on pieces of wood that maintain their own identity. One who comprehends the Bohr model must see that none of the three components of the sodium atom acts simply as an electron, proton, or neutron, that each functions instead as a part of sodium. The form that is known and that is modelled in the Bohr atom is therefore a natural form, a unifying form that confers substantial identity on the parts that make up the composite. Traditionally this has been called the substantial or substancing form, but as noted earlier it can equally be regarded as a specifying form and a stabilizing form. It gives unity to the parts by specifying the substance they compose as sodium, and it stabilizes them by rearranging them, when necessary, to maintain that element's specific identity.[156]

That there must be some intrinsic principle which brings about this unity of distinct parts can be said to follow from the so-called "henological principle". Woodbury expresses this principle as follows:

> Diverse things not according to themselves are united, but there must be some one cause of their union.[157]

Diverse things cannot themselves be the cause of their union, since they are themselves diverse. Things which are diverse cannot be a cause of unity, since this would violate the principle of non-contradiction, since at the same time and in the same respect something would be the cause of both diversity and unity. Woodbury gives the following *reductio ad absurdam* argument to support this principle:

> a. Diversity or manyness from itself bespeaks dividedness of being, which is the opposite of what 'unitedness (or one) bespeaks, which is undividedness of being.
>
> b. But not the same is the reason of opposites: otherwise something is together what it is (v.g. diversity) and its own opposite (v.g. unitedness), - so that it would together be and be-not what it is: which is a negation of the supreme principle (PRINCIPLE OF NON-CONTRADICTION).[158]

Since diverse things cannot be the cause of their unity, there therefore needs to be one intrinsic principle in natural things which orders its diverse parts and also which enables the functioning of

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156 *Op. cit*., pp. 45-46.

157 A. Woodbury, *Metaphysics - Natural Theology*, unpublished manuscript, p. 103.

158 *Ibid*., p. 103.

those parts for the good of the whole thing. This proper ordering and functioning can be said to be best attained by a single intrinsic principle, and this we have called the substantial form.

v) Growth and Development of Living Things.

A fifth piece of evidence can be said to be the growth and development of a living thing. A living thing grows and develops from its earliest state to its mature state in an ordered and coordinated way. The progressive growth of an organism and all its parts in a coordinated way suggests an intrinsic principle found in each of these parts which is responsible for such ordered and coordinated development. If each part of a living organism was an independent thing, it would be impossible to explain the coordinated process required for its growth.

An objection may be raised against this argument, namely that DNA is sufficient to explain growth and development and therefore appeal to some intrinsic principle or substantial form appears to be superfluous. DNA is a molecule which carries genetic information in a living thing. However it would be erroneous to say that the growth and development of a living thing can simply be explained by the genetic information contained in a gene, which would be a reductionist explanation. As Goyette argues, if DNA is regarded as a type of encoded information found in genes, there is need for a cause which would be responsible for inscribing and interpreting this encoded information. As he states:

> The DNA molecule may be a carrier of information, but the information itself cannot be reduced to the molecular material any more that the meaning of the word "dog" can be reduced to the sound waves produced by my mouth. As Leon Kass points out, "one can hold DNA molecules in a bottle, but one cannot physically hold or grasp the messages they carry."[159]

There is the need therefore for some intrinsic principle which can read this encoded information, interpret it and apply it to the various parts of the organism. In fact, we can go further and say that

[159] J. Goyette. "St Thomas on the Unity of Substantial Form" *op. cit*., p. 526. See also Connell on the function of genes as instruments, *Substance and Modern Science*, p. 186.

the very code itself in the DNA is a form of expression of this intrinsic principle or substantial form, which is then in turn interpreted and applied by this same form.[160]

A second argument against the sufficiency of DNA itself as an explanation is its inability to explain morphogenesis, that is, the origin of the overall shape or form of an organism. As Goyette states:

> This is especially clear in multicellular organisms which contain identical DNA in every cell of the body. The DNA in the nucleus of a heart cell is the same as the DNA contained in the nuclei of the liver and lung cells. Thus, although every cell contains the same genes, not every gene is *expressed*. In the process of growth and development cells differentiate and different kinds of cells produce different proteins. Since each cell makes use of only a part of the genetic code, we must appeal to some other principle to explain the specific shape or form of the whole organism. But this is precisely where Aristotle's notion of substantial form seems most readily to apply since he calls it the "shape" (*morphe*) or "look" (*eidos*) of a thing. Aristotle does not mean to reduce a thing's substantial form to its physical shape or outward appearance, but a thing's shape, the way it looks, is the most immediate manifestation of its nature.[161]

An argument for the existence of the substantial form can also be made from the fact that a fertilized ovum is a totipotent cell, meaning that it can give rise to every kind of cell which will eventually be in a body.[162] However, this capacity for totipotentiality does not manifest itself in all cells, since when they are differentiated they lose the capacity to become other types of cells and are therefore no longer totipotent. Commenting on this, Connell states:

> In differentiated cells, some operations are expressed, while others are suppressed, which allows us to say that although many activities do not occur, *every cell has every operational capacity*. Thus the *entire internal structure with all of its operational roots has to be present in every cell of the organism*, a proposition that follows as a conclusion from the biological data. Hence the internal structure itself is not divisible as a magnitude. (Nor can it be adequately imagined, though it can be conceived.) When we remember that muscles, tendons, and bones, as well as organs such as the brain, liver, heart, kidney, and

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160 *Ibid*., p. 528.

161 J. Goyette. "Substantial Form and the Recovery of an Aristotelian Natural Science" *op. cit.*, p. 529.

162 "Totipotent cells can form all the cell types in a body, plus the extraembryonic, or placental, cells. Embryonic cells within the first couple of cell divisions after fertilization are the only cells that are totipotent. Pluripotent cells can give rise to all of the cell types that make up the body; embryonic stem cells are considered pluripotent. Multipotent cells can develop into more than one cell type, but are more limited than pluripotent cells; adult stem cells and cord blood stem cells are considered multipotent." https://stemcell.ny.gov/faqs/what-difference-between-totipotent-pluripotent-and-multipotent.

> lungs all develop in the right places from the cells derived from one fertilized ovum, the implications are unavoidable. The internal structure with all the order it represents is originally present in the fertilized ovum and "passes the whole of itself' to every subsequent part produced from it. Yet because completed substances are extended, they must have spatially separated physical parts, and for exactly the reason biologists give: if every operation occurred in every cell, organisms would be in a state of chaos. In other words, because cells are virtually (if not actually) totipotential, the orderly exercise of distinct operations in substances requires spatially separated parts to prevent the organism from being a mass of confusion. So both the development and the subsequent exercise of activities of the organisms make it plain that the internal structure and its influence extend to every part of the entity.[163]

vi) Irreducible Properties of Substances.

It can be argued that a thing has a substantial form if it has properties and powers which are not reducible to those of its parts. If we take the example of salt, it has properties and causal powers which are different from that of sodium and chlorine which constitute it. Therefore, the properties of salt are not reducible to the properties of sodium and chlorine considered separately. Furthermore, in the formation of salt, the elements which constitute it, namely sodium and chlorine, interact in such a way that these constituent elements undergo changes. An indication of this is that in salt, the properties of sodium and chlorine are not exhibited or expressed. Commenting on this phenomenon Connell states:

> Reflecting on the theory, we see that the representation of compounds as aggregates *does* account for the union and separation of atoms, but that it *does not* explain the disappearance of some properties and the coming to be of others, except for adding the mass (mass-energy), which is conserved. (We might add that total charge is conserved too.) So given that changes have occurred in almost all the properties, we know that something more than a mere uniting must occur, even though the nature of the additional activities or interactions is left in the dark. That some sort of interaction must occur cannot be doubted, if observation is to mean anything, but *precisely what the character of the interaction is we have no way of determining.*[164]

The interaction of elements, as in natural compounds such as salt, and the emergence of new properties not found in the constitutive elements, can be compared with artefacts, such as axes,

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163 Connell. *Substance and Modern Science*, p. 198.

164 Connell *ibid*, p. 84.

beds and cars, in which no such interaction takes place among its parts and in which there is no emergence of new properties not found in the parts themselves.[165] The parts of a car, for example, do not undergo any interaction among themselves which results in the alteration of their properties and the resulting emergence of new properties. An artefact is therefore a mere aggregate which has an accidental unity of these parts. On the other hand, the emergence of new properties in a natural compound like salt does indicate the presence of a new intrinsic principle, namely a new substantial form, which is responsible for these new properties not found in the separate elements. Salt therefore has properties which are not reducible to the elements out of which it is made, thereby indicating the presence of a substantial form and a true substance rather than a mere aggregate.[166]

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[165] Again as Connell states: "We may now summarize the points we have been making in the following way. A machine is an aggregate constituted principally by an external order that does not result in the modification of physical properties or bring about new behavioural abilities in its parts. Instead a machine is a medium which allows a natural agency to act on a passive recipient whose character is determined by the properties already present in it. Such motion or modification (electrification, a limited rise in temperature, etc.) is the only-new property the machine has, except its human utility. Hence, if a natural stuff is an ordered aggregate, what we have just said will be true of it. On the other hand, if the set of properties belonging to the stuffs of the thing or its parts is changed other than through a change of state, then some sort of interaction over and beyond an external ordering has occurred; and such an entity is not an aggregate." *Ibid*., p. 86.

[166] Some man made products, such as plastics, can be said to be substances materially but not formally. Substances are natural things, but man may have some involvement in producing from such natural substances a new thing which can be said to be a substance materially speaking, in that it is constituted of natural substances and certain natural processes are involved. Because of the human involvement in producing the new product, we could say that it is an artefact formally speaking. Something like plastic would be materially and substantially a substance but formally or accidentally an artefact.

As Connell also notes: "Every aggregate, it is true, comes to be by combining pre-existing entities or stuffs, but we cannot convert the proposition to say that everything that comes to be by combining pre-existing substances is an aggregate, for "combining" is an equivocal word. Combining sometimes does make interactions possible, as is plain in chemical reactions. ..We should note too that chemists produce plastics and other materials not found in nature. Now the sets of conditions as well as the combinations of ingredients which make the reactions possible are artefactually brought about; both the conditions and order of combining are supplied by human causes. This does not mean, however, that the product is an aggregate." *Substance and Modern Science*, p.85.

Brown examines the question whether bread and wine, being man-made products, are substances or artefacts. St Thomas clearly regards them as substances, since he regards the transubstantiation of bread and wine into the Body and Blood of Christ as a change of substances. This is because, while human art is involved in making these products, it also relies on the power of natural principles, and indeed it primarily relies on such principles (*cf*., *ST* III, q. 75, a. 6, ad 1). He states: "Some substances can be aided in their generation by human art. But an artisan's aiding the generation of a natural thing is not a sufficient condition for that natural thing's being considered an artefact... This is because the processes that are essential to generating the bread in the first place are natural ones, for example, the heating of a mixture of flour and water by fire." C.M. Brown. "Artifacts, Substances, and Transubstantiation: Solving a Puzzle for Aquinas's Views." *The Thomist* 71 (2007), p.112.

This emergence of new properties is even more evident in living things. We have already examined above the particular capacity of a living thing to grow. We could also add its capacities of nutrition and reproduction. These three capacities are new kinds of capacity which are not found in mere aggregates of parts which are artefacts. No artefact, such as a machine, is capable of nutrition, growth or reproduction. The emergence of these new kinds of capacities in living things indicates therefore that they are not a mere aggregate or sum of their parts as are machines.[167] While certainly living things in many ways resemble machines, in that there is an orderly arrangement of parts, these three capacities cannot be reduced to a mere ordering of such parts. Connell, commenting on the reproduction of cells through mitosis or cell division, states:

> It is perhaps important to repeat that mitosis admittedly cannot occur without physical and chemical changes taking place. A complete description of mitosis would involve quite a list of such processes. But this is not the point at issue. A physical change terminates in the modification of a property or properties, whereas a chemical change terminates in a new compound with a new set of properties. Cell division, however, terminates at neither. The two daughter cells resulting from mitosis are qualitatively alike and individual members of the same species. The activity whereby this effect is brought about is what is at issue, and it is sui generis. There is nothing like it in the categories of physical change and chemical change. And so we may conclude that reproduction (not to mention growth and self-maintenance) gives rise to *a distinct category of activity*. Reproduction is the coming to be of a new individual substance that is not different in kind from its progenitor. It therefore issues from a distinct *kind* of behavioural capacity that cannot be classified with any of the active or passive physical properties. Reproduction is a new kind of behaviour, which biologists generally admit, that shows the existence of a different kind of capacity or potentiality or behavioural disposition, whichever term one prefers.[168]

By way of summary, we can say that the six pieces of observational evidence point to there being a substantial form and further only one substantial form, which is in both the whole and its parts.

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[167] J.S. Mill, speaking about the emergence of life from non-living parts, states: "All organised bodies are composed of parts, similar to those composing inorganic nature, and which have even themselves existed in an inorganic state; but the phenomena of life, which result from the juxtaposition of those parts in a certain manner, bear no analogy to any of the effects which would be produced by the action of the component substances considered as mere physical agents. To whatever degree we might imagine our knowledge of the properties of the several ingredients of a living body to be extended and perfected, it is certain that no mere summing up of the separate actions of those elements will ever amount to the action of the living body itself." *A System of Logic*. (London: Longmans, Green, Reader and Dyer, 1872), Bk.III, Ch.6, §1.

[168] *Substance and Modern Science*, pp. 114-5.

This substantial form is the cause of the being of the parts and also of the ordering and functioning of the parts for the good of the whole.

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3.3. Privation as a *per accidens* Principle.

We have seen above that St Thomas holds that, in addition to matter and form as *per se* principles of change, there must also be privation as a *per accidens* principle. Privation is the absence of a form in a subject. It could also be described as the non-being in some subject, since form confers a manner of being, whether accidental or substantial. In our example, man has the privation non-musical in him, in that before he learns to play an instrument he simply lacks that skill. This principle is described as a *per accidens* principle because it is not a principle through itself or *per se* but rather *per accidens*, that is, in so far as it happens to be found in matter or a subject. Prime matter also possesses privations of different substantial forms, but it is only prime matter, as a potency to substantial form, which is a principle *per se* or through itself of the substantial change. Prime matter is in the previous substance and then remains throughout the substantial change, entering into the new substance as a real, positive constituent principle.

4. The Two Extrinsic Principles or Causes.[169]

We has seen thus far that St Thomas holds that there must be three intrinsic principles in order to explain substantial change, two *per se* principles, namely prime matter and substantial form, and one *per accidens* principle, namely privation. However, he states that these three principles are not sufficient to explain substantial change adequately. In addition to these three principles there is also needed an efficient cause and a final cause, which are extrinsic causes[170].

If we turn first to the efficient cause St Thomas states in the *DPN*, Chapter 3:

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169 These extrinsic principles will be examined in more detail in Chapter 4.

170 We may also add that there also exists an extrinsic formal cause, often referred to as an exemplar cause. This may be defined in general as the form which an artificer uses as a pattern in his operation. H. Grenier. *Thomistic Philosophy: Metaphysics* (Charlottetown: St Dunstan's University, 1950), p. 216.

> From this it is plain, therefore, that there are three principles of nature: matter, form and privation. But these are not sufficient for generation. What is in potency cannot reduce itself to act; for example, the bronze which is in potency to being a statue cannot cause itself to be a statue, rather it needs an agent in order that the form of the statue might pass from potency to act. Neither can the form draw itself from potency to act. I mean the form of the thing generated which we say is the term of generation, because the form exists only in that which has been made to be. However, what is made is in the state of becoming as long as the thing is coming to be. Therefore it is necessary that besides the matter and form there be some principle which acts. This is called the efficient, moving or agent cause, or that whence the principle of motion is.[171]

St Thomas states that there is needed an efficient cause in order to explain generation because what is in potency cannot bring itself to actuality. What is in potency can only be reduced to actuality by something already in actuality.[172] What is needed therefore is a cause which can effect the transition from the state of potentiality to actuality. The example he gives is the production of a statue from bronze. The bronze, as matter, is in potency to becoming a statue. But it cannot itself effect this actuality without some agent cause bringing this about, namely the sculptor. Further, not only must there be an agent cause to actualise the potency of the matter, but also the agent cause is needed in order to introduce the form into the matter. In the example given, the sculptor is needed in order to introduce the accidental form of the statue into the bronze. He does this by modifying the bronze so as to have the form of a statue.

If we consider the case of substantial change, we also see the need for efficient causality to explain such a change. For example, in the case of the natural coming into being of a horse, this can only come about because of the efficient causality of the parents, which is needed to unite their reproductive materials. Further, the sperm operates as an efficient cause by acting on the ovum and thereby effecting a change in both its own matter and that of the ovum, hence giving rise to the embryo of a new horse.

In addition to the efficient cause, St Thomas states that there is also needed the final cause. As he states in the *DPN*,Chapter 3:

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171 *DPN*, ch. 3, n. 18.

172 *ST* I, q. 2, a. 3.

> Also, because, as Aristotle says in the second book of the *Metaphysics*, everything which acts acts only by intending something, it is necessary that there be some fourth thing, namely, that which is intended by the agent; and this is called the end.
>
> Again, we should notice that, although every agent, both natural and voluntary, intends an end, still it does not follow that every agent knows the end or deliberates about the end. To know the end is necessary in those whose actions are not determined, but which may act for opposed ends as, for example, voluntary agents. Therefore it is necessary that these know the end by which they determine their actions. But in natural agents the actions are determined, hence it is not necessary to choose those things which are for the end..... Therefore it is possible for the natural agent to intend the end without deliberation; and to intend this is nothing else than to have a natural inclination to something.[173]

St Thomas here, following Aristotle, states the principle that every agent acts for an end or purpose. In the case of a voluntary agent, such as man, he is capable of choosing his end or purpose. The sculptor, in our example, is able to choose to sculpt a statue. He then acts accordingly to effect this end or purpose by carving the statue. Natural, involuntary agents however do not choose their ends or purposes, but rather these are determined by their nature. In the example we have already considered, the sperm does not choose the end or purpose of uniting with the ovum, nor does it choose the end of the embryo which will result from its union with the ovum. Rather, it is determined by its nature to act in this way and this gives rise to its natural inclination to act in the way it acts.

5. Some Difficulties or Objections.

From what has already been examined, we see that St Thomas' explanation for substantial change can be described as a substratum theory, in that in such changes there is some subject or matter which is common to the previous substance and the new substance. This common matter is referred to as prime matter, which in itself is regarded as pure potency without any actuality or form. It is in itself a potency to substantial form. The generation of the new substance is explained by the actualisation of this prime matter by a new substantial form. Hence for St Thomas, substantial change is a formal change, in that it involves a change in the substantial form actualising or informing this underlying matter. This common prime matter is first informed or actualised by one form and then by another. Hence this version of the substratum theory can be described as

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173 *DPN*, ch. 3, n. 18 – 19.

hylomorphic, since it involves two *per se* principles, namely prime matter and substantial form, in order to explain substantial change. In addition there is privation, which is the absence of a form in the matter and is a *per accidens* principle. These two *per se* principles or causes are intrinsic principles which are used to explain change. In addition to these two intrinsic principles or causes, there are two extrinsic principles, namely the efficient cause and the final cause.

From this explanation of substantial change, a number of difficulties can be said to arise, which we will seek to address.

Firstly, it may be asked why prime matter must be pure potency in itself without any actuality. The argument for prime matter as the common matter underlying substantial change is an argument from analogy with accidental change. There is some identifiably same subject or matter underlying accidental change, namely a substance, which acquires a new accidental form. This substance has a potency to acquire this new accidental form, which potency is actualised when it acquires it. By analogy, there must be some subject or matter underlying substantial change. However, there is no identifiably same substance which underlies the change, since one substance changes into another. Therefore, the subject or matter of the change cannot be a substance but rather only a potency to become a substance.

An objection can be raised against this argument in that, while there is no identifiably same substance which underlies the change, since one substance changes into another, it is not immediately clear why the substratum of the change is prime matter considered as pure potency. Could it not be argued that the substratum consists of some integral parts of the previous substance which are rearranged into a new substance by the new substantial form? These parts would possess the potency for such reordering by the new form, which potency would be actualised once the new form comes into being.

Indeed, modern scientific evidence shows us that certain identifiable integral parts do remain in a substantial change, such as in chemical reactions. Atoms and other subatomic particles seem to persist throughout the change and simply undergo a change in their arrangement. For example, the

atoms of hydrogen and oxygen, which combine to give water, remain in the molecular constitution of the water molecule. In other words, it seems that an understanding of prime matter as pure potency is redundant and unnecessary to explain substantial changes. It seems therefore that substantial changes are really only accidental changes, since the same parts of the original substance seem to remain in the new substance, albeit arranged in a different order.

Pasnau refers to such a view of prime matter as integral parts as 'corpuscular prime matter.' Such integral parts would be incorruptible and indivisible.[174] Speaking about the views of Magnen, a philosopher who held such a corpuscular view, he states:

> Very often, as we will see in the chapters to come, critics of scholasticism do not attempt a direct refutation of the various elements of the hylomorphic scheme. Instead, they content themselves with showing that such metaphysical parts are not needed, leaving considerations of parsimony to do the rest. In the context of prime matter, Magnen again exemplifies this strategy. What he seeks to show, as we saw in the previous section, is that there are ingenerable and incorruptible atoms. This, however, does not prove that metaphysical prime matter does not exist; it simply makes any such further substratum unnecessary. For all we know, there might be something still more basic, a kind of metaphysical sub-basement beneath the atoms. Magnen sees this clearly. For immediately after concluding that his elements satisfy the four conditions of prime matter, he adds further not that Aristotelian prime matter does not exist, but that it is "altogether useless" (prop. 4, p. 79). He then reasons that since there is nothing pointless in nature, we should not posit any such further prime matter. From Peter John Olivi forward (see, e.g., §14.1), this is how the proponents of ontological austerity very often argue, on a wide range of fronts.[175]

The corpuscular view of prime matter holds that a material thing cannot be divided to infinity, and that therefore there must exist some indivisible particles. These would then constitute 'prime matter' from which all things are ultimately constituted. Other views are that the prime matter would be some form of energy. Some hold that, while prime matter does not consist of indivisible particles, it does have some actuality such that it is not pure potency.[176]

A response to this difficulty has been made in what was said above in this chapter. We have examined three arguments for the existence of prime matter as pure potency. From the first

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174 R. Pasnau, *Metaphysical Themes: 1274-1671* (Oxford: Clarendon Press, 2011), p. 40.

175 *Ibid.*, pp. 47- 48.

176 Such as the views of Suarez and Scotus. *Cf.*, Feser *op. cit*., pp. 175-7

argument, which we have called the *Argument from Substantial Change*, we can say that St Thomas insists that prime matter must be in itself pure potency because if it had some actuality it would compromise the strict unity to be found in substances. As we have seen, the substantial form confers existence on a substance and makes it to simply exist. It also is a principle of specification, in that it makes a thing to be the kind or species it is. If prime matter had some actuality in itself, that is, other than as conferred by the substantial form, then the substantial form would not confer *esse simpliciter* on the substance. It would merely confer an accidental way of existing, which would compromise the unity of a substance. The substantial form confers existence not only on the whole but also on each of its parts and it does so by uniting itself immediately to the prime matter of each part. We have seen above the observational evidence that there is need for a substantial form to explain certain phenomena, and further that there is only one substantial form for each substance. From the arguments for the unicity of the substantial form we distinguished substances from mere aggregates such as in the case of artefacts. The prime matter therefore cannot simply be some rudimentary type of second matter, for this would effectively make this second matter a substance and given that there can only be one substantial form in the whole and its parts, this is impossible.

Apart from this first argument from substantial change, there was also examined the second argument, namely the *Argument from Limitation*, which is a more metaphysical argument for prime matter as pure potency. Prime matter cannot simply be some rudimentary type of second matter, since this type of matter would have a form, and this form needs a limiting principle which limits the form to exist as a particular thing. The third argument was the *Argument from the Principle of Individuation* in which it was argued that prime matter cannot be some rudimentary type of second matter because this matter would in turn have a certain form which would determine its kind or species, and that there must be some potential principle which individuates this form to exist as a particular thing of that kind.

The second difficulty, following from the first and already raised in that difficulty, is the question of how to explain the fact that the same integral parts seem to survive the substantial change. In

other words, the substratum seems to be more than simply the prime matter considered as pure potency, but also certain integral parts which also carry over into the new substance. However, St Thomas' explanation holds that only prime matter, considered in itself as pure potency, survives the change.

The third difficulty is closely linked to the first two, namely how to explain the fact that the same accidents seem to survive the substantial change. For example, in the death of a living thing, the corpse seems to have the same accidents as the living thing. Yet if there is a change in the substance, should there not be a change in the accidents as well since the accidents inhere in the substance? The existence of these similar accidents suggests that the substratum of the change is not simply prime matter as pure potency but that the same accidents carry over into the new substance.

The fourth difficulty is how prime matter, considered as pure potency, can be a substratum of substantial change, since it is not something actual. It would seem that for something to be a substratum of the change it should have some sort of actuality.

The fifth difficulty is how to explain the origin of the new substantial form in the new substance. This difficulty will in fact be the principal problem to be addressed in this dissertation. If prime matter is the only substratum of substantial change, and prime matter is in itself pure potency, how can the new form, which is an act of this potency, be said to arise in this matter? We could frame this question as how something actual can arise from pure potency? Prime matter, considered as pure potency, does not seem to be able to contribute to the origin of this new form, and therefore the origin of the new form seems to be caused only by some efficient cause.

Speaking about this difficulty, Pasnau states:

> The most distinctive feature of the shared Aristotelian framework is the conviction that substantial change is marked by the loss and then gain of one or more substantial forms. ...The scholastic framework is particularly vulnerable in two places. First, it requires maintaining that in generation and corruption there is something—the substantial form—that comes into existence anew, seemingly *ex nihilo*. Scholastic authors have to admit that the substantial form comes into existence anew, since otherwise the change would not

> count as substantial. But they cannot allow that it is truly *ex nihilo*, since that sort of coming into existence counts as creation, and only God can create. This led to many long discussions of various ways in which a form might or might not be "educed from the potentiality of matter"—that is, arise out of the one ingredient that all parties agree to endure through change. Among later scholastics and their critics this becomes a prominent topic of dispute, one that William Pemble refers to as "the very most vexed of questions in natural philosophy" (*De formarum origine* p. 1)...This debate over the origin of new substantial forms leads directly to a second vulnerable aspect of the scholastic framework, regarding just how much endures through substantial change. On one hand it is tempting to want to allow more to survive substantial change, because the more that survives—whether that be accidental or substantial forms, or simply more thoroughly actualized matter—the easier it is to explain where the new substantial form comes from. For Thomists who think that only purely potential prime matter endures through substantial change, the problem of explaining the origins of the newly generated substantial form can seem well-nigh intractable. On the other hand, the Thomistic account makes it clear why generation and corruption are distinct from other sorts of change: the discontinuity of substantial change is so radical, on their approach, as to present no risk of confusion with the case of alteration. In contrast, the more one allows to survive corruption, the less clear it is how substantial change differs from accidental. If each involves no more than the coming or going of a form, then they seem not so different.[177]

In the next two chapters, namely chapters 3 and 4, we propose to examine especially this principal difficulty or problem, which arguably, as Pasnau notes, is the most vexed question concerning substantial change. In these chapters we will examine the explanation given by St Thomas for the origin of the new substantial form in the prime matter, a process which he terms 'eduction'. The other difficulties or objections, namely the second, third and fourth will be examined specifically in chapter 5.

[177] *Op. cit*., pp. 663- 664.

Chapter 3: The Process of Substantial Change – Part 1.

In the previous chapter we determined that in any change, whether it be an accidental change or a substantial change, there are three intrinsic principles of change, namely the subject or matter, the form and the privation. There are also two extrinsic principles or causes, namely the efficient cause and the final cause. In the case of substantial change in particular, we saw that the subject of the change is prime matter, which in itself is pure potency, the form is the substantial form and the privation is the mere absence of that form in the prime matter. Given these three intrinsic principles of change, the substantial change is seen as the reduction of the previous substantial form in the prime matter and its replacement by the new substantial form actualising prime matter, thereby giving rise to the new substance.

What we are concerned with now is to examine how St Thomas explains that this substantial change occurs. We will begin by examining the nature of accidental change and then consider substantial change and more specifically the explanation for the origin of the new substantial form in the prime matter.

1. Accidental Change or Motion.

Before we examine the process of substantial change, we can first begin by examining the process of accidental change. We have seen that change can be seen as a transition from the *terminus a quo*, which is a subject which has a privation of a new form, to the *terminus ad quem*, which is this same subject possessing the new form. If we give an example of an accidental change, a piece of stone has first the privation of the accidental form of a statue in that it simply lacks this form.[178] The stone then undergoes a transition from this state of privation of the form of the statue to the state of actually possessing the form of the statue after the stone is carved by a sculptor. Hence the *terminus a quo* of the change is the piece of stone which lacks the form of the statue and the *terminus ad quem* of the change is the stone which has the form of the statue. The change in the

[178] We should note that privation in the order of accident is distinct from privation in the order of substance. The former is a privation of accidental form in a subject or substance, whilst the latter is privation of substantial form in prime matter.

subject, in this case the stone, cannot be explained as a transition from the *terminus a quo* to the *terminus ad quem* unless the stone first has the privation of the form of the statue.

While this analysis of change and its three principles is useful, it is insufficient in itself. This is because the new accidental form of the statue does not simply arise from the non-being which the stone has. If we were to say this, we would be in violation of the principle *ex nihilo nihil fit*. While clearly the stone initially must have the privation of the form of the statue, we must then explain how the new form comes to be. In order to give this fuller explanation, we need to see that the subject must also have the capacity or potency to change so as to be able to be actualised by this new form. We have seen this in the previous chapter, when we said that for the stone to become a statue, it must first have the capacity or potency to do so. The change can thus be described as a transition from potency to act, in that the subject undergoes a transition from potentially having a form at the *terminus a quo* to actually possessing that form at the *terminus ad quem*.

In the Commentary on the *Metaphysics*, Book 7, Lecture 6 St Thomas states:

> Then he gives the second division, which involves the conditions of generation; for everything which comes to be is brought about by some agent, and is produced from something as its matter, and also becomes something, which is the terminus of generation..... And the reason for this division is that in every generation something which was formerly potential becomes actual. Now a thing can be said to go from potency to actuality only by reason of some actual being, which is the agent by which the process of generation is brought about. Now potency pertains to the matter from which something is generated: and actuality pertains to the thing generated.[179]

In this text, St Thomas comments that there are three conditions of generation, namely the agent which brings about the change, the matter of the change and the terminus or end of the generation, which is the thing generated. To be more precise, this is the *terminus ad quem*. The matter is something which has a potency, and hence the text states that potency pertains to the matter. The reason for this is that in generation, something which was potential becomes actual. The matter is the subject which remains throughout the change, which is first in potency to that change and then

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[179] *In Metaphys*., Bk. 7, *lectio* 6, n. 1383-1384. The potency of matter here referred to is a passive potency. The agent which actualises this potency can be said to have an active potency.

undergoes that change by virtue of that potency being actualised. In our example, the stone is the matter or subject, which has the potency to become a statue, and then this potency is actualised when it becomes a statue after this potency is actualised by the accidental form of the statue.

We notice that the matter is here described as that "from which something is generated" (ex qua aliquid generatur). Further on St Thomas will refer to the matter as "the principle from which a thing comes to be."[180] In our example, the stone is the matter from which the statue is generated or produced. Matter can be said to be the principle from which something is generated in the sense that the generation or change begins from the matter as having a potency to be actualised by a form. That is, the *terminus a quo* of the change is the matter, insofar as it has a potency to undergo that change and become actualised by a new form and insofar as it has a privation of the new form. The matter as the "principle from which" must not only have the potency to change and become actualised by a form, but also, as we have seen, must have a privation, in that it lacks the form which will eventually actualise it. The matter can be seen as a principle from which and hence as the *terminus a quo* of the change only in so far as it has a potency to change and a privation of the new form.

However, when we say that matter is the principle from which something is generated, we also mean that the matter remains throughout the change as the common substratum of the change. We notice that St Thomas states that "in every generation something which was formerly potential becomes actual." In the case of accidental changes, that "something" which was formerly potential and then becomes actual is the second matter or subject of the change, which is the *suppositum* in the case of accidental change. The matter first has the potency to be actualised by a form and then that same matter becomes actualised by the form. Hence the same second matter remains throughout the change and also enters into the constitution of the thing generated. This is because the thing generated is a composite of the matter and the new form which actualises that matter. In our example of the statue, the matter, that is the stone, remains throughout the change. This matter first has the potency to be actualised by the accidental form of the statue and it also has a privation

180 *Ibid*., n. 1388.

of the form of the statue. It then becomes actualised by that form and then also loses that privation. Because it remains throughout the change, the stone as matter enters into the constitution of the statue, since the statue is a composite of the matter and the new form of the statue which actualises it. Thus we are justified in saying that the statue is made or generated *from* the stone. If the subject did not remain throughout the change we would not be justified in saying that the new thing was generated from it.

St Thomas here also mentions two other conditions for generation to occur, one being an agent or efficient cause, which is an actual being, which is responsible for effecting the transition from potency to act. On this St Thomas states in *ST* I, q. 2, a. 3:

> Now whatever is in motion is put in motion by another, for nothing can be in motion except it is in potentiality to that towards which it is in motion; whereas a thing moves inasmuch as it is in act. For motion is nothing else than the reduction of something from potentiality to actuality. But nothing can be reduced from potentiality to actuality, except by something in a state of actuality. Thus that which is actually hot, as fire, makes wood, which is potentially hot, to be actually hot, and thereby moves and changes it. Now it is not possible that the same thing should be at once in actuality and potentiality in the same respect, but only in different respects. For what is actually hot cannot simultaneously be potentially hot; but it is simultaneously potentially cold. It is therefore impossible that in the same respect and in the same way a thing should be both mover and moved, i.e. that it should move itself. Therefore, whatever is in motion must be put in motion by another.

Motion is here described by St Thomas as the "reduction of something from potentiality to actuality." By reduction we can here understand the transition of something from potency to act. The "something" is the matter or subject undergoing the change. This matter or subject which is in a state of potentiality, in that it possesses a potency, cannot be reduced to a state of actuality except by something already actual. Otherwise this would be a violation of the principle of non-contradiction, for a thing would then be in potency and in act at the same time and in the same respect. Therefore, a thing in potency, in so far as it is in potency, cannot reduce itself to act but must be reduced to act by something already actual. In the example given, wood, as matter or subject, has a potency to become hot, but can only do so by an agent, namely fire, which is already hot. In the other example we have given, the stone, as matter, cannot be reduced from its state of potency to become a statue except by an agent, a sculptor, who is already actual.

The third condition given is that there must be some terminus of the generation, which would be the *terminus ad quem* of the change. This terminus would be a composite of the matter or subject which has endured the change and the new form which has actualised that matter. The new form is responsible for the actualisation of the potency in the matter and therefore must unite with the matter to give the new composite which is generated. Therefore St Thomas refers to the form as the principle "by which things have being", as opposed to the matter, which is the principle from which it comes to be.[181] In our example, the stone, which has a potency to become a statue, has its potency actualised by the accidental form of the statue, which is its particular shape or figure. The *terminus ad quem* of the change is therefore the statue, which is a composite of the accidental form and the stone as matter.

Hence from an analysis of these conditions of generation or change, using the example of accidental change, we can say that the matter undergoes a transition from one state to another, that is, from a state of potentiality to a state of actuality. Or this could be expressed by saying that the matter undergoes a transition from having a potency to having that potency actualised. We can therefore describe the transition in a subject or matter from one state to the other as change, or we can express this by saying that change is the transition in a subject from potency to act. This change or transition is what occurs between the two termini of the change, namely what occurs between the *terminus a quo* and the *terminus ad quem*. At the *terminus a quo* the matter is in potency to be actualised by a form and also has the privation of a form. At the *terminus ad quem* the matter's potency is actualised by a form and also has its privation replaced by a form. However the change is what occurs between these two termini and is the actual transition between these termini. Therefore, change is an intermediate way of being between the matter as in potency and as actualised with respect to that potency. Change, at least in the case of accidental change, which we have thus far examined, describes the matter as neither fully in potency nor fully actualised but rather that state of being in which the matter is on the way to full actualisation. As St Thomas states in his Commentary on the *Physics*:

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181 *Cf., In Metaphys.*, Bk. 7, *lectio* 6, n. 1388, 1390-93.

> Consider, therefore, that something is in act only, something is in potency only, something else is midway between potency and act. What is in potency only is not yet being moved; what is already in perfect act is not being moved but has already been moved. Consequently, that is being moved which is midway between pure potency and act, which is partly in potency and partly in act—as is evident in alteration. For when water is only potentially hot, it is not being moved; when it has now been heated, the motion of heating is finished; but when it possesses some heat, though imperfectly, then it is being moved—for whatever is being heated gradually acquires heat step by step. Therefore this imperfect act of heat existing in a heatable object is motion—not, indeed, by reason of what the heatable object has already become, but inasmuch as, being already in act, it has an order to a further act. For should this order to a further act be taken away, the act already present, however, imperfect, would be the term of motion and not motion itself—as happens when something becomes half-heated. This order to a further act belongs to the thing that is in potency to it.[182]

We see that St Thomas describes motion as being midway (medio modo) or a middle mode of being between being in potency only and being in act. The term motion can be used to mean accidental change. It has a narrower meaning than change, which includes both accidental change or motion as well as substantial change. That thing or matter or subject which is moved is in a middle way of being in that it is partly in potency and partly in act. He gives the example of water being heated, which is a qualitative accidental change, also referred to as alteration. The water at room temperature would be hot only in potency. When it has reached boiling point at 100 degrees, it would be in complete or perfect act with respect to that potency. However while it is being heated it would then be partly in act and also partly in potency. For example, once it had reached 50 degrees its potency would be partially actualised but it would still retain the potency for further actualisation. Hence he states that motion would be the imperfect act of heat existing in the heatable, but not simply insofar as it is partly in act, but also insofar as it still has potency for further actualisation and therefore has a certain ordination to further act. Hence motion in itself is an imperfect act, since it is a kind of intermediate state midway between complete potency and perfect act. Motion therefore has the aspect of an act in regard to the potency which has already been actualised, but also has the aspect of a potency towards an act yet to be attained.[183] Motion

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[182] *In Phys*., Bk. 3, *lectio* 2, n. 285.

[183] As Woodbury states: "[Motion] has together both to potency or the less perfect the respect of an act towards a term which has been relinquished, and towards further act the respect of a potency towards a term which will be attained." *Natural Philosophy,* p. 182.

therefore is an act, not of what has already been actualised or is actual but *of what is being actualised*, not however as it is actual but rather as it is being actualised.[184] Therefore motion is something fluid and not static.

Aristotle gives his celebrated definition of motion as "the entelechy (act) of what exists in potency, so far as it is in potency."[185] We see in this definition three parts. Firstly, that motion is an act, in that it is an actualisation of a potency in a thing. However, it is an imperfect act, in the sense discussed above, in that it is the act of what is being actualised as it is being actualised. Secondly, "of what exists in potency", in that something can be an act only of something which is in potency to that act. Thirdly "in so far as it is in potency" indicating that the act is imperfect in so far as there exists further potency which can be actualised and is here and now being actualised. To make the distinction clearer between a static imperfect act of a potency and motion as a fluid imperfect act, we could reformulate the above definition of Aristotle to read that motion is the act of what is being actualised as it is being actualised.[186] In the example of water being heated, the motion of being heated is not the act of the water in so far as it is warm, which would be an imperfect fixed act between the state of being cold and boiling, but rather in so far as it is *being heated* and as it is being heated. The water as being heated is an imperfect fluid actualisation of its potency which will only reach its term when it is in perfect act, which will be when it attains boiling point.

Apart from the accidental change or motion of alteration, which is a change in the accident of quality, there are two other accidental changes, namely quantitative accidental change, which is a

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184 *Ibid*., p. 185. Woodbury notes that motion or movement as an imperfect, unperfected act differs from an imperfect fixed act, and this in two ways: "first: in movement (v.g. '"being heated'), there must follow more of what is already had, to wit, more of movement: or, in other words, what is already had, to wit, 'be moved' must still follow; whereas in imperfect fixed act (v.g, warmth), this is not so: for it is not necessary that further warmth follow. And secondly; movement conducts its subject (the mobile) to a further act "beyond itself (to heat) whereas an imperfect fixed act (warmth) does not conduct its subject to a further act beyond itself." *Ibid.*, p. 182.

185 *Physics*, Bk. 3, ch. 1, 201a10.

186 Woodbury. *Natural Philosophy*, p 185.

change in the accident of quantity, and local motion, which is a change in the accident of place.[187] All three types of accidental change can be referred to as motion. The distinction between these three types of motion is due to the distinction in the terms of these motions, which in each case is an accident. In the case of alteration or change in quality, there is a transition from one quality, such as the cold temperature in water, to another quality, namely its hot temperature. In the case of quantitative change, there is the transition from one quantity, such as 10kg in weight, to another quantity, such as 20kg. In the case of local change or motion, there is the transition from one place to another place.

By way of summary, we may distinguish four things in accidental change or motion, namely the subject or matter which is moved, the form according to which the subject is moved, that is the form which is lost or acquired, the terms of the motion, which are the *terminus a quo* and the *terminus ad quem*, and the motion itself, which is an imperfect act. The essence of motion or accidental change is the transition or passage from potency to act in a subject, since motion is the reduction of something from potentiality to actuality.

2. Motion, Generation and Corruption Compared.

We have been considering one species of change or mutation, namely accidental change, which is also referred to as motion. However, as we have stated, change is a wider notion that includes both accidental change or motion and substantial change. Substantial change can in turn be divided into two types, namely generation and corruption, or to be more precise, into *generatio simpliciter* and *corruptio simpliciter*, since as we have already seen, accidental change can be said to be a *generatio or corruptio secundum quid*. In Book 5 of the *Physics* Aristotle gives the various species or kinds of change or mutation, of which there are three, namely generation, corruption and motion. On this division of the species of mutation or change St Thomas comments:

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187 *Physics,* Bk. 5, ch. 1, 225b5-9.

> Then at (478) he derives from these premises his division of change. And he says that it necessarily follows from these premises that there are three kinds of change: one is from subject to subject, as when something is changed from white to black; another is from subject to non-subject, as when something is changed from being to non-being; the third is from non-subject to subject, as when something is changed from non-being to being.[188]

Regarding the first type of change, namely from subject to subject, St Thomas states that this species of change is motion. The two subjects of the change are two contraries in the same thing, which are its positive or affirmative extremes.[189] The term 'subject' in this context refers to the *terminus a quo* and *terminus ad quem* and not to the subject which undergoes the change. The example given is the change of a thing from the colour white to the colour black. The opposition between black and white is contrary opposition. Speaking about contrary opposition, Spangler states:

> [Contrary opposition] was defined as the opposition existing between the positive extremes of the same subject, each of which excludes the other from that subject. Thus the positive extremes in the subject, water, are hot and cold, which cannot both be present at the same time in that given water. Since contrary opposition is between the positive extremes within a given subject, there may be an intermediate or middle position which is neither of these extremes. Thus lukewarm is a middle state between hot and cold, while mediocre is a middle between good and bad. Because a middle may exist between contraries, it is true to say that neither contrary may be present in a subject. Thus a given human being, being mediocre, is neither good nor bad.[190]

As Spangler notes, in this type of opposition, there is opposition between positive extremes in the same thing or subject. Such opposition cannot exist at the same time in the same subject. It is also a type of opposition which allows for the existence of intermediate states. Thus water, as the subject of the change, can change from one extreme of cold to another extreme of hot through various intermediate stages between these two extremes and therefore is able to be lukewarm. Likewise, a thing that is white can be increasingly darkened until it becomes its contrary of black and therefore is able to be grey in colour as an intermediate state.

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188 *In Phys*., Bk. 5, *lectio* 2, n. 651.

189 *Ibid*., n. 659.

190 M.M. Spangler, *Logic: An Aristotelian Approach*, rev. ed. (Eugen OR: Wipf & Stock, 2012), p. 90.

In contrary opposition, the extremes are in the same subject, which is a *suppositum* or individual existing thing which exists throughout the change, such as water. The contraries can be said to be positive or affirmative extremes in a subject in that they are positive accidents in the subject, such as cold and hot in water, being positive accidents of quality. However a contrary such as 'cold' in water, also includes a privation or absence, namely the privation or absence of heat. This privation however is not a total privation or absence of heat, but the lack of a particular perfection. This type of privation may therefore be referred to as a relative privation, unlike for example blindness in a man, which would be an absolute privation. Cold water still retains a certain temperature and is therefore something positive, even though it is the opposite extreme of hot water. Therefore, cold would be a type of natural minimum of heat which is contrary to the perfection of heat. It is because water remains throughout the change, as the subject or *suppositum* of the transition from the *terminus a quo* of being cold to the *terminus ad quem* of being hot that intermediate states are possible between the positive extremes. The water is able to pass through intermediate states between the two termini, as for example when cold water is gradually heated.

Aristotle goes on to say that motion, strictly defined as the change from contrary to contrary, can only occur in three of the categories of things, namely motion in quality, in quantity and in place.[191] These three types of motion are the three types of accidental changes, in that quality, quantity and place are accidents which modify a substance as the subject or *suppositum* of the change. A substance such as water, for example, can change its quality of temperature from the contrary cold to that of hot.

The other two species of mutation or change are generation and corruption. The change in a thing from non-subject to subject is generation and that from subject to non-subject is corruption. The

[191] *Physics*, Bk. 5, ch. 1, 225b5-9.

extremes of this type of opposition are said to be contradictories and not contraries, as in the case of motion.[192] Spangler speaking about this type of opposition states:

> Contradictory opposition, differing from contrariety, was defined as the absolute opposition between an affirmation and a negation, an opposition which has no intermediate or middle... In other words, contradictory opposition, consisting of an affirmation and its denial, does not have the possibility of any intermediate or middle position. There are only two choices: either the thing is or is not.[193]

While in the case of contrary opposition, the opposition is between two positive extremes which are opposites, in the case of contradictories, the opposition is between an affirmation and its simple negation. There can therefore be no intermediate between these extremes.

St Thomas, commenting on generation as an opposition between contradictories, states:

> He says therefore first (480) that the change from non-subject to subject takes place between contradictories and is called generation, which is the change from non-being to being. Now this can take place in two ways: one is unqualified generation, by which something comes to be in the strict sense of the word; the other is a particular kind of coming to be, i.e., in a qualified way, and he gives an example of both kinds. First of all, of the second kind, saying that when some thing is changed from non-white to white, it is not an unqualified coming to be of the whole thing, but a mere coming to be of its whiteness. Then he gives an example of the first: and he says that generation from non-being to being in the order of substance is generation in an unqualified way, in regard to which we say that a thing comes to be without qualification. And since generation is a change from non-being to being, a thing is said to be generated when it is changed from non-being to being.[194]

In this text, St Thomas refers to generation as a change or mutation from non-being to being, which are the two contradictories of the change. However, the change from non-being to being can be either a qualified change, which would be *generatio secundum quid*, or an unqualified or absolute change, which would be *generatio simpliciter*. The *generatio secundum quid* is a qualified

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192 *Ibid*., 225a12-17. For example, the change from non-hot to hot of water, or of non-white to white in an object would be an example of generation in the order of accidents, or of generation *secundum quid,* which is accidental change. The change from non-man to man as occurs in reproduction would be an example of generation in the order of substance, or generation *simpliciter,* which is substantial change.

193 *Op. cit*., p. 90-91.

194 *In Phys*., Bk. 5, *lectio* 2, n. 654.

generation in that the subject of the change, namely a substance, remains unchanged, with a change only in the accident inhering in the substance. Thus there is only a coming into being of an accidental mode of being, such as when a substance changes from non-white to white.[195] A *generatio simpliciter*, on the other hand, is an unqualified type of generation, since it is the generation of a substance and hence a substantial mode of being. It is the generation "from non-being to being in the order of substance" or more literally "from simple non-being to being which is substance" (ex non esse simpliciter in ens quod est substantia).

Commenting on this, St Thomas states:

> However, when something passes from non-white to white, it is not being changed from absolute non-being to absolute being. For, speaking strictly, what is being changed is the subject, and the subject of white is an actually existing being. Hence, since the subject remains throughout the whole change, there already was an actually existing being at the beginning of the change, although it was not a being actually existing as white. Consequently, it was not a case of unqualified coming to be but a coming to be white. But the subject of substantial form is not an actual being but a merely potential one, namely, prime matter, which at the beginning of generation is under privation and at the end under form. And so, in the case of a substance being generated, it is said that something comes to be in an unqualified sense.[196]

In the case of an accidental change or a *generatio secundum quid*, the same subject, a substance, remains throughout the change, and hence the change is a qualified change, such as from non-white to white. However in the case of a substantial change, there is no substance which remains throughout the change, but only prime matter, which is a "merely potential being" or more literally a "being in potency only" (ens in potentia tantum). This prime matter, as subject of the change, changes from having a privation of a particular substantial form to having that particular substantial form. Since it is the substantial form which confers *esse simpliciter* on a substance, as

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[195] It should be noted that the change in a subject, namely a substance, from non-white to white, is a change between two contradictories. The change from black to white would be a change between two contraries. While the change from non-white to white is a change from privation of white in a substance, it is not a privation in the order of substance but rather a privation in the order of accidents. Privation in the order of substance is a privation of substantial form in prime matter, whilst a privation in the order of accidents is a privation of an accidental form in an already existing subject or substance.

[196] *In Phys*., Bk. 5, *lectio* 2, n. 654.

an intrinsic formal cause, the prime matter changes from not having a new substantial form to having that form, that is, it changes from privation of a new substantial form to having that form.[197] When the prime matter is under the new substantial form, a new substance comes into existence simply or in an unqualified way, considered as a composite of prime matter and the new form. Similarly, in the case of *corruptio simpliciter*, the prime matter goes from having the substantial form of the old substance to not having such form. When the prime matter loses the old substantial form, the old substance then goes out of existence simply or in an unqualified way. Therefore, while in both accidental and substantial change there is a change from non-being to being, in the case of accidental change it is a change from non-being in a qualified sense, for example, not having a particular accidental mode of being, whilst in the case of substantial change, it is a change from non-being in an unqualified sense, that is, from not having a substantial mode of being.

It should be noted that when St Thomas, following Aristotle, states that accidental change *or generatio secundum quid* and substantial change or *generatio simpliciter*, is a change from non-subject to subject as between two contradictories, this is applying the notion of logical contradiction to the real or physical realm. It is an attempt to explain real, physical phenomena using the logical category of contradiction. However in the real or physical realm the change is not from non-being or privation in an absolute sense but rather non-being or privation in a subject or matter. It refers to a privative absence of a way of being in a subject or matter and not to a total or absolute absence. It is therefore not non-being *simpliciter* or absolutely speaking but rather non-being *secundum quid* or in a certain respect. In the case of accidental change, the non-being or privation is in a subject, namely a *suppositum*, which has the potency to undergo the change, while in the case of substantial change the non-being or privation is in prime matter, considered as pure potency.

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[197] It should be noted, as already explained above in Chapter 2, section 3.2.1, that when we say that the substantial form confers *esse simpliciter*, we do not mean that the form confers existence on a *suppositum* as an extrinsic efficient cause but rather formally as an intrinsic formal cause. The substantial form is able to do so only by virtue of the *esse* considered as the act of being which confers existence on the *suppositum* via the substantial form. *Cf*., n. 124.

Therefore, in the case of accidental change, such as a man changing from non-musical to musical or of an object changing from non-white to white, the privations of non-musical or non-white are privations in a *suppositum* which has a potency to undergo a change. Non-musical is not a total lack of musicality in a man, since man as the subject of the change has a potency to become musical, and likewise an object which is non-white retains the potency to become white. Therefore, the change from non-being to being in the physical realm needs to be understood as the change from non-actual being or potential being to actual being.

While in the case of accidental change, the subject remains the same throughout the change, such that the coming into being or generation is only of an accident from a potency in that subject, in the case of substantial change there is no common subject considered as a *suppositum* that remains throughout the change, but rather only prime matter, which is not an actual being but rather pure potency. However even in this case, we should not understand the non-being or privation in the prime matter as a total absence of being or non-being *simpliciter*. Rather the non-being in prime matter is that which is in an intrinsic potential principle. Therefore, the opposition between non-being and being is not a strict logical opposition but must be understood as the opposition between non-being in a potency, namely prime matter, and being, understood as the actual being conferred by the new substantial form. Therefore, non-being should here be understood as non-actual being or potential being, and the change is therefore a transition from potential to actual being.

If non-being was taken in an absolute sense, this would not be change but rather creation, which is the coming into being of something from absolute non-being. Therefore, when St Thomas states that substantial change is the change "from absolute non-being to absolute being" or more literally "from non-being simply to being simply" (ex non esse simpliciter in esse simpliciter), it should be understood as the change from non-actual being or potential being to actual being. St Thomas, by saying that substantial change is from absolute non-being or from non-being simply, wishes to contrast the non-being or privation in a *suppositum* with the non-being or privation in prime matter, which is pure potency. The non-being or privation in a *suppositum*, in relation to an accidental

mode of being, is less of a non-being or privation than that in prime matter in its relation to a substantial mode of being. The privation of a substantial form which confers a substantial mode of being is a more radical privation than a privation of an accidental form which confers only an accidental mode of being. In the former case, the substantial form immediately actualises prime matter to confer *esse simpliciter* or unqualified being on a composite *suppositum*, whilst in the latter the accidental form confers only *esse secundum quid* or being in a certain respect on an already existing *suppositum*.

St Thomas then goes on, in the same Lecture 2 of Book 5 to say that substantial change, that is *generatio* and *corruptio simpliciter* is *not* motion as strictly defined. We recall that motion as so defined means a change in a subject which remains throughout the change and which involves a change between two contraries which are positive extremes. Such would be the change from cold to hot in water. However in the case of substantial change, there is a change in the subject, prime matter, from privation of form or non-being, where, as we have argued, non-being is to be understood as non-actual being or potential being. Regarding this St Thomas states: "In another sense, what is in potency is called non-being insofar as being in potency is the opposite of unqualified being in act. Taken in this sense no motion is possible."[198] Hence prime matter, considered as in potency to unqualified being, and as having privation of substantial form, can be considered as non-being and as such non-being cannot be moved. Privation of unqualified being, that is substantial being, would not be a contrary since it is not a positive extreme. This is unlike the privation to qualified being, namely accidental being, which is a contrary because the privation is in a *suppositum* which already exists. It is a lack of a certain perfection in an actually existing *suppositum*. Summing up this argument St Thomas states:

> Now, why is it that what is not unqualifiedly a "this something" is not subject to motion at all, i.e., neither *per se* nor *per accidens*? It is because it is impossible for the non-existent to be moved. Consequently, it is impossible for generation to be a motion; for generation concerns itself with what is not. And although it was said in Book I that something comes to be *per accidens* from non-being and *per se* from a being in potency, yet it is true to say

198 *Ibid*., n. 656.

> of what is absolutely coming to be that, strictly speaking, it is non-being; hence, such a thing cannot be moved and, for the same reasons cannot be at rest. Hence, generation is neither motion nor rest.[199]

In Lecture 3 of Book 5 St Thomas will add another reason why substantial change is not motion, which has been touched on already in the above argument. This reason is that there is no motion in the genus of substance because there is no contrary of substance. As he states:

> Yet one form of a species is not contrary to another, if you consider it in regard to its own specific nature. First of all, because when you are speaking of substantial forms, there is no maximum distance between any two forms, such that you must pass through an orderly array of intermediate forms to go from the one extreme to the other. Rather, matter when it doffs one form can indiscriminately receive any other form in just any order. For which reason Aristotle says in II *On Generation* that when fire comes to be from earth, it is not necessary that the intermediate elements be involved at all.
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> Secondly, because, since the substantial essence of anything consists in an indivisible, no continuity can be found in substantial forms so as to make a continuous motion from one form to another by one form growing weak and the other growing strong.[200]

In the first reason given, St Thomas argues that in substantial change there are no intermediate forms between the extremes. This would indeed be the case if the extremes were contraries. In the case of water which changes from cold to hot, there are intermediate accidental forms in the water between these two extremes as the water gets progressively warmer. However, when one substance changes into another it cannot pass through such intermediate forms. The second reason is that in substantial change, the change does not occur through a departure of one form and the incoming of another as if it were a continuous motion.

Summarising the reasons why substantial change is not motion, Hugon states:

> Motion is between two positive and contrary termini. But substance does not come to be from a positive and contrary terminus, but from its privation. Therefore, substance is not the terminus of motion. Further, motion is the successive acquisition of a terminus in parts. But since substance is indivisible, it does not come to be in parts or successively, but altogether simultaneously and in an instant; hence the axiom: "The generation of a substance occurs in an instant" (generatio substantiae fit in instanti). Therefore, there is no

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199 *Ibid.*

200 *In Phys*., Bk. 5. *lectio* 3, n. 664.

> motion *per se* towards substance. We say 'per se' because substance can be the terminus of motion, insofar as it is affected by quantity, or has some alteration joined to it: for although generation occurs in an instant, nonetheless the dispositions and alterations that precede it occur with motion and successively.[201]

Hugon here adds that substantial change is something which occurs in an instant. We can see that this is implied in the above reasons why substantial change is not motion, in that motion, as strictly defined, is a successive change which occurs in time. The definition of motion as the act of what exists in potency insofar as it is in potency, requires that there be a successive actualisation of the matter or subject over time, or more precisely a successive actualisation of the potency in the matter. Once this actualisation is completed there is an end of the motion. When cold water is heated, there is a successive actualisation of its potency to be heated over time, which results in its motion, until the water has attained boiling point, at which point the motion ceases.

However substantial change is something which occurs in an instant and does not involve motion. As we have seen, the extremes of this type of change are contradictories which do not allow for intermediates in a subject or matter. As will be described in more detail later, in substantial change, in an instant the previous substantial form which actualised prime matter is reduced to the potency of prime matter and is replaced by the substantial form of the new substance. Therefore this type of change is not successive over time as is motion.

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[201] E. Hugon, *Cosmology*, trans. F.J.R. Carrasquillo (Heusenstamm: editiones scholasticae, 2013), p. 329. Grenier states that successive motion adds three things to substantial change or mutation, which distinguish it from the latter: "*First*, that it be between positively contrary terms, and not merely between privation and form For every kind of motion is change. But change obtains between opposites, in as much as in every change there is the forsaking of a term-from-which and the acquisition of a term-to-which. But, in successive motion, there must be some interval, or space to be travelled, between the term-from-which and the term-to-which; for otherwise we have instantaneous change. Therefore the opposition between the terms of motion cannot be *contradictory* or *privative*, as is the opposition between privation and form, between being and non-being, because opposition of this kind is immediate. The former kind of opposition must be between two positive terms, i.e., it must be *contrary* opposition. *Secondly*, the subject of motion must be complete being in act. Therefore first matter cannot be the subject of motion in the strict sense, although it is the subject of mutation, that is to say, of substantial generation and corruption. The reason is this: the change which takes place in first matter is a change from privation to form, and therefore it is instantaneous. For the principles of substantial generation are three in number: *privation* (term-from-which), *form* (term-to-which), and *subject* (first matter), *Thirdly*, motion is a *flux* between two terms. For motion in the strict sense, or successive motion, consists in this flux, whereas mutation is not a flux, but it is an instantaneous transition from non-existence to existence." *Philosophy of Nature*, pp. 101-2. It should noted that when Grenier states that the opposition between the terms of motion cannot be contradictory or privative, it should be understood that they cannot be privative in the order of substance, but they can be privative in the order of accidents, for example between non-hot and hot in water.

St Thomas states the following about instantaneous changes:

> A change may be instantaneous from a threefold reason. First on the part of the form, which is the terminus of the change. For, if it be a form that receives more and less, it is acquired by its subject successively, such as health; and therefore because a substantial form does not receive more and less, it follows that its introduction into matter is instantaneous. Secondly on the part of the subject, which sometimes is prepared successively for receiving the form; thus water is heated successively. When, however, the subject itself is in the ultimate disposition for receiving the form, it receives it suddenly, as a transparent body is illuminated suddenly. Thirdly on the part of the agent, which possesses infinite power: wherefore it can instantly dispose the matter for the form.[202]

For the first reason, namely on account of the form, a substantial form is acquired all at once and not successively as are accidental forms. The example St Thomas gives is that of the accidental form of health, which is a quality. Such a form can be acquired in degrees or successively, since a person can successively get better over time when recovering from illness. The form of health can receive more or less, in other words it can be increased or diminished. Substantial forms however do not admit of degrees, that is to say of more or less, and therefore cannot be acquired successively but rather all at once.

The second reason concerns the matter or subject of the change. St Thomas states that matter can be prepared successively to receive a form. In other words, matter can be disposed successively or over time to receive a form. Matter here should be understood to mean second matter, that is, a substance, since prime matter cannot be disposed successively. As already seen, prime matter changes from privation of substantial form to possession of form instantly, not successively or gradually. The example he gives is that of water being heated successively. When the ultimate disposition in the water is attained, the final accidental form is received instantly by which the water reaches 100 degrees and begins to boil. This second reason why change may be instantaneous is therefore on account of the matter in so far as it receives the form instantly once the ultimate disposition is attained. The third reason is that the agent may possess infinite power, which is the case with God, who is able to dispose matter instantly for a form rather than successively, as is the case with agents with finite powers.

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202 *ST* III, q. 75, a. 7.

In the case of an accidental change, the matter, which is a substance, is prepared successively for the new accidental form by the introduction of accidental dispositions into it. The potency in the substance is then gradually actualised until the ultimate disposition is attained, at which point the new form is introduced. For example, in the case of a piece of stone being sculptured into a statue, the stone, as the matter or subject, has dispositions gradually introduced into it which actualise the potency in the stone to take on the form of a statue. Modifications in the shape are gradually made until such time as the ultimate disposition is introduced and the form of the completed statue is actualised in the stone.

In the case of a substantial change, the matter is prime matter, which is in potency to substantial form and in itself is pure potency. It is prime matter which must be disposed in order to prepare it for the reception of the new substantial form although, unlike second matter, it is not disposed successively or gradually. This form will be introduced in an instant once the ultimate disposition in the prime matter is attained. What needs to be examined now in greater detail is St Thomas's explanation of how this process occurs. In particular we can see the issue as being how we explain the origin of the new substantial form in the prime matter. This will involve consideration of the way in which we can say that prime matter is disposed for the new form. From what has already been said, the motion of accidental changes is something which occurs for a subject which is a substance. A substance can undergo a series of successive accidental changes. Therefore, accidental changes can be made to a substance over time. The important and difficult question then arises in what sense we can speak of accidental changes disposing prime matter, which is the common matter of substantial change.

3. Possible Explanations Regarding the Origin of Substantial Forms.

We have seen that for St Thomas, substantial change requires a common subject of the change, which is prime matter. This prime matter is first actualised by one substantial form and then by a new substantial form. The new matter/ form composite gives rise to the new substance. The issue we wish to examine particularly at this point is from where the new substantial form originates.

St Thomas, when examining this question, looks at three possible explanations which attempt to answer this question.[203]

3.1. Forms as Actual but Latent in Matter.

The first explanation is that the substantial forms are contained actually in the matter, but in such a way that they do not produce or display their formal effects. In other words, the substantial form is actually present in the matter but latent or hidden so as not to display its effects. In the *De Potentia* q. 3, a. 8 St Thomas states:

> I answer that there have been different opinions on this point, and they all arose seemingly from this one principle that nature cannot make a thing out of nothing. Whence some concluded that nothing is made except in the sense that it is drawn out of another wherein it was latent. The Philosopher (*Phys.* i, 4) imputes this opinion to Anaxagoras who apparently was deceived through failing to distinguish potentiality from act: for he thought that whatever is generated must already have been in actual existence: whereas it must have pre-existed potentially and not actually. For if it pre-existed potentially it would become out of nothing: while if it pre-existed actually it would not become at all, since what is does not become.[204]

According to St Thomas, Anaxagoras held the view that the coming into existence of a new substance is to be explained by arguing that the substance, and hence the substantial form, already existed in the previous substance, although in some way it was latent. The reason for this explanation is the principle *ex nihilo nihil fit*. Since nothing can come from nothing, the new substance must therefore have already existed but in some latent or hidden way. The reference to the Philosopher in the text is a reference to the *Physics*, Book 1, Chapter 4 in which Aristotle critiques Anaxagoras' argument. We are told there that Anaxagoras held that there were an infinite number of principles from which a thing is made. This was proposed in order to avoid the *ex nihilo* problem. St Thomas, commenting on this theory, states:

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[203] *Cf.*, S. Ledinich. *The Eduction of Substantial Forms According to St Thomas Aquinas and as Explained by John of St Thomas*, Thesis for the Licentiate in Philosophy, University of St Thomas, Rome, 2016, pp. 14-22.

[204] *De Potentia*, q. 3, a. 8.

> Anaxagoras proceeded as follows. If something comes to be, it is necessary that it should come to be either from being or from nonbeing. But he excluded one of these alternatives-namely, that something should come to be from non-being. He does this because of the common opinion of the philosophers mentioned above. Whence he concluded that the remaining member was correct, namely, that a thing comes to be from being. For example, if air comes to be from water, then air pre-existed. For it cannot be said that air comes to be from water unless air pre-existed in water. Hence he wished to say that everything which comes to be from something pre-existed in that from which it comes to be. But because this seemed to be contrary to what appears to the senses (for it is not apparent to the senses that that which is generated from something pre-exists in it), he forestalled this objection by holding that that which comes to be from something pre-exists in it as certain most minute parts which are not sensible to us because of their smallness. For example, if air comes to be from water, certain minute parts of air are in the water, but not in that quantity in which it is generated. And so he said that by the gathering together of these parts of air by themselves, and by their separation from the parts of water, air comes to be. Having accepted, therefore, that everything which comes to be from something pre-exists in it, he further assumed that everything comes to be from everything. Whence he concluded that everything would be mixed in everything else as minute, non-sensible parts. And because an infinite variety of things can come to be from another, he said that infinite minute parts were in each thing.[205]

As St Thomas argues in the *De Potentia* text first quoted above, Anaxagoras erred because he held that the thing generated already pre-existed in act, whereas it pre-existed only in potency and not in act (praeexistat potentia et non actu). This error was made because Anaxagoras had failed to distinguish between potency and act, in that he thought that the only alternatives are that things are generated either from non-being or from being in act, whereas there is a third alternative, namely being in potency. Explaining in more detail this error, St Thomas states:

> All of these philosophers were deceived because they did not know how to distinguish between potency and act. For being in potency is, as it were, a mean between pure non-being and being in act. Therefore, those things which come to be naturally do not come to be from nonbeing simply, but from being in potency, and not, indeed, from being in act, as they thought. Hence things which come to be did not necessarily pre-exist in act, as they said, but only in potency.[206]

As Woodbury points out, this first explanation for the origin of substantial form effectively does away with substantial change, since one substance does not change into another because the new substance already existed in act, albeit in a latent and hidden way. Further, there is the added

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[205] *In Phys.*, Bk. 1, *lectio* 9, n. 62.

[206] *Ibid.*, n. 60.

absurdity of a substance being actually present with its form without there being a manifestation of the effects of that form, through an expression of its observable properties.[207]

3.2. Creation by an External Agent.

The second explanation examined is that the substantial form is created, that is that it is produced from nothing by an external agent who then infuses or joins that form with pre-existing matter. As St Thomas states in the same text in the *De Potentia* q. 3, a. 8:

> Since, however, the thing generated is in potentiality through its matter, and in act through its form, others maintained that a thing becomes as regards its form while its matter was already in existence. And seeing that nature cannot operate on nothing, and therefore presupposes something to act on, according to them nature's operation is confined to disposing matter for its form. While the form which must needs become and cannot be presupposed, must be produced by an agent who does not presuppose anything and can make something out of nothing: and such is the supernatural agent which Plato held to be the giver of forms. Avicenna held this to be the lowest intelligence among separate substances: while more recent followers of this opinion say that it is God.

This theory holds that the form is produced *ex nihilo* by some supernatural agent, such as some Platonic giver of forms, or Avicenna's lowest intelligence, or God. This produced form is then joined with matter which has been suitably disposed by some natural agent. This explanation presupposes that matter is uncreated and pre-existent and that the forms are created and united with such matter. In response to this explanation St Thomas states:

> Now seemingly this is unreasonable. Since everything has a natural tendency to produce its like (because a thing acts forasmuch as it is actual, namely by making actual that which previously was potential) there would be no need of likeness in the substantial form in the natural agent, unless the substantial form of the thing generated were produced by the action of the agent. For which reason that which is to be acquired in the thing generated is found to be actually in the natural generator, and each one acts inasmuch as it is in act: wherefore seemingly there is no reason to seek another generator and pass over this one.
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> It must be observed, then, that these opinions arose from ignorance of the nature of form, just as the first-mentioned opinions arose from ignorance of the nature of matter. For being is not predicated univocally of the form and the thing generated. A generated natural thing is said to be *per se* and *properly*, as having being and subsisting in that being: whereas the form is not thus said to be, for it does not subsist, nor has it being *per se*; and it is said to

[207] A. Woodbury, *Natural Philosophy*, p. 62.

> exist or be, because something is by it: thus accidents are described as beings, because by them a substance is qualified or quantified, but not as though by them it is simply, as it is by its substantial form. Hence it is more correct to say that an accident is of something rather than that it is something (*Metaph.* vii, 2). Now that which is made is said to become according to the way in which it is: because its being is the term of its making: so that properly speaking it is the composite that is made *per se*. Whereas the form properly speaking is not made but is that whereby a thing is made, that is to say it is by acquiring the form that a thing is said to be made.

St Thomas gives two reasons why this explanation is unsatisfactory. The first is that it seems redundant or unnecessary to posit a supernatural creator of forms, since it seems sufficient to say that natural generators are alone responsible for the new substantial form of the newly generated thing. For we observe, for example, that dogs generate other dogs which possess a similar substantial form to the generator and plants generate other plants of a similar form to themselves. It seems more reasonable to say that since dogs are of the same species as their progeny and therefore have the specifically same substantial form, that the parent as natural generator is responsible in some way for the substantial form being in the progeny. Otherwise this gives rise to a form of occasionalism, whereby God alone is said to act, thereby denying a proper role to secondary causes in a case where the secondary cause does seem to contribute to the new form being in the effect it brings about.[208] The natural agent, according to this explanation, has only the role of disposing the matter to prepare it for the reception of the new form, but is in no way responsible for the production of the new form.

Secondly, St Thomas argues that it is the composite which is generated, properly speaking, and not the form alone. If we continue with our dog example, dogs, as natural agents, generate other dogs of the same species and with the specifically same substantial form. They do not generate the substantial form itself as something subsistent and having an independent existence. This is because it is only the *composite* of matter and form which has existence *per se* and properly. The substantial form is only a part of the composite and is the principle by which the composite exists;

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[208] Having said this, this explanation of St Thomas applies only to non-subsistent substantial forms, namely the substantial forms of all natural things except man. Man is said to have a subsistent substantial form, his soul, which is immediately created by God and united with the matter. This follows from the fact that the human soul's operations, in particular intellection, are not *per se* dependent on matter and thus it is subsistent in itself.

it is that by which the composite has actual existence (id est per cuius acquisitionem aliquid dicitur fieri). The substantial forms of natural things, other than man, cannot subsist and only exist as the principles which actualise prime matter, the other co-principle of the composite, thereby giving an actually existing substance or composite. St Thomas gives an analogy with accidents, which are not beings *per se* or subsistent, but only exist in a substance, which alone subsists.

However, while a substantial form is not generated because it does not have being *per se*, and therefore we can say that it is not generated *per se*, we can say that it is generated *per accidens* or incidentally, in that it comes into being, as a principle of the composite, when the composite comes into being through or by means of the form. As St Thomas states:

> From the things which have been posited it ought to be evident that, just as an agent does not produce the matter or subject of generation, for example, the bronze, when he generates something, so too "neither does he produce the form," namely, the thing itself which is a sphere, except perhaps accidentally; for he makes a brazen sphere, which is a composite. And since a brazen sphere is also a sphere, he therefore accidentally produces a sphere.[209]

In the example given, which is that of an accidental change of a sculptor sculpting a bronze sphere, the sculptor does not produce the accidental form of 'sphere' but rather a bronze sphere, which is a composite of the matter, bronze and the accidental form, but he can be said to produce the form of the sphere *per accidens*.[210] By analogy, a natural agent, such as a dog, can be said to produce *per accidens* or incidentally the substantial form of its offspring, even though it *per se* produces a composite, namely a dog which consists of both co-principles of matter and form.

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[209] *In Metaphys*., Bk. 7, *lectio* 7, n. 1418. See also *ST* I, q. 45, a. 8 ad 1.

[210] By saying that the sculptor produces the form of the sphere *per accidens*, this does not mean that he does not intend to produce that form. He certainly does intend to produce this form in the bronze, but the production of this form occurs only in the bronze matter. In other words, what the sculptor intends *per se* to produce is the composite of bronze with the form of a sphere, but he intends to *per accidens* produce the form in so far as it is in that composite.

3.3. Eduction of the Form.

We have examined thus far two possible explanations for the production of a new substance, both of which are rejected by St Thomas. We are now in a position to examine the explanation he gives for the production of a new substance. In the Commentary on the *Metaphysics*, Book 7, Lecture 7 St Thomas states the following:

> Yet it must be noted that even though it is said in the text that form comes to be in matter, this is not a proper way of speaking; for it is not a form that comes to be, but a composite. For a form is said to exist in matter, although a form does not [properly] exist, but a composite exists by its form. Thus the proper way of speaking is to say that a composite is generated from matter according to such and such a form. For forms are not generated, properly speaking, but are brought from [educuntur] the potency of matter, inasmuch as matter, which is in potentiality to form, becomes actual under some form; and this is to produce a composite.[211]

St Thomas here repeats what we have already seen, namely that it is not the form which is generated *per se* but rather the composite. Hence the more precise way of speaking would be to say that the "composite is generated from matter according to such and such a form" (compositum generari ex materia in talem formam). Forms are not properly speaking or *per se* generated but rather are said to be "brought out from the potency of matter" (educuntur de potentia materiae). The forms could be said to be in the potency of the matter and then made actual in that same matter, in that they come to actualise the matter to produce a composite. Thus this explanation opposes the Platonic explanation given above, where the forms are already 'pre-made' and then simply united to properly disposed matter. Rather, the forms are said to arise from the matter, or more strictly from the potency of matter and then come to actualise this same matter to produce a composite.

While the form is not generated *per se*, we could say that it is generated *per accidens* or incidentally, as we have seen above. While the composite is what is generated *per se*, in that it is the composite substance which has existence *per se*, the form is generated *per accidens* as the

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211 *In Metaphys*., Bk. 7, *lectio* 7, n. 1423.

principle in the composite substance by which the composite comes to have actual existence. A particular dog generates *per se* another dog as a composite substance, but *per accidens* generates the substantial form of that generated dog as a principle of that dog.

In a similar text in the *De Potentia* q. 3, a. 8 St Thomas states:

> Accordingly the fact that nature makes nothing out of nothing does not prevent our asserting that substantial forms acquire being through the action of nature: since that which is made is not the form but the composite, which is made from matter and not out of nothing. And it is made from matter, in so far as matter is potentially the composite through having the form potentially. Consequently it is not correct to say that the form is made in matter, rather should we say that it is educed from the potentiality of matter.

Here St Thomas states that it is not correct to say that the form is made in matter (fiat in materia). This would be the case if the Platonic explanation is correct and the pre-made form was simply introduced into the matter. The matter in this case would be *purely receptive* of a premade form. It would play no part in the *per accidens* or incidental coming into being of the form. Rather, he repeats that the form is educed from the potency of matter, thereby indicating that the matter does play some role in the coming into being of the new form in that it is from the potency of the matter that the new form comes to be.

The verb *educere* is a word which consists of a combination of the preposition *ex* meaning from and the verb *ducere*, meaning to draw, or to draw out. This would give the nominal definition of this word as meaning to draw out from.[212] If the substantial form is said to exist in the potency of matter, then to draw out this form can be said to mean the actualisation of that form and therefore through the form the actualisation of the matter according to that form. To draw out means to draw out from potency to actuality. In the *De Potentia* q. 3, a. 4 ad 7 St Thomas states:

> A form may be considered in two ways. First, in so far as it is in potentiality: and thus God concreates it with matter, without any concurrent action of nature for the disposition of the matter. Secondly, in so far as it is in act, and thus it is not created, but is educed by natural agency from the potentiality of matter.

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212 *Cassell's Latin Dictionary* (London: Cassell & Company, Ltd, 1948), p. 186.

Here St Thomas states that the form can be considered both in potency and in act. It exists in the potency of matter, in that God, when He created individual things, created both the matter and the form, however not only the form which was actually actualising the matter of the thing created, but also He created the many other forms which are in the potency of prime matter. Hence prime matter contains *potentially* these other substantial forms. In the second way, the form can be considered in act, in so far as it is educed from the potency of matter and then comes to actualise that matter.

It should be noted that to speak of the substantial form as being in the potency of matter means that it is in the potency of prime matter. This is because the substantial form directly and immediately actualises prime matter, which results in the new substance. Hence the substantial form is educed from the potency of prime matter and then actualises this same matter which results in the newly generated substance, which is a composite of prime matter and substantial form. What needs to be examined now is how this eduction is said to occur. This will involve an examination of the role of the prime matter as the material cause or principle from which the new form is educed and consequently the new substance is generated, and also the role of the efficient cause, since as we have seen, it is not possible for prime matter itself, insofar as it is in potency and contains potentially the new form, to bring about this actualisation itself without some efficient cause which is already in act.

John of St Thomas describes eduction of the form from the matter in the following way:

> …eduction is a certain transmutative production [of the form], which bespeaks order to a twofold cause, namely to an efficient [cause] by which it is, and to the material [cause] from which it is and in which it is born and has being, and thus it supposes proportion in the subject itself, from which it depends and is caused.[213]

[213] Et sic eductio est productio quaedam transmutativa, quae dicit ordinem ad duplicem causam, scilicet ad efficientem, a qua est, et ad materialem, ex qua est et in qua innascitur et habet esse, et sic supponit proportionem in ipso subiecto, a quo dependet et causatur. *Cursus Philosophicus Thomisticus*, ed. P. B. Reiser, 2nd ed (Turin: Marietti, 1948), P. 1, q. 4, a. 1, p. 85 (The English translations of the *Cursus Philosophicus* are my own, unless otherwise indicated).

He states that eduction is a "transmutative production" of the form in that it involves the change of matter by an agent or efficient cause. It therefore requires at least two causes, the material cause from which the form is educed and comes into being, and the efficient cause by which this process occurs. The matter must be changed from potentially containing the form to actually having it and being actualised by it. He notes that the educed form arises from the matter and also depends on it. The form depends on the matter since the form is a co-principle with the matter and can only exist as united to and actualising the other co-principle, which is matter.

John of St Thomas goes on to give three conditions which are required for the eduction of forms from matter:

> …for the eduction of form from matter, three conditions are required: Firstly, that the form depends in its being and in its coming to be upon a subject, from which it is educed. Secondly, that such potency or subject is connatural and proportionate to such form and the form to it; otherwise it will not be contained in its potency, and so it will not be contained in it nor be educed from it. Thirdly, that the form will not come from without, but be born from matter itself, that is through its transmutation it may come to be, by which matter is reduced from potency to act.[214]

The first condition given is that the form depends on the matter for its being and coming into being. Since the form is educed from the potency of matter, it is therefore dependent on the matter for its coming into being. However, it is also said to be dependent on the matter for its continuing in being. To understand why this is the case, we need to be reminded that the form is only a principle of a composite and is not subsistent. Because this principle comes into being from the matter and comes to actualise the matter, it can only exist united to the matter. In other words, its whole being depends on its union with matter as its co-principle. This would be different if the form was created by an external agent and then simply joined to the matter which pre-existed. The

[214] Ad secundum, scilicet ad eductionem formae a materia, tres conditiones requiruntur: Prima, quod forma pendeat in suo esse et fieri a subiecto, a quo educitur. Secunda, quod talis potentia seu subiectum sit connaturale et proportionatum tali formae et forma illi; alioquin non continebitur in eius potentia, et sic in ea non continebitur nec ab illa educitur. Tertia, quod forma non veniat ab extrinseco, sed nascatur ex ipsa materia, id est per eius transmutationem fiat, qua reducitur materia de potentia in actum. *Ibid*., p. 85.

form would then have its own existence and hence be subsistent before its union with matter. Or, as in the case of the human soul, it is created by God and at the same time united with matter.[215]

Regarding the second condition for eduction, John of St Thomas states that the potency or subject must be connatural and proportionate to the form, otherwise it could not be said that the form is contained in the potency of matter nor will it be able to be educed from it. For example, the prime matter of a canine ovum is firstly proportionate to the substantial form of an ovum, which is the form currently actualising it. In order for the prime matter to become proportionate to the substantial form of a dog, that is, for the substantial form of a dog to be able to be educed from it, the dispositions of the prime matter will need to be changed such that it becomes proportionate and connatural to the new canine substantial form. It becomes so proportionate upon fertilisation, during which the dispositions in the prime matter of the ovum undergo a change. The important role of dispositions in matter in the process of eduction will be discussed in greater detail below.

The third condition for eduction is that the form does not come from without or extrinsically, as seen in the second explanation, but rather is born from the matter, that is, it is through the transmutation of matter that it comes into being and by which the matter is reduced from having the form in potency to being actualised by that form. This transmutation in the matter will be

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[215] In the *SCG*, Bk. 2, ch. 86 St Thomas examines the question whether the human soul can be transmitted through the semen. One theory he examines is whether the semen could be said to possess a power which is able to transmute matter to produce the soul. In response to this he states: "The second is also impossible. For it is by transmuting the body that the active power in the semen contributes to the generation of the animal; indeed, a power present in matter cannot act otherwise. But every form that is initiated through the transmutation of matter is dependent upon matter for its being, since by this means the form is made actual from being potential, and thus the material transmutation issues in the actual being of the matter through its union with the form. Hence, if in this way the form also begins to be simply, then the form will have no being at all except that which accrues to it through being united to a matter; that is to say, the form will be dependent on matter for its being. Hence, from the hypothesis that the human soul is brought into being through the active power in the semen it follows that its being depends upon matter, as with other material forms. But the contrary of this has already been proved. The intellective soul, therefore, is in no way produced through the transmission of the semen.

Moreover, every form brought into being through the transmutation of matter is educed from the potentiality of matter, for the transmutation of matter is its reduction from potentiality to act. Now, the intellective soul cannot be educed from the potentiality of matter, since it has already been shown that the intellective soul altogether exceeds the power of matter, through having a materially independent operation, as was likewise proved above. The intellective soul, therefore, is not brought into being through the transmutation of matter; nor, then, is it produced by the action of a power in the semen."

brought about by changing the dispositions in the matter, such that it changes from having the form potentially to having the form actually.

By way of summary thus far, from the texts of St Thomas and their understanding according to John of St Thomas, we can say that eduction is a transmutative production of a substantial form. By this is meant that the substantial form is produced *per accidens* or incidentally in the production of the composite substance. This *per accidens* production of the form is transmutative in that it involves changes in the dispositions in the prime matter in the original substance, whereby these dispositions are changed such that a new substance with new dispositions comes into being.

This transmutative production requires two causes. Firstly the efficient cause by which the eduction occurs, which causes both the new dispositions in the matter and the incidental production of the new form. Secondly the material cause, from which and in which the new form will arise and have its being. For the prime matter to perform this function it must have a proportion to the form which will be educed from it. This proportion will be brought about by dispositions in the matter caused by the efficient cause.

As Catalano sums up about the process of eduction:

> The agent incidentally causes a new form in matter by transmuting the matter i.e., by giving matter dispositions contrary to matter's previous dispositions We can now see a little more clearly what St. Thomas means by the term "eduction of substantial forms from the potency of matter." We have already seen that this term, in a negative way, signifies that forms are not caused as beings by an immaterial substance and then infused or induced in matter, and that, in a positive sense, this term implies that forms are incidentally produced by a material agent in the agent's very production of the composite. Now, however, we can add the incidental production of the patient's substantial form accomplished by means of transmuting the patient's matter. In fact, St. Thomas explicitly states that every form educed to act by a matter's transmutation is a form educed from matter's potency. We can, therefore, give the following definition of "eduction": To educe a form from matter's potency signifies that a material agent incidentally produces a form in matter by transmutation.[216]

[216] J. Catalano. *The Eduction of Substantial Forms According to St Thomas Aquinas,* Doctoral Dissertation, St John's University, New York, 1962, pp. 123-4.

In this chapter we have begun to examine the process of substantial change. We did this first by examining the process of accidental change. We saw that we can distinguish in such change the subject of change. In the case of accidental change, this subject is second matter or a substance. In the case of substantial change, this subject is prime matter, which is pure potency. We also distinguished the form which is lost and acquired and the terms of the change, namely the *terminus a quo* and the *terminus ad quem*. We also saw that the subject must have a potency to change, and that the essence of change is the transition or passage in the subject from potency to act. In the case of accidental change, this change is brought about by a successive and gradual introduction of dispositions into the subject. In the case of substantial change, the subject of change, namely the prime matter, is not disposed successively or gradually. Rather, in an instant, it goes from a privation of the substantial form to possession of it. This new form in the subject is said to be educed from the potency of prime matter, which occurs by changing its dispositions. In the next chapter we will consider in more detail the role of the material cause in the process of eduction, in particular the role of dispositions in prime matter, since these dispositions are required for the transmutation of matter.

Chapter 4: The Process of Substantial Change – Part 2.

In the previous chapter we described eduction as a transmutative production of a substantial form. By this we meant that the substantial form is produced *per accidens* or incidentally in the production of the composite substance. It was argued that this *per accidens* production of the form is transmutative in that it involves changes in the dispositions in the prime matter in the original substance, whereby these dispositions are changed such that a new substance with new dispositions comes into being. In this chapter we will continue to examine in more detail the role of dispositions in prime matter and more precisely how such dispositions are to be understood.

1. The Need for Dispositions in Matter.

According to St Thomas, matter needs to be properly disposed for the reception of a form. He speaks of "matter being disposed for the reception of a form, as heat is a disposition for [the reception of] the form of fire."[217] The example he gives here is of matter, such as wood, being disposed, through it being heated, for the reception of the form of fire. The heat would be an accident of quality which is gradually introduced into the wood thereby disposing it for the reception of the form of fire. Elsewhere he states:

> However, what is to be perfected can be united with a form only after a disposition is present which makes the subject to be perfected capable of receiving such a form, because a definite act takes place only in a potency suitable for it. For example, a body is united with a soul as with its form only after it has been organized and disposed.[218]

In this text St Thomas again states that a form can only be united to a subject after the subject has been properly disposed for that form. The reason given is that an act takes place only in a potency suitable for it. In other words, there needs to exist a proportion between the potency and the act or between the matter and the form.

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217 *De Virtutibus*, q. 1, a. 1 ad 9.

218 *De Veritate*, q. 8, a. 3 (The English translations of the *Quaestiones Disputatae de Veritate* are from *Truth*, trans. J.V. McGlynn *et al*, http://dhspriory.org/thomas/english/QDdeVer.htm.)

In the text we have already seen above from *ST* III, q. 75, a. 7, in which St Thomas states that change may be considered instantaneous on the part of the subject, he states:

> Secondly on the part of the subject, which sometimes is prepared successively for receiving the form; thus water is heated successively. When, however, the subject itself is in the ultimate disposition for receiving the form, it receives it suddenly, as a transparent body is illuminated suddenly.[219]

Here St Thomas states that the matter or subject sometimes is prepared successively or gradually over time for the reception of a form. Once the subject has been adequately disposed and the ultimate or final disposition is attained, the matter receives the form suddenly or instantly.

If we are to hold, with St Thomas, that a form is educed from the potency of matter, meaning by this that the matter contains the form potentially, and then this form becomes actualised, which in turn actualises the matter to give a new composite, then we must note that St Thomas holds that before this eduction can occur, the matter needs to be properly disposed. If we take the example of heating water to boiling point, which is an alteration or accidental change in quality, the water needs to be gradually disposed to receive the final accidental form by which it attains the temperature of 100 degrees. These dispositions are the result of gradually heating the water, thereby changing the accidents of the water, namely that of quality, until the ultimate disposition is attained, which results in the water boiling. The eduction of the accidental form by which the water boils would not be possible without these gradual dispositions.

Similarly, the accidental form of a statue can only be educed through gradual dispositions being introduced into the stone. These dispositions include the decrease in quantity of the stone as it is being chiselled and the changing shape or figure. As the stone is gradually modified, it is becoming more and more disposed for the new form of the statue. Through these dispositions, the stone, as matter, is becoming more and more actualised, and the form is being more and more actualised or

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[219] The example given of heating water gradually until the ultimate disposition is attained and it starts to boil and change into steam is supported by the chemical explanation of a change in state, such as from liquid to gas. The particles in the liquid water are gradually heated and excited until boiling point is attained, at which point the bond of the particles alters and the water changes to a gaseous state.

educed, until the ultimate disposition is attained, at which point the form of the statue comes to actualise the matter.

The examples we have been considering thus far are all accidental changes. In such changes, the matter which is disposed is second matter, that is, an existing substance such as water which is heated or a stone which is sculptured. We can however apply, in an analogical way, our analysis of what occurs in accidental changes to what occurs in substantial changes. However, we need to note two important differences between these two types of changes. Firstly, while the subject of the change in the case of accidental change is an already existing substance, such as water or stone in the examples we have examined, the subject of substantial change is prime matter, which is only a potency for substantial existence. Thus while a new accidental form, in the case of an accidental change, is educed from the potency of the subject, which is a substance, a new substantial form, on the other hand, is educed from the potency of prime matter, since this is the subject which endures through the change and is united immediately to the substantial form.

A second difference is that, as we have seen, accidental forms admit of various degrees, that is, of more or less, whereas substantial forms do not admit of such degrees. Thus, in the case of water being heated, the accidental form of the quality of heat admits of different degrees, thereby giving rise to different temperatures in the water. The same accidental form may be more or less intense. In the case of substantial change, however, the substantial form does not admit of such variation in intensity or degrees. It is either fully present or not. This was seen above when it was noted that substantial forms are contradictories which do not allow for intermediaries, whereas accidental forms are contraries which do allow for intermediaries.

On this point St Thomas in the *De Potentia,* q. 3, a. 9 ad 9 states:

> … a substantial form is brought into act not continuously or by degrees but instantaneously (else movement would needs be in the genus of substance just as it is in that of quality)... Thus the form of fire is not produced in the air so as gradually to advance from imperfection to perfection, since no substantial form is subject to increase and decrease, but it is the matter alone that is changed by the previous alteration so as to be more or less

> disposed to receive the form: and the form does not begin to be in the matter until the last instant of this alteration.

St Thomas here argues that a substantial form does not become actual by degrees or continuously but rather instantaneously. The substantial form is not subject to increase or decrease. Therefore, in the example of substantial change he gives of air changing into fire, the form of fire is not gradually produced. Rather, St Thomas states that it is prime matter alone that is disposed by previous alteration to receive the form. It is at the instant of the last disposition being attained that the new substantial form comes to exist in the matter.

Similarly in *ST* III, q. 75, a. 7 St Thomas states, as we have seen above:

> A change may be instantaneous from a threefold reason. First on the part of the form, which is the terminus of the change. For, if it be a form that receives more and less, it is acquired by its subject successively, such as health; and therefore because a substantial form does not receive more and less, it follows that its introduction into matter is instantaneous.

Therefore we may say that in the case of accidental changes, the accidental form is changed gradually or successively. In the case of substantial change, however, the substantial form is not gradually changed but comes into being instantaneously once the prime matter has been properly disposed by the ultimate disposition.

This explanation however gives rise to a particular difficulty which will need to be addressed. As we shall see, St Thomas holds that prime matter is disposed for the eduction of a new substantial form by means of changes in the accidents of the substance which is changed. However, since the accidents are said to inhere in a substance, considered as a *suppositum*, in what sense can it be said that they modify or dispose prime matter in which accidents do not inhere? It is this question which will now be addressed.

2. The Subject of Inhesion of Accidental Forms.

According to St Thomas, the proper subject of inhesion of accidental forms is the whole composite or substance and not prime matter. An accidental form is something which exists only *in alio* and

not *in se*, that is, it only exists in a substance as a subsisting subject. In *ST* I, q. 76, a. 6 St Thomas examines the question whether the human soul can be said to be united to prime matter through the medium of accidental dispositions. That is, can it be said that accidental dispositions inhere in prime matter directly. He argues:

> If, however, the intellectual soul is united to the body as the substantial form, as we have already said above, it is impossible for any accidental disposition to come between the body and the soul, or between any substantial form whatever and its matter. The reason is because since matter is in potentiality to all manner of acts in a certain order, what is absolutely first among the acts must be understood as being first in matter. Now the first among all acts is existence. Therefore, it is impossible for matter to be apprehended as hot, or as having quantity, before it is actual. But matter has actual existence by the substantial form, which makes it to exist absolutely, as we have said above. Wherefore it is impossible for any accidental dispositions to pre-exist in matter before the substantial form, and consequently before the soul.

In this text, St Thomas states that it is not possible that any accidental disposition come between any substantial form and its matter. By this he means that accidents cannot exist in prime matter alone. The reason given is that prime matter has no existence in itself, but rather only has existence when actualised by a substantial form which is united to it. But once the substantial form is united to prime matter, there then results an actually existing composite, and it is in that composite that accidents directly inhere. The first act of prime matter is caused by the substantial form, which confers on a thing *esse simpliciter* and this must precede any secondary act caused by any accidental form which only confers *esse secundum quid*.

A similar argument is given by St Thomas in the *De Ente*, Chapter 5 where he states:

> But that to which an accident comes is a being complete in itself and subsisting in its own existence. And this existence naturally precedes the accident which supervenes. And this is why the supervening accident does not, by its conjunction with that to which it comes, cause that existence in which a thing subsists, and through which the thing is a being in itself. It causes, rather, a certain second existence, without which the subsisting thing can be understood to be, just as what is first can be understood without what is second.[220]

In the Disputed Questions *De Anima* Article 9 St Thomas also examines the question whether the human soul is united to matter through a medium. In referring to a medium he examines the

[220] *Cf., In de Gen., lectio* 10.

question whether the soul, as substantial form of the body, is united to matter through the medium of other forms, whether these be substantial or accidental forms. His response to this question is similar to what we have already seen above, in that he argues that the substantial form must be immediately united to prime matter. He states:

> Among all [principles] the act of existing (*esse*) is that which most immediately and intimately belongs to things, as is pointed out in the book *De causis* [IV]. Hence the form which gives matter its act of existing, must be understood to come to matter prior to anything else, and to be present in it more immediately than anything else, because matter receives its act of existing from a form. Moreover, it is proper to a substantial form to give matter its act of existing pure and simple (*esse simpliciter*), because it is through its form that a thing is the very thing that it is. For a thing is not given an act of existing pure and simple through accidental forms, but only a relative one (*esse secundum quid*), such as to be large or colored, and so on. Therefore, if there is a form which does not give to matter its act of existing pure and simple, but comes to matter already possessing an act of existing through some form, such a form will not be a substantial one. From this it is obvious that an intermediary substantial form cannot intervene between a substantial form and matter, as some wished to maintain.

We have already seen this argument above, in which St Thomas argues that the substantial form is immediately united with prime matter, thereby conferring *esse simpliciter*. There can therefore be no accidental form which confers *esse simpliciter* but only *esse secundum quid*. Therefore, accidental forms cannot inhere immediately in prime matter. They can inhere only in a composite of prime matter and substantial form.

St Thomas in the same Article 9 then goes on to examine if there is any sense in which prime matter can be disposed by accidents for different substantial forms. He states:

> Therefore a more perfect form, constituting with matter a composite being in the perfection of an inferior grade, must be considered as matter with respect to a higher perfection; and so on up the scale. For instance, prime matter, so far as it now exists in a corporeal mode, is matter with respect to the higher perfection of life. (And so body is the genus of living body, and animated or living is the specific difference. For genus is derived from matter, and difference from form.) Thus, in a certain way, one and the same form actualizing matter in a lower grade of perfection, is midway between matter and that same form actualizing matter in a superior grade. But matter, so far as it is understood to have substantial existence as a perfection of an inferior grade, can, therefore, be regarded as the subject of accidents. For a substance in that inferior grade of perfection must have a proper accident which necessarily inheres in it. Likewise, from the fact that matter has corporeal existence through forms, it immediately follows that there are dimensions in matter

> whereby it is understood to be divisible into different parts, so that it can receive different forms corresponding to its different parts. Furthermore, from the fact that matter is known to have a certain substantial mode of existing, matter can be understood to receive accidents by which it is disposed to a higher perfection so far as it is fittingly disposed to receive that higher perfection. Moreover dispositions of this kind are understood to exist in matter prior to the form, inasmuch as they are given existence in matter by an agent, although there are some improper accidents of the form that are caused in the matter only by the form itself. Hence such accidents are not understood to exist as dispositions in matter prior to the form; rather is the form understood to be prior to the proper accidents as a cause is to its effects.

The first thing we note is that prime matter, when united to a substantial form to constitute a composite being of an inferior grade, can be considered as 'matter' with respect to a higher perfection and so on up the scale of perfections. By 'matter' here is meant second matter. It is however only such 'matter', considered as a composite, that can be said to be the subject of accidents and not prime matter alone. Therefore St Thomas states that it is only from the fact that this 'matter' has a substantial mode of existing that it can be understood to receive accidents which dispose it to a higher perfection. It is only accidents in second matter which can be said to be prior to a substantial form which confers a higher perfection.

We could say that while accidents cannot be said to inhere in prime matter directly, the prime matter can be said to be disposed *indirectly* in so far as it is in a composite being which is directly disposed. The prime matter in a composite of an inferior grade of perfection can be said to be indirectly disposed for a higher grade of perfection resulting from a higher substantial form by virtue of accidents in the inferior composite.

In Objection 5 of this same Article 9 the objection directly addresses the issue we are considering, namely whether prime matter is the subject of inhesion of accidents. It states:

> Further, it seems that the soul, as a form, is united to the body through a medium. For a form is not united to any kind of matter but to one befitting it (*propria*). Now the matter of any particular form is prepared to receive that form through proper dispositions which are proper accidents of a thing, just as hot and dry are proper accidents of fire. Therefore, a form is united to its matter through the medium of proper accidents. But the proper accidents of living things are the powers of their soul. Therefore, as a form, the soul is united through the medium of its powers to the body.

This objection argues that since form can only be united to prime matter if that matter is properly disposed to receive that form, the prime matter must have proper accidents inhering immediately in it in order to dispose it for the form. Therefore the substantial form is united to the prime matter through the medium of proper accidents. St Thomas responds to this objection as follows:

> The accidental dispositions which dispose matter properly for [receiving] some form are not media absolutely between form and matter, but between form inasmuch as it bestows the highest perfection, and matter inasmuch as it is already perfected by some perfection of an inferior order. For matter by its very nature is first with respect to the lowest grade of perfection, because matter of itself is in potency to substantial corporeal existence. Moreover, it does not require to be disposed in this way. But matter, having this perfection already in existence, requires dispositions to a higher perfection.

St Thomas rejects the argument in the objection by arguing that the accidental disposition is not in the prime matter immediately. This is because prime matter is first perfected by the substantial form, which confers "substantial corporeal existence", thereby giving existence to a *hoc aliquid* of a particular species. In other words, prime matter is immediately united to and actualised by the substantial form and does not have any intervening forms actualising it in any way and thereby disposing it. It is only after being actualised by a substantial form that the prime matter can be said to be disposed and to be requiring changes in these dispositions in order to be make fit to be the matter of a higher perfection.

The argument we have been giving, that the prime matter can be said to be indirectly disposed by means of accidents in the composite, can be supported by texts in which St Thomas talks about prime matter being in potency to different substantial forms, but in a certain order. In the *SCG* he states:

> Thus, prime matter is in potency, first of all, to the form of an element. When it is existing under the form of an element it is in potency to the form of a mixed body; that is why the elements are matter for the mixed body. Considered under the form of a mixed body, it is in potency to a vegetative soul, for this sort of soul is the act of a body.[221]

[221] *SCG*, Bk. 3, ch. 22.

In this passage, St Thomas begins by saying that the lowest substantial form which can actuate prime matter is the form of an element. This is so because elements are the simplest substances which cannot be decomposed into simpler kinds of substances. The next highest substantial form which can actualise prime matter is the substantial form of a compound of elements. As actualised under the substantial form of a compound, prime matter is able to be actualised by the substantial form of a plant.

This text is of interest to us because it shows the need for a certain order in the prime matter as it is being actualised by different forms. This order is necessary because of the dispositions in the prime matter which dispose it. While prime matter, considered in itself is in potency to all substantial forms, because in itself it is pure potency, as it is in particular things and as actualised by particular forms its potency is restricted and limited by the form which at present actualises it.

We have said that while the accidents immediately inhere in the composite substance and thereby directly dispose it, we can say that such accidents indirectly dispose the prime matter in so far as it is part of the composite and that therefore these accidents dispose the prime matter for the reception of a particular substantial form. John of St Thomas follows St Thomas in saying that the whole composite is the subject of inhesion of the accidents and not just the prime matter.[222] Prime matter is a principle of a substance which does not subsist and therefore cannot be the immediate subject of inhesion. Prime matter is however the subject of mutation or change, because it alone and not the composite is what is transmuted from one form to another, and in it alone is received the substantial form which is immediately united to it.[223]

However, John of St Thomas holds that in a sense the prime matter can be said to receive these accidents. He states:

> And although it is supposed that prime matter is the principle of receiving these accidents, however it is not the *principle that* (principium quod) of receiving them, but the *principle*

[222] *Cursus Philosophicus, Phil. Nat*., P. 3, q. 1, a. 5, p. 572.

[223] *Ibid*., p. 572.

> *by which* (principium quo), because it is the composite itself as the subject that (subiectum quod) has to receive the accidents...Therefore generation, in so far it is an accidental action, needs the subject of inhesion and of sustenance to be the composite, and not only prime matter, although this [prime matter] is the principle by which of receiving and the subject also of mutation, as was said above.[224]

Here John of St Thomas makes a useful and important distinction between a *principium quo recipiendi* and a *principium quod recipiendi*. The composite is the *principium quod recipiendi* of the accidents, since the composite of prime matter and substantial form, that is, an actually existing substance, alone can be the proper and immediate subject of inhesion. However the prime matter can be said to be the *principium quo recipiendi*, in that it is the principle by which the composite is able to receive, since prime matter is in itself pure potency.

John of St Thomas elsewhere gives further explanation of this when he states that prime matter is the *subiectum quo* and the *principium quo recipiendi*, and gives as a reason for this that prime matter is the "first root of potentiality and of reception in a composite" and this because it is in itself pure potency. By comparison, the substantial form is the first root of actuality. He then states: "Therefore whatever is received in a composite is received having this matter as a principle *quo* and first root of receiving."[225]

Further, in the same text, John of St Thomas states that: "An accident is received through the mediation of matter as through a *principio quo recipiendi*" (Accidens mediante materia recipitur tamquam principio quo recipiendi). The accidents can be said to be immediately received in the composite but mediately through prime matter, in so far as prime matter is the principle by which the composite is able to receive any accidental dispositions. By saying that the accidents are received through the mediation of prime matter he can be said to support what was said above that prime matter is indirectly disposed by accidents in the composite. It is through the mediation of prime matter as a *principium quo recipiendi* that the whole composite, as the *principium quod*, is able to receive accidents. Hence we can say that the accidents dispose the prime matter as a

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224 *Ibid*., p. 572.

225 *Ibid*., p. 758.

principium quo recipiendi even though it is only in the composite in which they immediately inhere. In other words, the accidents are able to extend down into the principle and root of a substance's potentiality, namely its prime matter, and thereby affect its dispositions. This explanation of John of St Thomas is thus able to address the problem raised above as to how prime matter can be disposed for the eduction of the new substantial form when it is the composite that is the proper subject of accidents.[226]

However what needs to be examined more closely is precisely how the accidental dispositions can be said to affect the prime matter. By means of accidental dispositions introduced into the substance or composite *suppositum*, the dispositions of prime matter are affected. Yet there can be no accidental forms inhering in the prime matter. The prime matter itself remains a pure potency without any actuality and is only a principle of the composite substance. To assist us in understanding how this may be possible, we will need to look more closely at the nature of prime matter itself.

3. Prime Matter as a Transcendental Relation to Form.

We have already seen above that the very nature of prime matter is that it is in itself pure potency. It is in itself a potency for substantial form and is not merely something which has a potency.[227] Its potency is not something superadded to its essence.[228] It lacks in itself any substantial form which would determine it as a substance, and therefore it lacks also all accidental forms, since such forms can only inform a substance. Prime matter therefore lacks all entitative acts, whether substantial or accidental, since all entitative acts are the result of having a form. This is why only the composite

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226 *Cf.*, Ledinich *op. cit.*, pp. 45-47.

227 "...materia secundum suam substantiam est potentia ad esse substantiale." *In Phys*. Bk. 1, *lectio* 15, n. 3.

228 "Non igitur potentia materiae est aliqua propietas addita supra essentia eius." *Ibid.* The essence of a material thing is comprised of its prime matter and substantial form. However to speak of the essence of prime matter is to speak of an essence without any form, that is, as only comprised of matter. Since the mind cannot understand matter without any form, the mind in a sense supplies the form for prime matter so that it can be understood. To speak of the essence of prime matter is therefore to speak of essence taken in a partial sense rather than in its fullest sense as comprising both matter and form.

substance, a union of matter and form, can be said to have existence *per se*. The prime matter and the substantial forms are only *per se* principles by which the composite comes to exist.

However prime matter is vastly different from privation which is simply the absence of form. In itself privation is non-being, whilst prime matter is a real potency or capacity for the reception of form. This real capacity can be seen as a transcendental order or relation to form, since prime matter is of its nature ordered or related to form. In the Commentary on the *Sentences* St Thomas equates prime matter with the relation it has to form:

> For if it is said that it [prime matter] is composed of its own nature itself and the relations [habitudinibus] by which it is referred to God or to that with which it is composed, again it may be asked concerning these relations whether they are a thing or not: and if they are not a thing, they do not make a composite; but if they are a thing, they are not referred to other relations but to themselves: because that which per se is a relation, is not referred through another relation.[229]

In this text St Thomas is arguing that prime matter is not composed of its own nature and the relations by which it is ordered to God or to form, as if the relations are superadded to prime matter. Rather, prime matter is, by its own nature, those relations.[230] This argument is made in the light of examining the question whether some creatures are simple. Both prime matter and form, whether non-subsistent substantial or accidental forms, are only principles of being and have no complete being in their own right. Their entire nature consists in their relation to their respective co-principle, and therefore it is not composed of its nature plus its relation to form. In that sense,

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[229] Si enim dicatur, quod componitur ex ipsa sua natura et habitudinibus quibus refertur ad Deum vel ad illud cum quo componitur, item quaeritur de illis habitudinibus utrum sint res, vel non: et si non sunt res, non faciunt compositionem; si autem sunt res, ipsae non referuntur habitudinibus aliis, sed se ipsis: quia illud quod per se est relatio, non refertur per aliam relationem. *In Sent*., Bk. 1, d. 8, q. 5, a. 1. The translation of this text is my own.

[230] This understanding of this particular text is supported by A. Forest, *La structure metaphysique du concret*, pp. 214-16, as noted by Wippel, p. 319, n. 93.

prime matter can be said to be simple.[231] Elsewhere St Thomas states that: "to be in potency is nothing else than to be ordered to act."[232]

While St Thomas argues that prime matter is by its nature a relation to form, he is also clear that by relation he does not mean the accident of relation, which may be termed a predicamental relation. In his Commentary on the *Sentences* he states:

> To the fourth objection I answer, that if by passive potency is understood the relation of matter to form, then matter is not its potency, because the essence of matter is not relation. However if potency is understood such that it is a principle in the genus of substance, according to which potency and act are principles in some genus...then I say that matter is itself its potency.[233]

Prime matter should not be understood as a predicamental relation since matter is an intrinsic principle of a substance, entering into the composition of its essence. Therefore prime matter cannot be in the genus of accident but rather in the genus of substance. Further to this, in the Commentary on the *Physics* St Thomas states:

> But lest anyone, because of these words, be in doubt about what the potency of matter is and whether it is one or many, it must be pointed out that act and potency divide every genus of beings, as is clear in Metaphysics, IX, and in Book III of this work. Hence, just as the potency for quality is not something outside the genus of quality, so the potency for substantial being is not outside the genus of substance. Therefore, the potency of matter is not some property added to its essence. Rather, matter in its very substance is potency for substantial being. Moreover, the potency of matter is one in subject with respect to many forms. But in its nature [ratio] there are many potencies according to its relation to different forms.[234]

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231 St Thomas goes on to say that a principle such as prime matter falls short of the perfect simplicity of the First Principle in two ways. Firstly it is potentially divisible or divisible *per accidens*. Secondly it may be able to enter into composition with something else, which would not be possible with God.

232 " ...esse in potentia nihil aliud sit quam ordinari in actum." *De Malo*, q. 1, a. 2.

233 Ad quartum dicendum, quod si per potentiam passivam intelligatur relatio vel ordo materiae ad formam, tunc materia non est sua potentia, quia essentia materiae non est relatio. Si autem intelligatur potentia, secundum quod est principium in genere substantiae, secundum quod potentia et actus sunt principia in quolibet genere… sic dico, quod materia est ipsa sua potentia. *In Sent*., Bk. 1, d. 3, q. 4, a. 2 ad 4. The translation of this text is my own.

234 *In Phys*., Bk. 1, *lectio* 15, n. 131.

St Thomas states that since prime matter is potency for substantial being, it must be in the genus of substance and cannot be "some property added to its essence", that is to say, it cannot be an accident or in the genus of accident. Its very nature is to be a potency for substantial being. In other words, its very nature is to be ordered or related to substantial being and therefore to substantial form as the co-principle of that being. Further, we note that he says that we may speak of many potencies in so far as there are different relations to different forms which actualise these potencies. On this point St Thomas in the same Commentary on the *Physics* states:

> Things which are related belong to one science. But matter is one of the things which are related, because it is spoken of in relation to form. However it is not spoken of as if matter itself were in the genus of relation, but rather because a proper matter is determined for each form. And he adds that there must be a different matter under a different form. Hence it follows that the same natural science considers form and matter.[235]

As Wippel states, commenting on this passage and on the earlier text from the same Commentary:

> As he writes while commenting on Bk II, matter is included among those things which are ordered to something else; for it is ordered to form. In other words, he is saying that matter is correlative by its very nature, but not that it falls within the genus relation. He could not admit that it does, of course, without undercutting matter's role as an intrinsic constituting principle of the composite substantial essence itself.
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> In his later writings, therefore, Thomas seems to have concluded that prime matter is pure potentiality of its very nature (as he apparently always held), and that this potentiality is or entails an ordering or relationship to substantial form. This ordering or relationship is not to be regarded as something superadded to matter, as it would be if it belonged to the category relation. But he no longer finds it necessary to distinguish two meanings for the passive potentiality of matter. Matter is now regarded as identical with its potentiality and with its relationship to form.[236]

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[235] *In Phys*., Bk. 2, *lectio* 4, n. 174.

[236] Wippel, *op.cit*., pp. 319-20. Wippel goes on to make the following comments: "Many Thomistic interpreters have expressed this by saying that matter is transcendentally related to form, and form to matter. They do so in order to express the point that there is no predicamental (or accidental) relation which is added to matter and relates it to its form. De Raeymaker describes this well in its general application to principles of being. Each principle "is identified entirely with the relation which binds it to its co-principle, and it does not contain anything which is not referred to this other principle" (*Philosophy of Being*, p. 105; see n. 5 as well). However, in recent times, doubt has been raised concerning whether Thomas himself defended the classical "Thomistic" doctrine of transcendental relation. See Krempel, *La doctrine de la relation chez saint Thomas*, pp. 174-79, 361-68, and especially pp. 583-96 (where he denies that Thomas admits of any kind of transcendental relation of matter to form, and concludes that there is only a logical relation between individual matter and its substantial form, and an accidental relation between the body and the soul). While I would grant that the terminology "transcendental relation" is missing from Thomas's texts, I am not convinced by Krempel's interpretation. To me it is clear that Thomas defends the view that a principle of

3.1. The Notion of Transcendental Relation.

It was said that prime matter is a transcendental relation to form and that its nature consists of this relation. This type of relation is distinguished from a predicamental relation or the accident of relation. Before distinguishing these two types of relations, we can say that they are both real relations, that is, relations found in a subject independently of the consideration of the mind, as opposed to a mental relation, which is a relation attributed to some subject from mental consideration alone, without positing anything real in the subject.[237]

Real relations may be distinguished into predicamental relations and transcendental relations. A predicamental relation is a relation which is *superadded* to the beings themselves between which the relation exists. It is, in other words, an *external order* which exists between diverse things and is therefore accidental and not essential to each thing but is something superadded to the thing. Examples of such relations are fatherhood, sonship, equality and similarity.[238]

This type of relation can be contrasted with a transcendental relation, which is not superadded to the being itself but is rather *essential to it*. As Woodbury states:

> A transcendental relation accordingly is the very entity of some absolute being from its very essence ordered towards another, or proportioned or adapted or adjusted to another, as matter from its very essence is ordered towards form, or essence towards be, or power towards act, or act towards object...accordingly that which is related through a transcendental relation is constituted related formally through its own entity, so that it is its own relation, not formally through a relation really distinct from its own entity, - in this case its order or adaptation to another would be only accidental, not essential.[239]

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being such as matter is related in objective or extramental fashion, i.e., really rather than merely logically, by its very nature or essence to its correlative principle, i.e., its substantial form and vice versa." p. 320, n. 96.

237 *Cf*., A. Woodbury, *Metaphysics - Ontology*, p. 396.

238 Woodbury defines predicamental relations as: "a pure order towards other, so that it is not together some absolute being; wherefore it is named 'predicamental' since it constitutes a special mode of being really distinct from every absolute mode of being. This predicamental relation is a real purely relative accident superadded to its subject, this subject being constituted related to another: not formally through itself, but formally through this accident really distinct from itself." *Ibid*., p. 397.

239 *Ibid*., p. 397. As Elders states regarding transcendental relations, St Thomas does not use the term himself but he is aware of this type of relation: "Substance and accidents are ordained towards one another, as are matter and form. This ordering towards one another can be called a relation, but of course we are dealing here with something completely different from the predicamental relations which have just been

3.2. The Appetite of Matter.

In order to understand more fully the transcendental relation of prime matter to form, we may examine the notion of St Thomas that prime matter has an appetite for form. The transcendental relation of matter to form is an innate appetite and is not really distinct from the entity of matter.

In the Commentary on the *Physics*, Book 1, Lecture 15 St Thomas notes that form is something good and desirable. The reason for this is as follows: "Form is very good because act is the perfection of potency and is its good; and it follows as a consequence of this that form is desirable, because every thing desires its own perfection." According to St Thomas, something is perfect in so far as it is in act.[240] Therefore a potency can be said to seek its perfection by seeking to be actualised, and in that sense form, which is an active principle and therefore a principle of perfection, is something which is desirable by potency. Further, what is perfective of something is also a good for that thing, and it is under the aspect of its goodness that it is desirable.

He then goes on to argue that since matter is a potency, it naturally seeks and desires form according to its nature as something perfective of it and therefore as a good.[241] This desire and inclination of matter for the form as something good for it can be termed appetite. This is because

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discussed. Substance and accidents, matter and form, *actus primus* and *actus secundus* are ordained towards one another, and this order is precisely the content of these realities themselves and not a relation added to them. While the predicamental relations are the "thinnest" beings, the realities we are now dealing with are positive things with a content of their own which is ordained towards something else. This being towards something else is called a transcendental relationship. Despite criticism by some this terminology can be used, provided that one realizes that something entirely different from the predicamental relation is meant here: the latter is only one particular, extremely thin accidental reality, while the transcendental relations express a positive content and are found in various categories. St. Thomas himself does not use the expression (he reserves the term for predicamental relations and relations of thought), but he is aware of the matter in question. Thus he speaks of a substance being ordained to its accidents, of accidents to substance, of matter and form to one another, of the faculty to its action, of the soul to the body, of creatures to God". L. J. Elders, *The Metaphysics of Being of St. Thomas Aquinas in a Historical Perspective* (Leiden: E.J. Brill, 1993), p. 267.

240 "...for a thing is perfect in proportion to its state of actuality, because we call perfect that which lacks nothing of the mode of actuality." *ST* I, q. 4, a. 1.

241 *In Phys.*, Bk 1, *lectio* 15, n. 136.

appetite is the inclination or tendency of a thing towards a good which is suitable to it.[242] St Thomas distinguishes between an innate and an elicited appetite. An innate or natural appetite is one which arises from the very nature of a thing without knowledge, for example the appetite of a plant for nutrients. An elicited appetite is one which arises from knowledge, such as the appetite a man has for food or drink which he apprehends and knows is good for him. The appetite of prime matter is obviously a natural or innate appetite. Commenting on matter as having a natural appetite St Thomas states:

> Therefore, natural appetite is nothing but the ordination of things to their end in accordance with their proper natures. However a being in act is not only ordered to its end by an active power, but also by its matter insofar as it is potency. For form is the end of matter. Therefore for matter to seek form is nothing other than matter being ordered to form as potency to act. And because matter still remains in potency to another form while it is under some form, there is always in it an appetite for form. This is not because of a dislike for the form which it has, nor because it seeks to be the contrary at the same time, but because it is in potency to other forms while it has some form in act.[243]

St Thomas notes that an actual being can ordain or order itself to its end by virtue of an active power it has. For example, a man can move himself to attain some end by an active power he has, such as his will. However the prime matter in an actual thing can also be said to ordain or order itself to an end by virtue of it being a potency. Even though prime matter has no active power in itself, since it is in itself pure potency, it can be said to be ordered to and to desire an end in so far as it desires form which is an act. Therefore prime matter, which is pure potency and therefore purely passive and receptive of form by its nature, can still be said to tend towards form. This overcomes the difficulty in explaining how something which is purely passive and receptive can also be said to have some inclination or tendency. As John of St Thomas states:

> But the reason is because it is not necessary that natural appetite be some act or active impetus towards something, but only a relation [habitudo] and order towards what befits itself. But most befitting to matter is form, through which it is perfected and actuated.

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242 "The natural appetite is that inclination which each thing has, of its own nature, for something; wherefore by its natural appetite each power desires something suitable to itself." *ST* I, q. 78, a. 1, ad. 3. *Cf.*, *ST* I, q. 80, a. 1, ad. 3; q. 81, a. 1.

243 *In Phys.*, Bk., 1, *lectio* 15, n. 138.

> Therefore order and relation to form is in the highest way an inclination connatural to matter.[244]

John of St Thomas goes on to examine to what the appetite of prime matter extends.[245] It can be said that it has an appetite for all forms, but in different ways. Firstly, in regards to forms which it neither has nor ever had, prime matter has an appetite by way of tendency and desire.

Secondly, as regards forms which it has, prime matter still retains its appetite, not by way of tendency and desire, but rather by way of possession and rest. However, this possession and rest does not fully satisfy the appetite of prime matter, for it still has an appetite for other forms. We saw this in the text above from the Commentary on the *Physics*, where it was said that prime matter retains its potency and therefore its appetite for other forms even while it is actualised by its present form. The actuality of its current form does not exhaust matter's potency.

Thirdly, as regards forms which the matter had but which it no longer has, prime matter can be said to still retain an appetite for the forms which were lost by way of proportion but not however as regards fulfilment of that appetite, that is, as regards the production of such forms in itself. The reason for this is that once a form is lost, that numerically same form cannot be produced by an agent. However the matter can be said to have an appetite for the form which it lost because it was once disposed and proportioned to that form. The matter could have an appetite for a similar form to that which it lost but such appetite would not be for the numerically same form.

St Thomas in *ST* I, q. 59, a. 2 makes it clear, as we said above, that this inclination and ordering arises not from something outside the matter but is something internal and is in fact equated with the matter, which is another way of saying that prime matter is a transcendental order or relation to form by its very nature or essence:

> ...the nature or essence of a thing is completely comprised within it: whatever, then, extends to anything beyond it, is not its essence. Hence we see in natural bodies that the

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244 *Cursus Philosophicus, Phil. Nat.*, P. 1, q. 3, a. 4, p. 78b. This translation is from Woodbury, *Natural Philosophy*, p. 46.

245 *Ibid.*, pp. 78-9.

> inclination to being does not come from anything superadded to the essence, but from the matter which desires being before possessing it...

3.3. The Potency of Prime Matter is Purely Passive.

We may add a further specification of prime matter by saying that of itself it is purely passive. To understand the reason for this, we must distinguish between active potency and passive potency. St Thomas defines an active potency as: "an active principle which is the source of change in something inasmuch as it is other."[246] The other type of potency is passive potency, which he defines as: "the principle by which one thing is moved by some other thing inasmuch as it is other."[247]

Of these two forms of potency, we must conclude that prime matter is a passive potency in that it is something which can be acted upon and cannot be a source of action itself. This should follow from the fact that prime matter is in itself pure potency, without any actuality. To elaborate on this, we may give two reasons why it is passive potency and furthermore purely passive without any active power whatsoever in itself.[248] Firstly, the power to act, which is second act and an accident, presupposes an anterior act, namely first act, which is the substantial form. But prime matter of itself has no first act, which is substantial form. Therefore prime matter has no activity whatsoever.

Secondly, existence is a condition which is necessarily required in order that a thing operate actively or effectively. However prime matter of itself has no entitative act or existence whatsoever, since it is pure potency. Therefore prime matter of itself is in no way active but is purely passive.

St Thomas in the *De Veritate* describes how something can pre-exist in potency in natural things and states:

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246 *In Metaphys.*, Bk. 9, *lectio* 1, n. 1776.

247 *Ibid.*, n. 1777.

248 H. Grenier, *Thomistic Philosophy: Philosophy of Nature*, p. 30.

> We must bear in mind, nevertheless, that in natural things something can pre-exist in potency in two ways. In one, it is in an active and completed potency, as when an intrinsic principle has sufficient power to flow into perfect act. Healing is an obvious example of this, for the sick person is restored to health by the natural power within him. The other appears in a passive potency, as happens when the internal principle does not have sufficient power to bring it into act. This is clear when air becomes fire, for this cannot result from any power existing in the air.
>
> Therefore, when something pre-exists in active completed potency, the external agent acts only by helping the internal agent and providing it with the means by which it can enter into act. Thus, in healing the doctor assists nature, which is the principal agent, by strengthening nature and prescribing medicines, which nature uses as instruments for healing. On the other hand, when something pre-exists only in passive potency, then it is the external agent which is the principal cause of the transition from potency to act. Thus, fire makes actual fire of air, which is potentially fire.[249]

In the example St Thomas gives of the power of healing, this power can be said to be an active power in a body which can in itself bring about the health of a body, or it can be assisted by the art of medicine as exercised by a medical doctor. However in the case of something which pre-exists only in passive potency, then the external agent is the principle cause of the transition from potency to act. This is indeed the case for prime matter which is in itself purely passive potency. The fact that prime matter is a purely passive potency does not contradict its having a natural appetite for form, which is an inclination or tendency for forms. This is because this natural appetite can be satisfied only through the efficient causality of an agent already in act, since the appetite is merely passive.

4. The Notion of Disposition.

We recall above that we posed the issue of how accidental dispositions can be said to affect prime matter which in itself is pure potency. This issue arises because the proper subject of these accidents is the *suppositum* or substance, being the *subjectum quod* of such accidents. However, prime matter was said to be the *subjectum quo* of such accidents and the dispositions it introduces. Given our fuller analysis of prime matter above, we are now in a better position to address this issue. Before doing so directly, we should first examine the notion of disposition.

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[249] *De Veritate*, q.11, a. 1.

St Thomas states "disposition signifies order" and that "disposition is nothing else than the order of parts in a thing that has parts."[250] In the first sense, the word is used of the disposition of parts in place, in which case the disposition is called position. Indeed, from the very word itself we see reference to this first sense of the word. However, in a second sense it can refer to a potency.[251] The tendency of a potency toward a proportionate form can be referred to as a disposition. The very tendency or ordination of a potency towards its end or term, which is its actualisation by a form, is the disposition of that potency.[252] Therefore, a potency will be said to be well disposed if it is fittingly ordered to its end, which is the form or act which will perfect it.[253]

If we consider prime matter in itself, we saw that in its essence it is ordination or transcendental relation to form in general as its end or term, or we could say that it is ordination or relation to all forms. But for prime matter to be ordained or related to *this* form rather than to another, that is, for it to be ordained or related to a particular form, requires the proportionate disposition of the matter. For example, that prime matter, which in itself is ordination or relation to all forms, would be ordained or related to the form of water rather than the form of gold requires a particular disposition in the matter. Therefore, we can say that what is meant by the disposition of prime matter is the ordination, relation or proportion of prime matter *to a particular substantial form* as opposed to its ordination or relation to substantial forms in general or all forms. The dispositions in the matter are responsible for particularising the matter to a specific way of existing under a particular form. We could also express this by saying that while matter has a natural appetite for all forms, it will be proportionate and suited for this form rather than another only through its dispositions.

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250 *In Metaphys*., Bk. 5, *lectio* 20, n.1058, 1061; cf., *ST* I-II, q. 49, a. 1 ad 3.

251 *In Metaphys*., *ibid*.

252 Wuellner gives the following as a definition of disposition: "the tendency of a proximate passive potency toward a proportionate form..." B. Wuellner, *A Dictionary of Scholastic Philosophy*, 2nd ed. (Milwaukee: The Bruce Publishing Company, 1966), p.82.

253 It is in this sense of disposition that St Thomas states: "However, what is to be perfected can be united with a form only after a disposition is present which makes the subject to be perfected capable of receiving such a form, because a definite act takes place only in a potency suitable for it." *De Veritate*, q. 8, a. 3.

Prime matter has an appetite or relation to all substantial forms. However, for it to be the matter for this form rather than that requires dispositions in the matter. It is not however the prime matter itself which disposes itself for a particular form, since of itself it is pure passive potency. Nor is it the substantial form, since the substantial form is responsible for a specific determination, that is, for determining differences in species or kind. Rather, what disposes the prime matter for this form rather than that are accidental dispositions, that is, dispositions in the accidental order.[254] The accidental disposition most fundamental is that achieved by the accident of quantity. St Thomas teaches that matter signed by quantity (*materia signata*) is the principle of individuation of a particular substantial form.[255]

4.1. The Accident of Quantity.

According to St Thomas, the accident of quantity can be defined as an "order of parts in the whole."[256] This accident therefore is responsible for a substance having parts and for those parts to be ordered in the whole. As Hugon states: "The proper and essential ratio [note, property] of quantity is that of an extension of parts that is ordered to the whole, or to have parts outside of parts, that is to say, parts of which one is not the other and one is outside of the other."[257] This property of quantity is one that gives internal quantitative extension or the positioning of parts in the whole such that one part is outside the other. Other properties of this accident are those of external or circumscriptive extension, or the extension of parts in place; impenetrability; divisibility and measurability.[258]

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[254] In addition to the necessity of the accidental dispositions, there is also the necessity of the efficient cause to explain the introduction of the dispositions. This will be discussed in more detail below in Section 8.

[255] That *materia signata* is the principle of individuation is taught by St Thomas in a number of texts: *cf*., *In Sent*., Bk. 4, d. 11, q. 1, a. 3; *SCG* Bk. 1, ch. 63; *ST* I, q. 75, a. 4; *De Veritate*, q. 2, a. 6 ad 1; *De Ente*, ch. 1. The principle of individuation is normally expressed as *materia signata quantitate*. While this exact expression of the principle of individuation is not found in St Thomas, it can be said to accurately summarise his teaching. For example, in the *In Metaphys*., Bk. 5, *lectio* 8 he states: "Materia enim, secundum quod stat sub dimensionibus signatis est principium individuationis formae."

[256] *SCG*, Bk. 4, ch. 65.

[257] *Cosmology*, p. 235.

[258] *Ibid*., pp. 235-6.

Given that the accident of quantity gives extension of parts, it can be seen that this accident is the fundamental accident of a substance, since no other accident can exist without there first being an extension of parts. As Hugon states: "Now, the first accident that is immediately received in a corporeal substance, and which is the proximate subject of accidents, is quantity."[259] Further, the accident of quantity has a direct relation to matter, as quality does to form. As St Thomas states: "The first accidents which follow substance are quantity and quality, and these two are proportionate to the two essential principles of substance, viz., matter and form."[260]

4.2. Matter Signed by Quantity as the Principle of Individuation.

We have examined in a general way the accident of quantity. What now needs to be examined is what St Thomas means by matter signed by quantity, since he states that this is the principle of individuation which is responsible for individuating a substantial form in a particular existing substance or *hoc aliquid*.

The question regarding individuation arises from the fact that we experience many things which are the same species but which differ numerically or as individuals. For example, John and Peter are numerically distinct individuals, yet they have the same specific nature, namely that of man. This amounts to saying that these individuals have the *specifically* same substantial form, yet this specifically same form is individuated in particular individuals. There then arises the question of what the principle of individuation is, that is, what is responsible for the individuation of the specifically same form. According to St Thomas, the principle of individuation is matter signed by quantity.

In the Commentary on the *De Trinitate* of Boethius q. 4, a. 2 St Thomas argues that prime matter is indistinct in and of itself and therefore it cannot individuate form unless it is rendered divisible. This would follow since prime matter of itself is a purely passive potency. Something of this nature

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259 *Ibid*., p. 228.

260 *In Sent*., Bk. 4, d. 12, q. 1, a. 1.

is incapable of itself of individuating. Matter is only rendered capable of individuating if it is divisible, and it is rendered divisible by the accident of quantity.

St Thomas goes on to state that it is dimension which enables quantity to individuate matter to be this matter and this form here and now existing. He however distinguishes between determined dimensions and indetermined dimensions. *Determined* dimensions are those which are considered in terms of their termination, namely in terms of their determined measure and configuration. When dimensions are considered in that way, they fall within the genus of quantity and have a complete or perfected accidental existence. However, St Thomas states that if dimensions are considered in this way, they cannot be a principle of individuation. This is because it would mean that a change in a substance's dimensions would mean that there is a change in the individual, such that there would be a numerically different individual. Our experience however indicates that an individual can change its determined dimensions but still remain the numerically same individual.

The second way to consider dimensions is as *indeterminate (interminatae),* that is as dimensions not having any determination but only in so far as they are dimensions. While dimensions never in fact exist without having a given determination, they may however be considered without such determinations. In such a case the dimensions would fall within the genus quantity but only as something imperfect and incomplete. St Thomas goes on to say that it is indeterminate dimensions which serve to individuate, designate or sign prime matter as *this* matter and to individuate substantial form as *this* form, thereby causing numerical diversity within a species.[261]

To help explain how indeterminate dimensions can individuate matter and form, St Thomas in objection 3 of this same article states that quantity is unique among the accidents in that it has *within itself* the reason for its individuation as an accident. All other accidents are individuated as accidents by virtue of the subject in which they inhere. This makes these accidents numerically

[261] Alio modo possunt considerari sine ista determinatio, in natura dimensionis tantum, quamvis numquam sine aliqua determinatio esse possint, sicut nec natura coloris sine determinatione albi et nigri; et sic collocantur in genere quantitatis ut imperfectum, et ex his dimensionibus interminatis materia efficitur haec materia signata, et sic individuat formam. Et sic ex materia causatur diversitas secundum numerum in eadem specie. *In de Trin*., q. 4, a. 2.

distinct accidents of the same species. For example, the colour 'red' is the same species in all red things, but is individuated in a thing as having *this* red by virtue of its inhesion in a subject. St Thomas argues that dimensions share this manner of individuation with other accidents. However it also, unique to itself, has a second way of individuation, namely in itself, in so far as within itself it has parts outside of parts which have different positions. This being the case, prime matter is able to individuate substantial forms because it is subject to an accident which *within itself* has the explanation of its own individuation, namely quantity as subject to indeterminate dimensions.[262]

Therefore we can say that the signing of prime matter required for individuation is not achieved by the accident of quantity as inhering in a subject but rather by the relation of prime matter to indeterminate quantity. Since the relation of prime matter is not to determinate quantity, which would be a predicamental relation, but rather a relation to indeterminate quantity, we can say that prime matter is sealed by a *transcendental relation* to indeterminate quantity. As Woodbury comments on this:

> Therefore quantity concurs to the individuation of substances inasmuch as primary matter is ordered to quantity, or connotes it. But this order or relation of matter to quantity is transcendental. First, indeed, because primary matter before form is not the subject of accidental form, and therefore is not receptive of predicamental relation. Secondly because primary matter is transcendentally relative to form and therefore to the dispositions required by form, one - and indeed the first - of which is quantity; and accordingly primary matter is transcendentally relative to this form inasmuch as it is transcendentally relative to this quantity. Wherefore, since the relation of primary matter to *this* form is transcendental its relation to *this* quantity is likewise transcendental. Therefore quantity concurs to the individuation of substance inasmuch as primary matter is transcendentally related to it or connotes it. But quantity, as it concurs to the individuation of substance, is quantity taken as interminated [indeterminated]; for individuality is not varied with variation of the terms of quantity (i.e. of its determinate size and shape). Therefore quantity concurs to individuation of substance inasmuch as primary matter is transcendentally relative to interminated [indeterminated] quantity, or, in other words, connotes interminated [indeterminated] quantity.[263]

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[262] Nullum autem accidens habet ex se propriam rationem divisionis nisi quantitas; unde dimensiones ex se ipsis habent quandam rationem individuationis secundum determinatum situm, prout situs est differentia quantitatis. *In de Trin*., q. 4, a. 2 ad. 3.

[263] *Metaphysics – Ontology*, p. 85.

As Woodbury notes, prime matter has a transcendental relation to substantial form and therefore also has a transcendental relation to the dispositions required for a form. The first and most fundamental disposition is that of quantity, however not quantity as the determined dimensions of a subject, but rather as indeterminate dimensions. Hence what is meant by matter sealed by quantity is prime matter as transcendentally related to indeterminate quantity.[264]

An objection may be raised concerning the above explanation, in that it could be said that form is in the subject before quantity, and that matter respects this form numerically before it respects this quantity numerically, and that therefore a thing is individuated by form and not by matter. The solution to this objection lies in the fact that mutual causes in different orders of causality can both precede and follow each other. As Hugon argues, in the genus of purely receptive cause, the substantial form is prior because it is received in prime matter immediately. However in the genus of dispositive cause, quantity is prior, since prime matter is related to a particular form only through its dispositions.[265]

4.3. The Disposition to Quantity in Substantial Change.

From what we have seen above, prime matter can be said to individuate a specific substantial form in so far as the matter is signed by quantity. We have seen that what is meant by this term 'quantity' is not the determinate quantity of a given existing substance, but rather indeterminate

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[264] On this point Wippel states: "First of all, I would note that it is not to determinate dimensions alone that he appeals to account for individuation but to matter insofar as it is designated or insofar as it is subject to such dimensions. This is important, because it enables him to meet another frequently raised objection to his solution, namely, that he has appealed to an accident or to accidental principles to account for the individuation of material substances. According to Thomas matter itself is an intrinsic and essential principle of corporeal essences. And while matter taken alone cannot account for individuation, once matter has been rendered this matter or designated matter by quantity and hence by being subject to the three dimensions, it is matter itself, a substantial or essential principle, that both receives and individuates its appropriate substantial form." *Op. cit*., p. 372.

[265] As Hugon goes on to explain: "Therefore, matter is first related to the dispositions that determine it to a certain form than to the form itself, which is caused in a certain way by the dispositions and thus is posterior to them. But the first and most determinative of all dispositions is quantity. Therefore, matter is first related to quantity than form... Quantity is the first accident, and it belongs to its ratio that it divides one part of matter from another, and when this division has been made, there result a distinction and a determination with respect to the matter thus divided; but matter thus divided and determined becomes capable of having such determined form. Therefore, quantity is that which most disposes and determines matter with respect to form. It is clear, therefore, that quantity is prior to form in the genus of dispositive cause." *Cosmology*, p. 303.

quantity. This signing of the prime matter is a transcendental relation of the matter to indeterminate quantity. This indeterminate quantity is the first and most fundamental disposition in the matter and makes it proportionate to a certain form and therefore able to individuate that form.[266]

In order to understand how a substantial change is brought about, it will therefore be necessary to explain it firstly in terms of changes in the dispositions of prime matter, and especially the disposition of quantity. If an agent acts on the determinate quantity of a substance, this will affect the disposition of the prime matter. However as we noted above, not every change in the determinate quantity of a substance results in a substantial change such that a numerically different substance comes into being. For example, a thing can change its quantity, such as increase its weight, without there being a substantial change. There can be said to exist a certain range in which changes in the determinate quantity can occur without there being a substantial change. If this range is exceeded, then a substantial change will result. We could say that the transcendental relation between the prime matter and indeterminate quantity sets up this range. Every body has a certain 'natural quantity' which is its indeterminate or signate quantity, which sets up this range appropriate to each body, both specifically and individually.[267] When there are changes brought about by an agent in the determinate quantity of a body, there is then a corresponding change in the disposition in prime matter to the indeterminate or signate quantity. If the change of this quantity is within the natural range of that body, there is no substantial change. However, should it go outside this range, then the prime matter becomes disposed for a new substantial form, which is then educed from the potency of the matter. The prime matter would then be proportionate to the new substantial form and not to the old form.

Commenting on this notion of prime matter as having a certain range or limit, Wippel states:

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[266] It should be kept in mind that, as said above, while in the genus of dispositive cause quantity precedes the substantial form, in the genus of purely receptive cause the substantial form precedes quantity. However both the quantity and form are *mutual causes*, which can be said to precede or follow each other only in different orders of causality. There is not a precedence in time of quantity before form or form before quantity since they are mutual causes.

[267] I wish to acknowledge Dr Don Boland, in private correspondence with me, for this understanding of signate or indeterminate quantity as a certain 'natural quantity'.

> In addition, I would suggest that Thomas may also have come to recognize that just as the intension or remission of an accidental quality need not destroy the numerical identity of that same quality, so too, so long as changes in a material entity's dimensions remain within the limits marked out for it to be a given type of being, such changes will likewise not prevent the matter of that entity from continuing to be numerically the same matter. Hence it will continue to individuate its substantial form and both will retain their numerical identity.[268]

The signing of prime matter by virtue of its transcendental relation to indeterminate or signate quantity disposes the matter and in a sense transcendentally demands that a certain substantial form inform it and give it existence and that certain determinate dimensions inhere in it. This disposition does not add any act to prime matter itself, which remains in itself pure potency. It is able to do so because the disposition is the result of a transcendental relation or ordering between prime matter and indeterminate or signate quantity. When an agent effects changes in the determined quantity of a body, if the limit is reached, the prime matter will then demand that a new substantial form be educed from it which will actualise it. There will be no direct change in the matter itself, but its disposition to individualising the old form will change to be the individuating principle of the new substantial form because there will then exist a proportion of matter to the indeterminate or signate quantity of the new substance.[269]

We may apply our analysis to a particular example. In the case of a chemical reaction, such as the production of water from hydrogen and oxygen, we can say that both hydrogen and oxygen atoms have determinate quantity, which results in their having subatomic parts which are ordered, such as

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[268] *Op. cit.*, p. 372.

[269] As Phillips states, regarding the objection that the requirement for a definite quantity suggests that that matter is determined and does not remain purely potential: "Nevertheless, certain further difficulties arise with respect to the theory, for it seems that if first matter has a requirement for a definite quantity, it is already determined to a certain extent, or actuated, and so does not lose all its actuation in substantial change, in contravention of what we have already seen is necessarily required in such change. This, however, is not the case, for just as first matter in general is not a capacity for receiving all forms of whatsoever kind, but only material ones, so that it is determined extrinsically, though not intrinsically, similarly 'this' matter has a great deal of its capacity taken away from it, but nevertheless, what remains is a sheer capacity, not any positive determination. The Scholastics express this by saying that it has a transcendental relation to 'this' quantity, i.e. a relation which is not something added to it, but is its very self; just as matter as such has a transcendental relation to material form as such. They are correlatives, one implying the other. The matter remains purely potential, but its capacity is limited ; as in the case of two vessels of different sizes, the smaller one's actual content would be less than that of the larger, and yet both may be equally empty; so, in the case of our two 'matters,' both may be equally potential. The matter which has a transcendental relation to a definite quantity is no less potential than matter in general, but there is less potentiality." *Op. cit.*, pp. 160-1.

the nucleus of protons and neutrons, and their orbits of electrons. If an agent causes the union of these atoms at particular conditions, such as with the introduction of energy, the electrons in the hydrogen and oxygen atoms will change their order and position in their orbits, which will result in the formation of a water molecule. The signate quantity in the hydrogen and water atoms causes these atoms to be disposed in a certain way and to have a certain range of movement and change in their electrons, beyond which the electrons change their orbits and the atoms bond to form a water molecule. This is because the disposition in the prime matter in these atoms changes, making it more disposed for the eduction of a new substantial form of water rather than the old forms of hydrogen and oxygen. The signate quantity will then also change and this is responsible for the matter to now be disposed for the form of water.[270]

It should be noted that while it is prime matter signed by indeterminate quantity which is the principle of individuation and therefore of fundamental importance in explaining substantial change, changes in the other accidents would also have an influence in disposing prime matter, but only in so far as *all* accidents are ultimately founded on quantity as the first accident most directly linked with prime matter. Hence changes in the accident of quality, for example, are able to dispose prime matter in so far as this accident is grounded in the first accident of quantity. Likewise changes in quantity are able to lead to changes in the accident of quality. As Hugon states regarding the fact that all qualitative alterations require a corresponding change in quantity:

> All material accidents, quality not excepted, are immediately subjected to quantity, and by means of quantity, to a substance. On this account, once a change in quantity occurs,

[270] Wallace gives the following description of the decomposition of water: " $2H_2O \rightarrow 2H_2 + O_2$ This is usually understood to mean that two molecules of water break down, under electrolytic action (the triggering agent in this case), into two diatomic molecules of hydrogen and one diatomic molecule of oxygen. The bearing of this on the problem of individuation is seen when we consider the two hydrogen molecules that result from the breakdown: each has the same nature, and yet one is distinct from the other. Whence does this differentiation arise? Assuming... that the principle of individuation is protomatter signed with quantity, one can say that the extrinsic agent in this case (electric potential) so alters the quantitative dispositions of the protomatter underlying the water molecules that it is impossible for these to break down into one molecule each of hydrogen and oxygen. The matter of H_2O is so "signed" by its quantity that the only way mass-energy requirements can be satisfied is by the eduction from the protomatter of two hydrogen natures, each with a different but equal mass-energy, along with one oxygen nature. The individual hydrogen molecules that result are both the same, and yet they are different in the minimal sense that the extensive quantity of one is not that of the other." *Op. cit*., p. 63.

> qualities also change, and vice versa; once quality changes through alteration, a change in quantity occurs.[271]

Changes in quantity also mean that there is locomotion or change in place, since the accident of quantity leads to parts which have position or place. Hence the change in place of parts leads to a change in quantity and also in quality and other accidents. In the example given above with the production of water, the change in place of the electrons required for the reaction to occur leads to a change in the accident of quantity and hence to the change in disposition in prime matter. Also, for example, the increasing temperature which results when something is heated leads to the increased movement of particles, which is a locomotion or change in place, which can affect the disposition.[272]

5. Resolution of all Forms to Prime Matter.

We have said above that accidents inhere in a composite substance as in a *principium quod recipiendi* and dispose prime matter as a *principium quo recipiendi*. This being the case, it would follow that once the original substance ceases to exist, the accidents which immediately inhere in it must also cease to exist. The accidents do not exist *in se* but only *in alio*, namely in a substance, and therefore once the existence of the substance ceases, that is once it corrupts by the departure of the original substantial form, the accidents must therefore likewise corrupt. John of St Thomas holds this to be the teaching of St Thomas, and states that substantial change requires the resolution of all forms to prime matter, such that neither the same substantial or accidental form(s) which

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[271] *Cosmology*, p. 218.

[272] As Catalano states: "All physical changes occur through local motion. This is evident both from experience and from a careful analysis of the nature of efficient causality in material things. Thus experience reveals that whenever qualitative changes are produced, they are associated with a local motion. The molecules in a heated body move faster than those in a cold body. Color is communicated by local motion, and different colors have different local movements. Nutrition and growth are produced by means of the local movements of bodily organs and chemicals. Substantial changes are produced by means of local motion....The fact that bodies are contained within the limits of their own quantity does not prevent them from using their quantitative parts as instrumental causes in producing qualitative changes. An artist uses quantitative parts, i.e., tools, to put qualities in matter, namely, design and purpose. It is through the medium of such local motions and quantitative contacts that qualitative changes are produced in a body. Thus, every qualitative change will have a quantitative aspect and for this reason the qualitative change itself, to some extent, can be explained quantitatively. Color and heat, for example, can be explained in terms of wave movements. But this does not mean that the local motion which is present in alteration and substantial change is to be identified with these changes." *Op. cit*., pp. 99, 101.

were in the original substance remain in the new substance.[273] By resolution to prime matter is meant that in substantial change, only the prime matter is common to both the original and new substance, there being the resolution or reduction of the original substantial form and accidental forms into the potency of prime matter. One proof text given for this teaching is from the Commentary on the *De Generatione et Corruptione*, Book 1, Lecture 10 in which St Thomas states:

> But there is a problem as to whether the same numerical passion which is at one extreme of a set of contraries could exist in the generated and in the corrupted, as was said above. For if it does not remain the same, then the transition into each other of things that are similar will not be easier, since on both sides it will be necessary to remove everything. Similarly, it seems to follow that like is destroyed by like, for the generator destroys that which previously was present. But if one supposes the same numerical passion to remain, it follows that even though that which was prior, namely, the subject, has been removed, that which was subsequent, namely, the passion, remains. Moreover, the same numerical accident would be in two subjects.
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> It should be answered, therefore, that the same numerical passion does not remain, but that what existed previously is corrupted per accidens with the corruption of the subject, when the form which was the principle of that accident departed, and that a similar accident comes, following on the newly-arriving form. And because, with respect to this accident, there was no conflict between agent and patient, the change was easier. Nor is it unacceptable for like to destroy like per accidens, i.e., by reason of corrupting the subject or matter — this is the same way in —which a larger flame consumes a smaller.[274]

St Thomas states that the numerically same accident cannot remain in a substance which has undergone a substantial change, since the accident inheres in the substance as subject and this substance is corrupted in the generation of a new substance. The accident therefore undergoes a corruption *per accidens*, that is, by virtue of the corruption of the composite. However, a similar

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273 *Cursus Philosophicus, Phil. Nat*., P. 3, q. 1, a. 6, p. 582.

274 *In de Gen*. Bk. 1, *lectio* 10, n. 6. (The English translations of the *In Librum Aristotelis de Generatione et Corruptione Expositio* are taken from *Commentary on Aristotle's Generation and Corruption*, trans. P, Conway and R.F. Larcher, http://dhspriory.org/thomas/english/GenCorrup.htm.) See also *ST* III, q. 77, a. 1.

accident comes into being in the new substance. Elsewhere St Thomas states that the accidents remain only specifically the same, but not numerically.[275]

Hugon states that we can say that the same accident remains materially but not formally. The accidents may appear the same to the senses, that is, materially, but the intellect understands the accidents as different formally in that there is a new subject. He replies to the objection that arises in the case of a living thing which dies, which is a substantial change, in which the corpse appears to have the same accidents as the living thing. He states:

> 2nd Objection: If the accidents of a corpse are not the same in number as those of the living animal, then the senses are deceived insofar as they report that the figure, color, etc., are the same. Reply: The reply given previously stands: the senses attest that it is the same figure, the same color, etc., *materially*; reason, however, argues that figure, color, etc., are *formally* different, since they have a new subject; and the senses do not in any way contradict this assertion.[276]

The question however remains how these new accidents come to be in the new substance, which are not numerically the same yet are similar and appear to be identical to those of the corrupted substance. To determine the answer to this question we will need to examine in more detail the role of dispositions in matter and the distinction between the previous and ultimate dispositions.

6. The Role of the Previous and Ultimate Dispositions.

The accidental dispositions which prepare matter for a new substantial form may be referred to as the *previous dispositions*. These are the dispositions which are introduced gradually and successively in the *supposit* or composite whole, such as changes in quantity or quality. They terminate in the *ultimate or final disposition*, at which instant the new substantial form comes to actualise the matter. We have already seen that John of St Thomas states that the *subiectum quod* of such previous accidental dispositions is the whole composite, and that prime matter can be said

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[275] *Quod.*, I, q. 4, a. 1.The only case in which the accidents would remain numerically the same is by a miracle, as happens in the case of transubstantiation, where the numerically same accidents of bread and wine remain even though there is a change in substance. *Cf.*, *ST* III, q. 77, a. 1.

[276] *Cosmology*, p. 206.

to be disposed as the *subiectum quo* of inhesion of such dispositions. Therefore, when the ultimate disposition in prime matter is attained, as in a *principium quo recipiendi*, the new substantial form is educed from its potency.

A difficult question now arises, namely what is the subject of the ultimate disposition.[277] This difficulty is expressed by John of St Thomas as follows:

> …but the ultimate disposition, if it were caused in the subject [which is corrupted] would be corrupted with it, and thus would not be conjoined to the substantial form which is newly generated. But if the ultimate disposition is produced in the subject which is newly generated, then it...will not be the cause of the corrupting of the [previous] form, and of the disposing of the matter ultimately for the introduction of the [new] form.[278]

John of St Thomas raises two difficulties regarding this. Firstly, if the ultimate disposition is in the composite whole which is corrupted, it also would be corrupted and therefore it would not be able to be conjoined with the new form which is generated. On the other hand, if the ultimate disposition is only in the subject newly generated, as the disposition arising from the newly generated form, then it would play no part in the corrupting of the previous form and the disposing of the matter for the new form.

Secondly, if the ultimate disposition passes with the substance which is corrupted, how is this disposition able to cause the new substantial form? If the ultimate disposition is in the composite whole, and this is corrupted, then, since there is a resolution of all accidents to prime matter, only prime matter denuded of all accidents, and hence of the ultimate disposition, would pass over into the new substance. The ultimate disposition would then play no part in the origin of the new substantial form.

In giving a solution to this difficulty, John of St Thomas firstly states that the ultimate disposition is indeed in the *newly* generated substance as the disposition of the new substantial form. This follows since it is the disposition which is compatible with the new form but not with the old: "the

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277 For a treatment of this question *cf.*, S. Ledinich *op. cit.*, pp. 50 – 61.

278 *Cursus Philosophicus, Phil. Nat.*, P. 3, q. 1, a. 7, p. 588. This translation is from Woodbury, *Natural Philosophy,* p. 68.

ultimate disposition is that which is ultimately opposed to, and therefore incompatible with...the form [which is corrupted]; for there does not remain another further [disposition] to bring about its expulsion." On the other hand the "ultimate disposition ...is compatible and connected with the generated form; and therefore it is together with it."[279] This can be said to agree with St Thomas, who states: "At the same instant at which the disposition is complete in the matter, the form also is present."[280]

Further, John of St Thomas states that the ultimate disposition can be said both to prepare the matter for the new form and also to be caused by the new form, but under different respects or formalities. He states:

> Therefore the ultimate disposition according to its two respects or formalities is able to follow the form and to dispose matter in a diverse genus of causes. For because it is an accident incompatible with the preceding form, but connected with and subordinate to the generated form as a proper accident thereof, it must needs be that it depend upon it and follow upon it. But because it is the term and consummation of the preceding alteration, through which the matter was disposed for the generated form, therefore through the ultimate disposition the matter is terminatively and consummatively disposed and prepared. And so this ultimate disposition terminates a double action of the generator according to a different formality, namely alteration and generation: alteration in so far as it is the consummation and termination of the preceding alteration, and generation in so far as it is the proper passion conjoined with the substantial form, and so follows the substantial form.[281]

He repeats here that the ultimate disposition is incompatible with the old substantial form and therefore must exist with the new form. It is in fact the proper accident resulting from that form and is therefore caused by it. However, the ultimate disposition is also the "termination and consummation of the preceding alterations". As such, the matter is "terminatively and consummatively disposed and prepared." The ultimate disposition is able to do both these things under different formalities or respects, that is, it is both able to precede and to follow something in different respects. This follows from the principle that something is able both to precede and

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279 *Ibid*., p. 590.

280 "...in eodem instanti in quo est dispositio completa in materia, est et forma." *De Veritate*, q. 28, a. 9 *sed contra* 4.

281 *Op. cit*., p. 591. This translation is from Woodbury, *Natural Philosophy*, p. 69.

follow something in a different genus of causes (causae ad invicem sunt causae in diverso genere). We could say that in the genus of material causality, the ultimate disposition is the terminus and consummation of previous dispositions in the matter, and in that genus of causality it can be said to precede the new form. However in the genus of formal causality, it can be said that it is the proper effect or accident of the newly generated form and thus follows from it.[282]

John of St Thomas further specifies that the ultimate disposition in the prime matter, as in a *principium quo recipiendi*, disposes the prime matter by a "real and intrinsic denomination" (realem et intrinsecam denominationem).[283] The subject of inherence can be said to be denominated intrinsically by the accidents of quality, quantity and relation, but denominated extrinsically by the other accidents.[284] By making this clear, John of St Thomas is thereby indicating that the qualitative changes which are introduced into the whole subject as in the *principium quod recipiendi* also affect the prime matter by a real and intrinsic denomination, and not only the whole substance in which they properly inhere. They are thus able to reach down to

[282] St Thomas discusses this also in the *De Veritate*, q. 28, a. 8: "Oportet igitur, secundum aliam opinionem, quod praedicti motus eodem ordine se habeant ad utrumque, ut quodam modo praecedant, quodam modo sequantur ordine naturae. Nam si ordo naturae attendatur secundum rationem causae materialis, sic motus liberi arbitrii praecedit naturaliter gratiae infusionem, sicut dispositio materialis formam; si autem attendatur secundum rationem causae formalis, est e converso. Et est simile in rebus naturalibus de dispositione quae est necessitas ad formam, quae quodam modo praecedit formam substantialem, scilicet secundum rationem causae materialis; dispositio enim materialis ex parte materiae se tenet. Sed alio modo, scilicet ex parte causae formalis, forma substantialis est prior in quantum perficit et materiam et accidentia materialia."

[283] *Cursus Philosophicus, Phil. Nat*., P. 3, q. 1, a. 7, pp. 595-6.

[284] The distinction between intrinsic and extrinsic denomination is made in the Commentary on the *Physics*: "Tripliciter autem fit omnis praedicatio. Unus quidem modus est, quando de aliquo subiecto praedicatur id quod pertinet ad essentiam eius, ut cum dico *Socrates est homo*, vel *homo est animal*; et secundum hoc accipitur praedicamentum *substantiae*. Alius autem modus est quo praedicatur de aliquo id quod non est de essentia eius, tamen inhaeret ei. Quod quidem vel se habet ex parte materiae subiecti, et secundum hoc est praedicamentum *quantitatis* (nam quantitas proprie consequitur materiam: unde et Plato posuit magnum ex parte materiae); aut consequitur formam, et sic est praedicamentum *qualitatis* (unde et qualitates fundantur super quantitatem, sicut color in superficie, et figura in lineis vel in superficiebus); aut se habet per respectum ad alterum, et sic est praedicamentum *relationis* (cum enim dico *homo est pater*, non praedicatur de homine aliquid absolutum, sed respectus qui ei inest ad aliquid extrinsecum). Tertius autem modus praedicandi est, quando aliquid extrinsecum de aliquo praedicatur per modum alicuius denominationis: sic enim et accidentia extrinseca de substantiis praedicantur; non tamen dicimus quod homo sit albedo, sed quod homo sit albus. Denominari autem ab aliquo extrinseco invenitur quidem quodammodo communiter in omnibus, et aliquo modo specialiter in iis quae ad homines pertinent tantum." *In Phys*., Bk. 3, *lectio* 5 (vol. 2, p. 114).

the level of prime matter in order to dispose it really and intrinsically, even though these accidents do not directly inhere in prime matter.

While the prime matter can be said to be disposed by a "real and intrinsic denomination" the question arises as to whether, since all accidents are resolved into prime matter in a substantial change, these dispositions in prime matter are also resolved. John of St Thomas argues regarding the ultimate disposition that: "as the terminus and consummation of the preceding dispositions it virtually contains (virtualiter continet) these [preceding dispositions] and continues the preparation and determination, which these [preceding dispositions] make in the matter up to the instant [of change] exclusively".[285]

In light of what was discussed above regarding the disposition of prime matter considered as a transcendental relation, we can say that the notion of the previous dispositions remaining virtually in the ultimate disposition can be explained as the prime matter being transcendentally ordered to the accidents gradually introduced into the whole composite, the first and most fundamental being that of quantity. The gradual changes in the accidents of the composite will thereby result in a corresponding change in the transcendental relations of the prime matter. These transcendental

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[285] *Cursus Philosophicus, Phil. Nat*., P. 3, q. 1, a. 7, pp. 596-7. On this understanding that the ultimate disposition virtually contains the previous dispositions Phillips states: "Are we, then, to suppose that nothing at all of the substance which undergoes substantial change is to be found in the new substance which comes into being, with the exception of the absolutely undetermined first matter? This does not at all follow, for we can see that though the replacement of one substantial form by another is instantaneous, yet the process which leads up to this change is a gradual one: since the first substance is gradually changed by the modification of its qualities until it arrives at the state in which the new substantial form, which is to take possession, is required as the source of these modified qualities. The accidents introduced in this way into the changing substance are called by the Scholastics the previous dispositions, since they dispose the subject to be informed by a new form; and these remain virtually through the change, since the matter which has been brought, by their means, to the point at which it calls out, as it were, for the new form, remains throughout the change. It never has the chance to fall into complete indetermination, since the new form takes possession of it as the old one disappears. They are like children playing 'musical chairs', where one child holds on to the coat-tails of another, so as to be able to occupy immediately the chair which the other has vacated. Consequently the new form will produce in the substance accidental dispositions which are the exact counterpart of those which the subject had, immediately before the change, when the old substantial form was present. These dispositions will, however, be numerically distinct from the previous ones, since we now have a new subject." *Op. cit*., pp. 134-135. Also Kent states: "For it is clear that the fundamental concept at work in St. Thomas's thinking, no matter which particular example is used to express it, is this: *Each kind of substantial form disposes prime matter differently toward the various other forms that are possible to prime matter.* And since prime matter survives substantial change, the disposition of its potencies survives as well, thereby providing continuity in a substantial change between (1) the potencies that were closest to actualization under the previous substantial form(s) before the substantial change and (2) the form(s) that was (were) actualized at the moment the substantial change occurred." *Op. cit*., p. 330.

relations remain throughout the gradual accidental changes and would constitute the previous dispositions and would then terminate and be consummated in the ultimate disposition. At that instant the prime matter thus disposed will then be proportioned to a new substantial form which will be educed from the potency of prime matter. We may now examine more closely what is meant by eduction in view of the matter and its transcendental relations.

7. The Notion of Eduction Revisited.

Given what has been said above regarding how prime matter can be said to be disposed for a new substantial form, we may now examine more closely the notion of eduction in an attempt to explain it more fully. We have seen above that eduction can be said to mean the incidental production, by an agent, of a new substantial form in prime matter, brought about by the transmutation of prime matter. We say that eduction is the incidental production of a new substantial form because what is *per se* produced in a substantial change is the composite of matter and form; the form is only *per accidens* or incidentally produced as that by which the composite exists. This is because the substantial form is what gives actuality to prime matter, its co-principle, giving rise to a composite which exists. We likewise say that this incidental production of the form is achieved by the transmutation of prime matter. This, as we have seen, is effected by the agent changing the dispositions in the matter, such that it gives dispositions which are contrary to matter's previous dispositions.

We have seen that eduction also requires that the new substantial form be drawn from the potency of prime matter and that this was the result of the transmutation of the matter. This means that the forms are in the potency of prime matter and are then drawn out into act through the agency of the efficient cause. Prime matter is in itself pure passive potency. We have also seen that in itself and according to its nature it is an ordering or transcendental relation to form. However we may add here a further precision by saying that prime matter is more fundamentally and primarily transcendentally ordered to the existence of the composite or supposit. As we have seen, the proper or *per se* terminus of a substantial change is the composite or supposit. The substantial form is the

per accidens or incidental terminus.[286] The substantial form is that by which the supposit attains its act of existence, which it does when the substantial form actualises the potency of prime matter. As we have seen, according to St Thomas, prime matter, according to its very nature, is "that which is in potency to substantial existence" (quod est in potentia ad esse substantiale).[287] Its potency is to exist substantially and not primarily to be a potency for substantial form. The form is only that by which the supposit will exist. As St Thomas also states: "...that which is made is not the form but the composite, which is made from matter and not out of nothing. And it is made from matter, insofar as matter is potentially the composite through having the form potentially."[288]

This being the case, we can speak of a twofold ordination of the prime matter, namely to the supposit and to the substantial form. However, the ordination or relation of matter to the form is subordinate to its ordination or relation to the composite supposit, in that its ordination to the form *comes from* its more primary ordination to the supposit. Since its ordination or transcendental relation to form comes from its ordination or relation to the composite supposit, we can say that the form comes from or is educed from the ordination to the composite. This ordination or relation can also be seen as a finality or natural appetite. The finality or appetite of matter for the form arises from its finality or appetite for the composite. Since the ordination of prime matter to the substantial form can be said to come from its ordination to the existence of the composite, we can say that the substantial form is present in the potency of prime matter since it is present in its ordination to existence as a composite. As St Thomas states:

> Everything which is ordered to something as to its own good, has in some way this [something] present and united to it according to a certain similitude which is at least

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[286] Hugon states that the supposit is the *terminus qui* of the generation. The *terminus qui* is that to which the generation ultimately tends and in which it ultimately rests. The substantial form is the *terminus quo*. The *terminus quo* is that by means of which the *terminus qui* is constituted, and the supposit is constituted mediately by the substantial form. *Cosmology*, p. 222.

[287] *DPN*, ch. 1.

[288] *De Potentia*, q. 3, a. 8.

> proportional, just as a form is in some way in matter insofar as the matter has an aptitude and an order to the form.[289]

By way of analogy, if I have a finality or ordination to get to Sydney as my destination and remote end, I also can be said to have *within* this ordination a finality or ordination to more proximate ends which are means by which I may attain my remote end, such as my intention to buy a plane ticket. My intention of buying a plane ticket can be said to arise from or be educed from my intention of getting to Sydney. Similarly, prime matter not only has an ordination and natural appetite or intention to an existent composite or supposit, but is that ordination or relation by its nature. This ordination is its remote end; its proximate end is its ordination to substantial form as the means by which the end can be attained. However, unlike our example, prime matter is purely passive and cannot bring itself to attain its remote end. Rather this is achieved by an efficient cause which draws the substantial form from the ordination to the composite supposit by means of changing the disposition in the matter and thereby transmuting it.[290]

Having examined the roles of the material and formal causes in the process of substantial change, namely prime matter and substantial form, which are the two intrinsic causes, we must now

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[289] Omne autem quod ordinatur ad aliquid sicut ad suum bonum**,** habet quodammodo illud sibi praesens et unitum secundum quamdam similitudinem, saltem proportionis, sicut forma quodammodo est in materia inquantum habet aptitudinem et ordinem ad ipsam. *In de Div. Nom*., ch. 4, *lectio* 9.

[290] Catalano states regarding this understanding of eduction: "We have seen that in the order of intention matter's potency is primarily to the actually existing composite. But we have also seen that matter's potency to an actually existing composite is through its order to a substantial form; for it is only by receiving a substantial form that matter can become a composite and thereby be proximately ordered to existence. Consequently, prime matter's order to a substantial form *results from* matter's order or potency to existence. The substantial form, therefore, can be said to come from matter's order to existence. .... It is then in the above sense that the form is educed or comes from the potency of matter, i.e., the form *comes from* matter's incidental order or potency to existence since matter itself can exist only by being united to a form. In other words, the form comes from matter in the sense that a necessary means comes from an order to an end. For example, a boat can be said to arise from an intention to cross an ocean, in a similar way a form arises from matter's order to a composite. We must stress that the example is only analogous. The ordering to this end, namely, to cross an ocean, is merely an intention and consequently exists only in the mind. But the order to the composite's existence is real. Indeed, prime matter is nothing else but this order. The substantial form, therefore, is really pre-contained potentially in prime matter, since prime matter is nothing else but a real order to a substantial existence through this very fact that it is nothing other than an order to a substantial form. The substantial form, therefore, comes from matter in the sense that the potency for the form comes from matter's potency to new existence. The form itself is said to come from matter, since the form is nothing other than the act of this potency. That is, the substantial form is said to come from prime matter because the entire reality of the form is to be the act of prime matter." *Op. cit*., pp. 136-7; 140-1.

examine the roles of the extrinsic causes, namely the efficient cause, the final cause and the exemplary cause (the extrinsic formal cause.)

8. The Role of the Efficient Cause in the Process of Substantial Change and Eduction.

In the previous section we described eduction as the incidental production, by an agent, of a new substantial form in prime matter, which is brought about through the transmutation of matter. This transmutation of matter involves the efficient cause causing accidental changes in the original substance which brings about changes in the dispositions in the prime matter. Since prime matter in itself is pure potency, it is not able to effect these dispositions itself, but requires an already active efficient cause. This efficient cause is extrinsic to the prime matter and substantial form, which are both intrinsic causes or principles. It is precisely because it is an extrinsic and active cause that it is able to bring about these dispositions in the prime matter, which dispositions prime matter is not able to bring about because it is a purely potential, passive and receptive principle. The efficient cause, because it is an active cause, is able to bring about an actualisation of the potency of prime matter, that is, to bring it from potency to act. This follows because what is in potency is brought to act only by that which is already in act.[291] Nor can the substantial form which is generated bring itself out of potency into act, since the form does not exist until the newly generated thing has been made to exist. Since it does not yet exist, it cannot be responsible for the coming into being of the newly generated thing.[292]

Therefore, the process of eduction involves both the prime matter from which the new form is educed and the efficient cause by which this is brought about. While it is clear that there must be a role for the efficient cause in the incidental production of the new form, the nature of this role needs to be examined. The efficient cause not only transmutes matter by disposing it, but also

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[291] *Cf.*, *ST* I, q. 2, a. 3.

[292] *DPN*, ch 3.

incidentally produces the new form through such transmutation. What needs to be examined more closely is how the dispositions are related to the incidental production of the new substantial form.

8.1. The Generation of the New Substantial Form is not the Result of Alteration.

The issue that concerns us is whether the incidental production of the new substantial form is the result of alteration, that is, of the accidents introduced into the original subject by the efficient cause, or whether it is the result of a distinct effect of the efficient cause distinct from the production of the previous accidental dispositions. John of St Thomas holds that indeed the incidental production is the result of an effect of the efficient cause distinct from alteration.[293] This can be said to be in conformity with the mind of St Thomas, who states: "the disposition does not do something towards the form effectively, but materially only, inasmuch as through the disposition the matter is made fit for the reception of the form."[294]

Two reasons can be given for this conclusion. The first reason is that alteration and eduction of the new form have different subjects. The subject of the previous accidental disposition is the whole composite, whereas the eduction of the new form has as its subject prime matter. The second reason is that the new form cannot be said to be the result of the alteration because the eduction of the new form occurs upon the cessation of the alteration. The alteration is in the composite which is corrupted and therefore does not exist in the instant of generation. However, nothing can be the result of another except that from which the result occurs endures. Therefore, for both of these reasons, we can say that the production of the new substantial form and hence the generation of the new substance requires a certain distinct action which occurs in an instant, while alteration is a successive action over time.[295]

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293 *Op. cit.*, p. 558.

294 *De Veritate.* q. 28, a. 8 ad 5.

295 *Cf.*, Hugon. *Cosmology,* pp. 218-9.

8.2. The Efficient Cause of Generation.

According to St Thomas, a substance does not act immediately as an efficient cause of generation, but rather mediately, that is, through the mediation of accidents. The efficient cause of generation is an accident which acts in virtue of the substantial form of the agent or efficient cause. That accident is the power of the agent as an instrument of that agent's substantial form. The efficient cause, as a substance, therefore operates through the medium of an operative power which it has, which is a quality. The power of the generating agent produces a twofold effect. Firstly, the proper effect, namely the proper dispositions, which this power of the principal cause produces. Secondly, the instrumental effect, namely the new substantial form, which this power produces as an instrument of the efficient cause, or more specifically as an instrument of the substantial form of the efficient cause.[296] The only proper effect produced by the power of the efficient cause is the previous dispositions, which are accidents introduced in a substance. However, as an instrumental effect, the power can produce a new substantial form. It does so insofar as it is an instrument of the efficient cause. It does so using the previous dispositions as its own instruments. Thus the power, as an instrumental cause of the agent as efficient cause, and in turn the previous dispositions, are both instrumental causes of the agent.

We may consider an analogy to help elucidate this description. A sculptor would be the principal efficient cause of the statue he is sculpting. The chisel he uses would be an instrumental efficient cause. The chisel, by its own proper power of cutting or splitting, disposes the marble for the shape or figure intended by the sculptor.[297] The proper effect of the chisel is therefore these dispositions

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296 *Cf.*, *ibid*., p. 219.

297 We say that the chisel produces the effect of cutting and splitting by its own proper power to indicate that it is indeed a true secondary cause which has the power to cut and split. This proper power of the chisel is not found in a wooden spoon, and it is for this reason that it cannot be used by a sculptor to carve marble. Having said this, we nonetheless say that the chisel cannot bring about its proper effect without the principal efficient causality of the sculptor. On this point Woodbury states: "However, from this, that an instrument, as an instrument, does not move save moved, that is, does not act instrumentally save from the fluid power communicated to it by the principal cause, it is not to be inferred that it does not use its own proper power, or in other words, that it does not exercise its own proper causality, while it is exercising its instrumentary activity. (To think this would be like thinking that the pen, while it is writing a poem from the instrumentary poetic power received in it from the poet, is not still exercising its own principal activity, from its own proper

introduced into the marble. However, there is also the instrumental effect of the shape or figure of the statue, which is an effect which is beyond the proportion of the chisel's own power, that is, it is a higher effect which cannot be accounted for only by the proper effect of the chisel. This is because the chisel, as an instrumental efficient cause, receives a transient power from the sculptor as the principal cause which enables it to produce an effect which is higher than the subordinate cause's own proper power.

St Thomas holds that the generating agent is able to produce a new substantial form incidentally through the accidents it introduces because these accidents act as its instruments. He states:

> An accidental form acts by virtue of the substantial form whose instrument it is: thus heat is said to be the instrument of the nutritive power (*De Anima* ii, 4): wherefore it is not unreasonable if the action of an accidental form terminate in a substantial form.[298]

Since the accidental form can act as an instrument of the substantial form of the agent, it is able to produce an effect which *surpasses* the causality of the accident as accident.[299] As St Thomas states elsewhere: "In some instances, however, the action of the principal agent attains to something in the effect produced to which the action of the instrument does not attain"[300] It is in fact able to give rise to a substantial form. The accident as instrumental cause is then able to produce an effect not only like it itself but also like its agent and principal cause. As St Thomas states:

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power, of excluding ink from itself, and accordingly spreading it – given application to its own act)." *Metaphysics - Ontology*, p. 471.

298 *De Potentia*, q. 3, a. 8 ad 13. Also *In Metaphys.*, Bk. 7, *lectio* 8, n. 1547.

299 It can be said that the accidents have an obediential potency. An obediential potency is a potency whereby a creature can be brought over to an act which exceeds the natural capacity of that creature. This obediential potency is able to be actualised by a higher agent that communicates to an obediential potential subject a participation in its own higher power, thereby elevating the lower to a higher power which is greater than its own proper power. *Cf.* Woodbury, *Metaphysics - Ontology*, pp. 105, 109. The creature possessing the obediential potency would then be an instrument of the higher agent. In our example, the accidents would have an obediential potency to produce a substantial form, not by virtue of their own proper powers alone, but insofar as they act as instruments of the higher principal efficient cause.

300 *SCG*, Bk. 2, ch. 89.

> Likewise, it is not necessary, because every action of lower bodies is done by active and passive qualities which are accidents, that only an accident be produced by their actions. For, just as they are caused by the substantial form which, together with matter, is the cause of all the proper accidents, these accidental forms also act by the power of the substantial form. Now, that which acts by the power of another produces an effect similar not only to itself but more especially to that by whose power it acts. For instance, from the action of an instrument there is produced in the artefact a likeness of the form in the mind of the artist. Consequently, it follows that substantial forms are produced from the action of accidental forms, as they act instrumentally through the power of the substantial forms.[301]

The agent is therefore able to introduce accidents into the original substance both gradually and successively, such that it is able to dispose the prime matter for the eduction of the new substantial form, but also, through the instrumentality of these accidents, it is able to produce the new substantial form incidentally. St Thomas makes a distinction between the efficient cause *preparing* or disposing the matter, and *perfecting* it by the introduction of the new form: "The perfecting cause is that which gives fulfilment to motion or mutation, as that which introduces the substantial form in generation. The preparing or disposing cause is that which renders matter or the subject suitable for its ultimate completion."[302]

As to how the agent is able to use the dispositions to produce the new form incidentally, we can say that the previous accidental dispositions introduced into the original composite substance are used by the agent, in an instrumental way, to give prime matter a new ordination or relation to a new composite existence and therefore a new ordination or relation to a new substantial form as that by which such new composite existence comes into being. As Catalano states:

> It would seem that in the act of generation the agent uses the last dispositions suited to the old form as instruments in the agent's incidental production of the new form. It is indeed true that these are *previous* dispositions, i.e., those suited to the *old* form. Yet, because they are acting under the agent's causal power, it seems that they could be used as instruments in the agent's ordering of the patient's prime matter to a new existence and, simultaneously, in the agent's incidental production of the new form. For we must

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301 *SCG*, Bk. 3, ch. 69.

302 *In Phys*., Bk. 2, *lectio* 5, n. 180. *Cf*., *ST* I-II, q. 180, a. 2 ad 2; I, q. 45, a. 2.

> remember that a principal cause can use an instrument to produce an effect beyond its own power. Thus, the agent uses the patient's dispositions to specify matter's potency to a new form and simultaneously to produce, in an incidental way, the form itself.[303]

The last of the previous accidental dispositions, that is, those just before the ultimate disposition, are able to be used as instruments of the agent to order the prime matter to a new composite existence, that is, to a new substance and therefore to a new substantial form as that by which the new composite becomes actual. It is this ordination or relation to a new form which results in the ultimate disposition. However further to this, the accidental dispositions are able to surpass their causality as mere accidents of the original substance and, as instruments of the agent, are able to produce a new substantial form incidentally and thereby a new substance.

As we argued above, because the ordination or relation of the new substantial form comes from the more primary ordination to composite existence, the new form can be said to come from or be educed from that ordination to the new composite existence. The incidental production of the new substantial form is then the agent's actualising of prime matter's new ordination or potency.[304]

8.3. Identifying the Efficient Cause.

Some general comments can be made about the identity of the efficient cause. In the case, for example, of the generation and corruption of non-living things, the efficient cause, while it is an extrinsic cause in the sense that it is extrinsic to the prime matter and substantial form, can in fact be something within the thing undergoing the change, and not only something outside it. As Wallace states, using as an example the radioactive decay of uranium to produce lead:

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303 *Op. cit.*, p. 144.

304 As Catalano states: "But the agent not only *educes* a form *from* the potency of matter, it also incidentally *produces* a form in the potency of matter. This incidental production of the substantial form is nothing else but the agent's actualizing of matter's new potency. Thus the agent educes a form from matter's potency in the sense that the agent draws out of matter a potency or order to a new substantial form, and, the agent incidentally produces a substantial form in matter's potency in the sense that the agent actualizes matter's new potency. For, the total being of all substantial forms, other than man's, consists in being the act of matter." *Op. cit*., pp. 145-6.

> This brings us back, finally, to the agent that initiates natural radioactivity of the type seen in the breakdown of the uranium series. The answer we shall propose in the following chapter is that this particular agent is not outside the uranium the way the sculptor is outside the marble but rather is found within the uranium itself, generally in the natural forces or powers proper to all inorganic substances, and particularly in those characteristic of uranium. This is why we refer to radioactivity as natural and the process whereby the lead is produced as a natural generation.[305]

These forces would include the four forces studied in modern physics, namely the strong force, the weak force, the electromagnetic force and gravitational force. For example, in chemical reactions, the electromagnetic forces associated with electrons and ions are responsible in efficiently causing elements and compounds to enter into various combinations or to break down into various components.[306]

In the case of the generation of living things, we see that the generator generates things which are like the generator, in that men generate men and plants generate plants. The natural generator is able to act as an efficient cause because in it pre-exists a substantial form which is the source of its active power. As St Thomas states: "Action belongs to the composite, as does existence; for to act belongs to what exists. Now the composite has substantial existence through the substantial form; and it operates by the power which results from the substantial form."[307] In the case of the generation of a sensate thing, such as a horse, this active power in the generator is transmitted to the semen and the semen, by virtue of the generator's power which it contains, is able to act as an instrumental cause of the generator, the principal cause. Through this power, the semen is able to

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[305] *Op cit., The Modelling of Nature*, p. 61.

[306] St Thomas also recognised certain active qualities of the elements which go to make up compounds. However, he also argued for the need for the efficient causality of the heavens and heavenly bodies: "there are no active principles found in bodies here below except the active qualities of the elements, which are hot and cold and the like .... But accidents of this sort are but material dispositions for the substantial forms of natural bodies. And matter is not enough to do the work of an agent cause. This is why it is necessary that there be above these material dispositions some active principle ... which by its presence and its absence causes . . . the generation and corruption of bodies here below. The heavenly bodies are active principles of this kind. And so, whatever generates here below, causing the motion which produces a [substantial] species, does this as an instrument of a heavenly body. And this is why it is said in Bk. II of the *Physics* that man, and the sun, generates man." *ST* I, q. 115, a. 3 ad. 2.

[307] *ST* I q. 77, a. 1 *ad* 3.

bring about a transmutation of matter and to effect the generation of a new substance through the eduction of a new substantial form which is specifically the same as in that of the generator.[308]

9. The Exemplary Cause and the Final Cause in the Process of Substantial Change.

We can briefly consider the roles of the other two extrinsic causes, namely the exemplary cause and the final cause. By exemplary cause is meant an extrinsic formal cause. While the intrinsic formal cause is the form which is actually in a thing, whether accidental or substantial form, the extrinsic formal cause is extrinsic to the thing and is the exemplar or likeness after which the thing is said to be made.[309] In the case of an artefact, the idea of the thing made is in the mind of the artificer. This idea operates as an extrinsic formal cause of the artefact, in that the form in the artefact comes about by an imitation of the idea in the mind of the artificer. Thus the idea can be said to cause by specifying the kind of form which is in the artefact.

In the case of the generation of a living thing, the substantial form in the generator operates as an exemplar cause of the thing generated, in that the substantial form in the thing generated is an imitation of the form in the generator and is specifically the same form. In the case of the generation of non-living things, the exemplar cause is not as obvious. For example, in the case of the generation of water from hydrogen and oxygen, there may not appear to be any exemplar causality involved. However, if we recall what was said above in Section 3.2, prime matter can be said to have an innate appetite for all forms. These forms can be said to operate as exemplar causes in the process of generation. The matter in the oxygen and hydrogen can be said to seek to imitate the form of water, which form exercises an exemplar causality in the process of generation of the water.

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308 *Cf., ST* I, q. 118, a. 1 ad 2.

309 *Cf., In Metaph*., Bk. 5, *lectio* 2, n. 764.

This then bring us also to a consideration of the final cause. The forms as appetible or desirable by prime matter also have the nature of an end. The matter seeks the form as something which will perfect it and therefore the form is the end or final cause of the matter. The appetition of prime matter for forms which will perfect it can be said to be the root of the explanation for the natural inclination we find in things, which natural inclination explains, for example, why oxygen and hydrogen tend to form water. For a natural, non rational thing to intend a certain end means nothing more than it having a natural inclination towards something.[310] This natural inclination or natural tending to an end is the cause of all the other causes and explains why the other causes are as they are. As St Thomas states:

> Therefore the end is the cause of the causality of the efficient cause, because it causes the efficient cause to be an efficient cause. Likewise, the end causes the matter to be the matter and the form to be the form, since matter receives the form only for the sake of the end and the form perfects the matter only for the sake of the end. Therefore we say that the end is the cause of causes, because it is the cause of the causality in all causes.[311]

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By way of summary: In this chapter we sought to give an explanation of eduction as the transmutative production of a substantial form. This process was said to involve changes in the dispositions in prime matter. The question of what is meant by dispositions in prime matter was examined. It was argued that prime matter can be indirectly disposed by means of changes in the accidents in the composite substance. We saw that prime matter, in its very essence or nature, is a transcendental relation to substantial form. This relation is an innate appetite not really distinct from the entity of prime matter. It was also said that prime matter is in itself a purely passive potency.

Through accidents directly or immediately introduced into a composite substance, the prime matter is indirectly disposed and this occurs primarily through changes in the accident of quantity, which is the first accident and one which has a direct relation to prime matter. Prime matter was said to be

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310 *Cf., DPN.,* ch. 3.

311 *Ibid*., ch. 4, n. 29.

have a transcendental relation to indeterminate quantity. As such, it can be said to be signed by quantity and to be able to act as a principle of individuation. This transcendental relation of prime matter to indeterminate quantity was said to be the most fundamental disposition in the matter and makes it proportionate to a certain form. Through changes in the determinate quantity of the composite whole, the relation of prime matter to indeterminate quantity can be affected, which changes the matter's disposition for another form. In this way, prime matter would be indirectly disposed for a new form. Changes in other accidents, such as quality, can dispose prime matter, since these other accidents are themselves dependent on quantity as the first accident in matter.

The notion of eduction was also examined in terms of two transcendental relations, namely the transcendental relation of prime matter to a new composite supposit and the new substantial form. The new form can be said to come from or be educed from the more fundamental and primary relation of prime matter to the new composite supposit. The chapter concluded with a brief examination of the roles of the extrinsic causes in the process of substantial change, namely the efficient, exemplary and final causes.

Chapter 5: Some Objections and Replies.

In the previous two chapters we examined the principal problem in the explanation for the process of substantial change, namely the explanation for the origin of the new substantial form. At the end of chapter two we raised some other difficulties regarding St Thomas's explanation of substantial change. In this chapter we propose to examine these difficulties in the form of objections and offer some replies to each. The first objection is that prime matter, considered as pure potency, cannot be a substratum of substantial change, since it is not something actual. The second objection is that the same integral parts seem to survive the substantial change and appear in the new substance. The third objection is that the same accidents seem to survive the substantial change.

1. First Objection: That prime matter as pure potency cannot be a substratum.

We recall that in the hylomorphic explanation for substantial change, it was argued that there must be a substratum which underlies the change and that this substratum is prime matter. The substantial change is explained as a change in the substantial form which actualises this matter, which results in a new substance being produced. The objection we are now to examine concerns how prime matter can be said to be a substratum if it is pure potency. A recent example of this objection is that of Christopher Byrne, who expresses the objection as follows:

> The trouble with this argument [i.e., the argument that if prime matter had any determinate nature, then substantial change would be reduced to a kind of accidental change], however, is that it renders unintelligible the role of prime matter as a substratum of substantial change. Aristotle argues that all change must be understood in terms of a persisting substratum and a pair of opposed properties or attributes, one of which is lost and the other gained in the process of change. Prime matter is supposed to act as the substratum for the generation of the material elements. It is, however, impossible for prime matter to do this if it lacks any independent actuality, or determinate nature, of its own; if prime matter is nothing apart from some formal cause, then there really is no persisting substratum for these substantial changes. This is because prime matter, which is supposed to persist, is what it is by the end of the change by virtue of a formal cause which is different from the one that made it to be what it was at the beginning. In effect, in any change for which prime matter is the substratum, there is nothing which has persisted throughout, independent of the formal cause gained or lost in that change. Even if the change is thought to be instantaneous, the contradiction remains because now the substratum must be thought of as persisting up to the point at which its first formal cause is lost, and then as

> being immediately re-created by virtue of the new formal cause which comes into existence.[312]

Byrnes argues that it is not possible for prime matter to be a substratum of substantial change because prime matter is nothing apart from the substantial form which actualises or determines it. If it is nothing in itself, it cannot possibly be a substratum. He argues that for prime matter to qualify as a substratum, it would need to have an independent actuality or determinate nature of its own.

In reply to this objection, we can say that prime matter is not regarded as nothing, but rather is a real co-principle in a substance. While it is true that this co-principle has no independent existence without the other co-principle of the substantial form actualising it, giving rise to the composite supposit, this does not mean that prime matter is nothing in itself. Rather, as we have already seen, St Thomas regards prime matter in itself as a potency, and more specifically he regards it in itself as pure passive potency. This potency is something real, even though in itself it is not actual. Byrnes seems to see a difficulty with saying that something can be real if it is not actual. If this is the case, then the reality of potency itself must be questioned, since potency is a real capacity or ability to be actualised by some form. The potency in a piece of marble to take on the accidental form of a statue is something real in the marble, even though it has not yet been actualised by the accidental form of the statue. While this is an example of a mixed passive potency, in that the potency is in some subject which is already in act, namely the marble, nonetheless this mixed potency is something real in the marble which allows it to undergo the accidental change. To say that potency is not something real because it is not actual can be said to be to fail to understand the distinction Aristotle makes between actual being and potential being.[313] This distinction was made in order to avoid the dilemma faced by Parmenides who could not explain change because he failed to grasp the reality of potential being. He regarded the only alternative to actual being as non-

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312 C. Byrne, "Prime Matter and Actuality," *Journal of the History of Philosophy*, 33 (1995), p.204.

313 *Cf*., *Metaph.*, Bk. 9, ch. 1.

being, whereas there is also the alternative of potential being. As St Thomas states regarding the reasoning of those who denied change:

> The weakness of their understanding forced them to hold this position because they did not know how to resolve the following argument, according to which it seemed to be proven that being is not generated. If being comes to be, it comes to be either from being or from non-being. And each of these seems to be impossible, i.e., that being comes to be from being or that it comes to be from non-being. It is clearly impossible for something to come to be from being, because that which is does not come to be, for nothing is before it comes to be. And being already is, hence it does not come to be. It is also clearly impossible for something to come to be from non-being. For it is always necessary that there be a subject for that which comes to be, as was shown above. From nothing, nothing comes to be. And from this it was concluded that there is neither generation nor corruption of being.[314]

As St Thomas states, since there must be a subject or substratum for that which comes into being, if this subject is non-being generation is indeed impossible. This seems to be the argument given by Byrnes when he argues that prime matter is in itself nothing and therefore cannot be a subject or substratum of change. However, as St Thomas goes on to argue, a thing is generated *per se* from being in potency and only *per accidens* from non-being, in so far as the matter has a privation.

> Thus a thing comes to be *per se* from being in potency; but a thing comes to be *per accidens* from being in act or from non-being. He [Aristotle] says this because matter, which is being in potency, is that from which a thing comes to be *per se*. For matter enters into the substance of the thing which is made. But from privation or from the preceding form, a thing comes to be *per accidens* insofar as the matter, from which the thing comes to be *per se*, happened to be under such a form or under such a privation.[315]

It could be said also that Byrnes seems to be confusing prime matter as pure potential being with privation. Privation is indeed non-being *per se*, in that in itself it is nothing.[316] However prime matter is that which has a privation, in so far as it may lack a substantial form and therefore it has non-being, but it is not non-being *per se* but only *per accidens* in that it happens to lack a substantial form.[317] Thus, as St Thomas argues, a thing is generated *per se* from matter because it is

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314 *In Phys*., Bk. 1, *lectio* 14, n. 121.

315 *Ibid*., n. 127.

316 Privation however is non-being in a subject or matter and is distinct from negation. *Cf.*, *DPN*, ch.1.

317 *Cf.*, *In Phys*., Bk.1, *lectio* 15, in which St Thomas makes the distinction between non-being *per se* and non-being *per accidens*.

that which is the substratum and which enters into the composition of the new substance. It can only be said to be generated from a privation *per accidens* in so far as the matter has a privation.

Another recent examination of this objection is that by Kronen, Menssen and Sullivan. The authors frame the problem in the following way:

> Traditionally the problem is set up so it looks as if it first must be settled whether there is substantial generation; that settled, by whatever argument, one then goes on to analyse the subject of the transformation. This is quite misguided, however, if it is thought that one can dispose of the question "is substantial generation possible?' without dealing with the question "what survives?", for the strongest argument against the possibility of substantial transformation is that it is revealed upon analysis of any such putative transformation that the subject, the continuant, the survivor, would have to be a stuff too strange for anybody to accept.[318]

Kronen *et al* then go on to say that, according to St Thomas, this continuant or substratum in substantial change is prime matter considered as pure potency. However they go on to argue that prime matter considered as pure potency cannot be the continuant and that to argue thus is incoherent. In support of this position, they adopt an argument of the Jesuit philosopher Suarez, which they express as follows:

> (1) If the continuant is Thomistic prime matter, then either it is the very same, that is, numerically the same prime matter in the first substance and in the second substance, or it is not.
>
> (2) If it is the very same prime matter, then since where there is identity there is entity, the position reduces to Suarez's, where we have a continuant which is an actuality.
>
> (3) If it is not the very same matter, then there is no continuant, for the idea of a continuant is the idea of numerically the same being persisting through time.[319]

Line (1) of the argument states that the prime matter in a substantial change must be either numerically the same or numerically different. However to make this a choice between only these two alternatives implies that prime matter is an actual thing, for to speak of something being numerically the same or different properly speaking applies only to actual things which can be

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[318] J.D. Kronen, S. Menssen, T.D. Sullivan, "The Problem of the Continuant: Aquinas and Suarez on Prime Matter and Substantial Generation," *The Review of Metaphysics* 53 (June 2000), pp. 863-4.

[319] *Ibid*., pp. 873-4. This argument is said to be taken from his *Metaphysical Disputations* 13.4.13.

numbered. However as we stated above, prime matter is not an actual thing but rather a co-principle of a thing and in itself is pure potency. Hence it is not correct to speak of it as numerically the same or different. The dichotomy presented in line (1) is therefore a false dichotomy.

Line (2) of the argument then draws out what is already implied in line (1), namely that if the prime matter in the second substance is numerically identical to the prime matter in the first substance, then it must have entity or being and therefore must be something actual, which is what Suarez indeed held. But if prime matter is something actual then it cannot be in itself pure potency, unless a contradiction is admitted. However, we can respond again by saying that the prime matter is not numerically identical because it is not an actual thing but rather a potency or potential being and that therefore no contradiction results.

Line (3) of the argument assumes that for something to be a continuant, it must be numerically the same and therefore something actual, for only something numerically the same and actual can persist through time. But, the argument continues, if the prime matter in the first substance is numerically different from that in the second substance, then it cannot be a continuant or substratum in the substantial change, which is something required of it in the Thomistic explanation. However we can reply that prime matter, as a potency, can be a continuant because it is a real co-principle in a thing even though it is not something actual. Actuality is not a condition for being a continuant and therefore neither is numerical identity. Both the conclusions in lines (2) and (3) can therefore be avoided if the false dichotomy presented in the first line is rejected, namely that prime matter must be either numerically the same or different. As stated already, to speak of something as numerically the same or different applies properly only to actual being and not to potential being, which prime matter is.

Kronen *et al* therefore argue that St Thomas's account is incoherent because he is involved in a contradiction. This is because they claim that, according to this account, prime matter as pure potency is the numerically same continuant or substratum in substantial change. However, they

argue, if it is a numerically same substratum then it must be an actual thing and not a potency. The authors claim that this explanation of prime matter as the numerically same substratum or continuant in substantial change is the standard reading of St Thomas's account, and because of its incoherence they reject this explanation.[320] However they also reject Suarez's explanation, in that, as they argue, if prime matter has some actuality and is not pure potency, then this effectively amounts to saying that the substratum is a substance and therefore reduces all substantial changes to being accidental changes.[321]

Instead of the standard explanation of the substratum or continuant, which Kronen *et al* refer to as the 'alpha' explanation, they propose an alternative explanation, which they refer to as 'gamma'. They state:

> The proper response to the question "what survives?" is, according to gamma: no individual thing. There is no numerical continuant. There is subjectivity to change, but not a subject, not an actual subjectivity. There is no actual subjectivity because there is no actual being, and potential realities do not have actual identities. Substantial generation is still possible, because there is subjectivity to change that persists through the transformation. We might say (putting things colloquially) that gamma amounts to the view that gunk persists, but there are no chunks of gunk.
>
> We have been careful to say that position alpha is commonly understood to be Aquinas's position, not that it actually is his position. It is commonly thought from the way Aquinas talks about change and coming to be that he accepts Aristotle's claim under its standard interpretation that for any kind of change, any kind of generation, there must be three items: the initial condition, the terminal condition, and the subject or continuant, which is first in one condition and then in the other. If this interpretation is accepted by Aquinas, however, then it is pretty clear that he departs from the Aristotelian principle, because he cannot mean by subject, numerically one subject, for reasons we have given (following Suarez). He cannot consistently hold that the first form makes the matter one thing, the second form makes it a second thing, no matter how weak a sense of thing is invoked, and still maintain that the matter is numerically the same through the whole transformation.[322]

Kronen *et al* support the so-called gamma explanation that the continuant or substratum of substantial change is "subjectivity to change," understood as a potency, and not as a subject or actual being. They however claim that this gamma explanation is not the standard reading of St

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320 *Ibid*., p. 878.

321 *Ibid*., p. 875.

322 *Ibid*., pp. 879-880.

Thomas's explanation. We, on the contrary, would reject this claim. The standard reading of St Thomas is indeed that the continuant or substratum is prime matter considered as potency. Most commentators on St Thomas do not regard the continuant as some actual subject. To regard the continuant as some actual subject would indeed be an incorrect reading of St Thomas's explanation and is rightly rejected by Kronen *et al*. However by claiming that alpha is the standard reading and then rejecting it for gamma, these authors are effectively creating a straw man only to strike it down. What they claim is the correct but non-standard reading is what we would say is the standard and correct reading, namely that prime matter is a continuant but that it remains a potency without any actuality in itself.

Having said this, however, we would agree with the authors that there is a danger in calling the prime matter a subject of substantial change. The danger lies precisely in the fact that to do so can imply that prime matter is an actual thing which is numerically same in the first and the second substance. This would effectively equate substantial change with accidental change. St Thomas is aware of this terminological problem, when he states:

> Both that which is in potency to substantial existence and that which is in potency to accidental existence can be called matter.... But these differ, because that which is in potency to substantial existence is called the matter from which, but that which is in potency to accidental existence is called the matter in which. Again, properly speaking, that which is in potency to substantial existence is called prime matter, but that which is in potency to accidental existence is called the *subject*. Thus we say that accidents are in a subject; but we do not say that the substantial form is in a subject.
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> In this way matter differs from subject because the subject is that which does not have existence by reason of something which comes to it, rather it has complete existence of itself (*per se*); just as man does not have existence through whiteness. But matter has existence by reason of what comes to it because, of itself, it has incomplete existence. Hence, simply speaking, the form gives existence to matter; the accident, however, does not give existence to the subject, rather the subject gives existence to the accident; although sometimes the one is used for the other, namely matter for subject and conversely.[323]

[323] *DPN.*, ch. 1, n. 2 – 4.

Subject, properly speaking, refers to a supposit which is the substratum of accidents. This supposit is something which exists of itself. However, matter, and here St Thomas is referring to prime matter, does not exist of itself but rather receives its existence from the substantial form, and therefore is not properly speaking a subject, even though the term is sometimes applied to it. It should be noted that when St Thomas states that the form gives existence to matter, it should not be understood that the matter then becomes a subject or supposit. This seems to be the understanding that Kronen *et al* are giving to the effect of the substantial form actualising prime matter. Rather, it is the *composite* of matter and form which exists and is a supposit, and this supposit comes to exist by virtue of the form actualising the matter.

In regards to this first objection we have been considering, it is also important to note that even though prime matter, as a substratum of substantial change, remains a potency throughout the change and does not become a supposit or subject strictly speaking, some of the potency of prime matter is indeed actualised by the substantial form. However this does not mean that prime matter then becomes a supposit. Some of its potency is actualised by its substantial form but it still remains a potential co-principle. As we have seen above in Chapter 4, prime matter still remains in potency to and possesses an appetite for other forms while it is presently under some form.[324] It still retains a potency or appetite for other forms because only some of its potency is actualised at a given moment. Again it is important to stress that it is the composite of prime matter and substantial form, that is, the supposit, which has existence and not the prime matter alone even though some of its potency happens to be actualised.

A note of caution should also be made regarding the use of the expression 'pure potency' when applied to prime matter. While as we have seen above in Chapter 2 prime matter can be said to be pure potency in that *per se* or in itself or in its essence or nature it has no form and therefore no actuality, this does not mean that prime matter, as currently actualised by a substantial form, does not have some of its potency actualised. Some of its potency can be said to be actualised while it

[324] See Ch. 4 n. 3.2. C*f*., *In Phys*., Bk. 1, *lectio* 15, n. 138.

still remains, in itself, pure potency. The potency which remains for other forms can still be referred to as pure potency because in itself or *per se* it lacks any actuality.

Similarly, prime matter also undergoes changes in its dispositions, as we discussed in the previous two chapters. These dispositions are the result of changes in accidents in the composite, especially quantity, which results in changes in the transcendental relations of the prime matter. The fact that the dispositions in prime matter change, such that it may be more or less disposed for a substantial form, does not alter the fact that in itself it still remains pure potency. As Kent states regarding this:

> Since St. Thomas defines prime matter as "that which is in potency to substantial being," and since it has just been shown that nothing in the notion of "that which is in potency to substantial being" prohibits our supposing variations in it according to the degree to which particular potencies are ready for actualization, it follows that prime matter admits of variations according to the degree to which particular potencies are ready for actualization. In other words, nothing in the definition of the term "prime matter" prevents us from asserting that prime matter can be more or less disposed for the reception of a particular substantial form, on account of the dispositive action of some cause. The potency for substantial being does not cease to be the potency for substantial being when it is considered as falling under the influence of a form that brings some of its potencies closer to actualization than others.[325]

2. Second Objection: That the same integral parts seem to survive a substantial change.

In this second objection we are dealing with the observation that in a substantial change some of the integral parts of the original substance seem to survive the change and remain in the new substance. For example we have argued, following St Thomas, that the death of a living thing is a substantial change. However in the event of the death of an animal many of the integral parts of the living animal seem to be present in the corpse. For example, the same organs, muscles and cells seem to survive the substantial change and remain in the corpse. If there is only one substantial

[325] Kent *op. cit.*, pp. 315-6. As Kent also adds regarding the confusion by some over the use of the term pure potency when applied to prime matter: "First, there seems to be a tendency to jump from St. Thomas's statements that prime matter is formless, "pure" potency to the conclusion that prime matter must be undifferentiated potency, i.e., a potency that is considered as if there were no differing levels of potentiality in it for one form as compared with another...Potency is still "purely" potency – i.e.. still formless in itself-even when it has been extrinsically influenced by form so as to have some of its potencies elevated so that they are closer to actualization than others." pp. 322-3.

form in the living animal which is responsible for giving existence to the whole and all its parts, then it can be asked how the parts continue to survive and seem to be the same as those in the living thing if the substantial form has departed. It could be argued that this can be taken as evidence that there was not only one substantial form in the original substance, the living animal, responsible for the existence of the whole and all its parts, since these parts survived the departure of that form. Rather, one might argue that there are many substantial forms in the original substance, which would account for the existence of these parts, and which would explain why the parts in the new substance seem to remain the same. On this account, only the form of the whole original substance would depart but not the subsidiary forms of the parts.

An example of this type of objection is that raised by Terence Nichols. He examines the phenomenon of parts existing in a whole and asks how this should be explained. He looks at the example of water as it is present in living things and argues as follows:

> Modern Thomists continue to follow Thomas in affirming that only one substantial form informs the matter of an organism, which is therefore said to be one substance. The organism, of course, has parts such as cells, tissues, organs, etc.; these are said to be parts of a substance (rather than accidents). Thus the cells and organs of a human being are parts of the substance which is the person. But what about the water in the blood or cells – is this a part of the substance, or an independent substance included in the body? If one holds, as Thomas did, that there is only one substantial form in the (human) body, then there cannot also be other, separate substances, else the person would be an aggregate, not a substance. But modem anatomy and physiology tell us that blood is a fluid made up of water, which is the carrier and solvent of various suspended cells, platelets, and dissolved solutes (e.g., sodium chloride); blood plasma, which is the blood fluid separated from the suspended elements, is about 90% water. Similarly, in the so-called intracellular fluid in the cells water is the solvent for solutes and carrier for suspended semi-solid elements. Modern Thomists will typically argue that water is not present as such (that is, as a separate substance) in the body. Rather, water is said to be "virtually present," as St. Thomas affirmed. But it seems hard to deny that water is present as water in the blood and cells. It has not undergone a substantial change and become something else; even in solution it still functions as water. .. Yet, if it is water, it seems that there is more than one substantial form in the body....In fact, water in the blood or cells seems to be regulated by the overall form of the body and is only accidentally, not substantially modified: that is, it behaves, on the one hand, as part of a larger substance and, on the other, as an independent substance with its own characteristics. It is both a part of a larger whole and a kind of whole itself.

> To describe this paradox of partial autonomy and partial participation in a larger whole, Arthur Koestler has coined the term holon: that which is both part of a larger whole and itself a quasi-autonomous whole. [326]

Nichols argues that water in a living body appears to be a separate substance, in that its properties as water when ingested in the body seem to survive the process of ingestion. The process of ingestion of water would therefore not be a substantial change, because in the event of a substantial change the properties of the original substance are also changed into those of the new substance. Since the properties of water remain the same, therefore the water remains the same substance when ingested.

As Nichols states, if this is indeed the case, then the living body seems to have more than one substantial form, namely at least the substantial form of the whole body as well as that of the water, since it is the form which determines the species of the substance and its properties. However he does not want to say that the water retains its own substantial form because water has a partial autonomy and a partial participation in the whole. In other words, the water in the whole body is not totally independent and separate. He proposes that the water is an example of a holon, which is both a part of a whole and is itself a quasi-autonomous whole. Further on he adds:

> If Thomism continues to retain substance-accident language (as it probably will), I propose that a third category be added to the categories of substantial and accidental form, namely, that of *subsidiary form*. A subsidiary form would inform a subsidiary whole—a holon. Such a form would stand part way between a truly substantial form, which informs an independently existing substance, and an accidental form, which inheres in another. Such would be the form of those organs that are wholes yet also parts (the heart, liver, eye, etc.), of the water molecules in the body, and of the DNA molecules in the cells. As the example of water shows, a form may function either as a substantial form or as a subsidiary form, depending on whether its composite, water, exists as an independent substance or as an inclusion in a more comprehensive form.[327]

Nichols argues that the concept of a holon or subsidiary whole can be applied to many parts of larger wholes, such as water, organs or DNA in a body, and, as he states elsewhere, to atoms,

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[326] T. L. Nichols, "Aquinas's Concept of Substantial Form and Modern Science," *International Philosophical Quarterly*, 36 (1996), pp 312-3.

[327] *Ibid*, pp. 316-7.

molecules and cells. In fact most of the subsidiary parts of a whole seem to function as holons.[328] These holons would be informed by a subsidiary form which would be midway between a substantial form and an accidental form.

The notion of a subsidiary form which would inform a holon is problematic. St Thomas in the *De Mixtione* holds that it is not possible to have a form which is between a substantial form and an accidental form:

> First of all, indeed, because it is entirely impossible that there be something midway, a mean, between substance and accident. For, if that were so, there would be something midway, a mean, between affirmation and negation; since it is proper to an accident to be in a subject, but to a substance not to be in a subject. Though substantial forms are indeed in matter, they are not in a subject; for a subject is some actual individual, and a substantial form is what makes a subject some actual individual. It does not presuppose that actual individual.[329]

Since it is a substantial form which makes something exist as a supposit or individual thing, and an accidental form which causes an accident to be in a supposit as in a subject, there cannot be a mean between these two forms, since something either causes something to exist as a supposit or as an accident in a supposit. Everything that exists either exists in itself or exists in another, and there is no third alternative to this. The so-called subsidiary form must therefore either be a substantial form or an accidental form.

This being the case, we can ask how the presence of parts such as water in a body can be explained. We have ruled out Nichol's explanation that the phenomenon can be explained by saying that the water, as a holon or subsidiary whole, has a subsidiary form which is midway between a substantial and accidental form. In considering this question, we should first distinguish the various ways in which a substance like water can be said to be present in a living body. It is one thing for a substance such as water to be assimilated into a living body and another for it to be simply present. For example, the way in which water is present in a body immediately after drinking a cup of water and which simply remains in the stomach is different from the presence of

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328 *Ibid*., p. 313.

329 The English translations of the *De Mixtione Elementorum* are taken from *Aquinas on Matter and Form and the Elements* trans. J. Bobik (Notre Dame, IN: University of Notre Dame Press, 2006).

water in a cell. The water that simply remains in the stomach can be said to retain its own substantial form since it has not, as yet, been assimilated into the body. Similarly it could be argued that water which is used to help flush waste through urination has not been assimilated but acts as a mere carrier. However the water in the cell could be said to have been assimilated into the very structure of the cell and forms a constitutive part of it. Having made this distinction, we can say that the question we are considering concerns the explanation for water and other such substances which have been assimilated into the body and which seem to retain their particular properties.

One possible explanation is to argue that the water retains its own substantial form, in which case a body would have more than one substantial form. This alternative was examined by St Thomas in his analysis of the formation of mixtures from elements. The elements of earth, air, fire and water were thought to combine to give a new substance which was a mixed body constituted of some or all of these elements. The production of the mixed body from the individual elements was held to be a substantial change. While we need not accept the ancient physics behind the composition of mixed bodies, what St Thomas has to say will be useful in coming to understand the phenomena we are examining.

St Thomas rejects the explanation which would hold that the elements in a mixed body retain their substantial forms. This explanation was held by Avicenna and Averroes, and in response to them St Thomas states:

> Avicenna held that the substantial forms of the elements remain entire in the mixed body; and that the mixture is made by the contrary qualities of the elements being reduced to an average. But this is impossible, because the various forms of the elements must necessarily be in various parts of matter; for the distinction of which we must suppose dimensions, without which matter cannot be divisible. Now matter subject to dimension is not to be found except in a body. But various bodies cannot be in the same place. Whence it follows that elements in the mixed body would be distinct as to situation. And then there would not be a real mixture which is in respect of the whole; but only a mixture apparent to sense, by the juxtaposition of particles. Averroes maintained that the forms of elements, by reason of their imperfection, are a medium between accidental and substantial forms, and so can be "more" or "less"; and therefore in the mixture they are modified and reduced to an average, so that one form emerges from them. But this is even still more impossible. For the substantial being of each thing consists in something indivisible, and every addition and subtraction varies the species, as in numbers, as stated in Metaph. viii (Did. vii, 3); and

> consequently it is impossible for any substantial form to receive "more" or "less." Nor is it less impossible for anything to be a medium between substance and accident.[330]

The first explanation given by Avicenna would mean that a mixed body would not be one whole supposit or individual thing. The mixed body would be an aggregate of different bodies since the different substantial forms of the elements would give rise to different bodies with different individual matter which would not be able to occupy the same place. We have seen above in Chapter 2 that St Thomas held to the unicity of substantial form in a substance. The explanation of Averroes argues that the elements retain their substantial forms which have been in some sense lessened in the mixed body. However as St Thomas argues, substantial forms do not admit of more or less, since this would in effect result in a different form.

The only acceptable alternative according to St Thomas is to say that the substantial forms of the elements cannot remain in the mixed body in act but only by their powers or virtually:

> Another way must be found, therefore, which both safeguards a true mixing, and insures, as well, that the elements are not totally corrupted, but remain in some way in the mixed body. It must be taken into consideration that the active and passive qualities of the elements are contrary to one another, and take on degrees of more and less. Now, a mean quality which partakes of the nature of each extreme, can be constituted out of contrary qualities which take on degrees of more and less, as pale between white and black, and warm between hot and cold. Thus, therefore, when the excelling intensities of the elementary qualities are diminished, a certain mean quality is constituted out of them, a quality which is the proper quality of a mixed body, a quality which differs however in diverse mixed bodies in accord with diverse proportions of mixing. And this mean quality is the proper disposition to the form of a mixed body, just as the simple quality is to the form of a simple body. Just as the extremes, therefore, are found in a mean which shares the nature of each of them; so too are the qualities of simple bodies found in the proper quality of a mixed body. Though the quality of a simple body is indeed other than its substantial form, it acts nonetheless in the power of the substantial form. Otherwise, all that heat would do is make things hot, and a substantial form would not be brought to a state of actuality by its action, since nothing acts beyond the limits of its species. It is in this way, therefore, that the powers of the substantial forms of simple bodies are preserved in mixed bodies. The forms of the elements, therefore, are in mixed bodies; not indeed actually, but virtually [by their power]. And this is what the Philosopher says in book one of On Generation: “Elements, therefore, do not remain in a mixed body actually, like a

330 *ST* I, q. 76, a. 4 ad 4. Also *cf*., *De Mixtione*, n. 2 - 6.

> body and its whiteness. Nor are they corrupted, neither both nor either. For, what is preserved is their power."[331]

The correct explanation for the phenomenon that elements seem to remain in a mixed body and not be totally corrupted is that they remain in the body not in act but only by their power. They would remain in the mixed body in act or actually if they retained their substantial form. But as already stated this would not result in a single individual supposit but rather an aggregate with an accidental unity. St Thomas explains that the elements have qualities which are contraries. When they combine to form a mixture, a mean quality results which is proper to the mixed body and becomes the proper disposition for the substantial form of that mixed body.[332] The qualities of the elements, which can be said to include its powers, therefore remain in the mixed body but without their respective substantial forms. They remain therefore virtually (*virtute*) without their respective form. This is possible, as St Thomas states, because these powers, as indeed all powers, act by virtue of the substantial form. However in the case of the mixed body, the powers of the elements act by virtue not of their own substantial forms, since these have been corrupted in the production of the mixed body, but rather by virtue of the substantial form of the mixed body. The powers of the elements remain but they can be said to act as instrumental causes by virtue of the principal causality of the substantial form of the mixed body. As Bobik comments regarding this:

> Thus, the substantial forms of the elements are not actually present in mixed bodies. Each mixed body has its own, and one, substantial form. And it is this substantial form which manifests its proper activities through its proper qualities, which had been the extreme, or excelling, qualities (now brought, or tempered, to a mean) of the formerly separately existing elements. The mixed body, like any corporeal substance, can have actually but one substantial form, its own. Potentially, however, i.e., both virtually (in their power) and

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331 *De Mixtione,* n. 15 - 18.

332 As Kent states, this notion of a mean or middle quality can be applied to modern atomic theory: "An example of such a contrariety might perhaps be found in two atoms, one of which is "open to receiving up to two more electrons in its outer electron shell" and the other of which is "disposed to lend one electron to another atom's outer electron shell." A "middle quality" might then be produced by these atoms through the act of combining, whereby their opposite tendencies regarding the sharing of electrons will be wholly or partially neutralized. So, in this way, St. Thomas's principles concerning "contraries" that produce "middle qualities" can apply equally well to subatomic phenomena that he himself never imagined. Yet, upon reflection, this is only to be expected, since St. Thomas's principles arise from the very concept of "contraries" as "opposites"; "opposites" by definition partially or wholly neutralize each other when combined, or else they are not "opposites."" *Op. cit*., p, 305.

> retrievably, it has as many substantial forms, in number and in kind, as the elements which are required as its ingredients.[333]

As Bobik also adds, not only are the elements present in the mixed body with their powers, but also these elements can be retrieved from the mixed body. In our example of water in a living body, it may be retrieved from the body and exist independently as water, in which case the water would regain its own substantial form and its powers would be then under the influence of its own form acting as principal cause. This also explains the phenomenon that composite substances are able to be decomposed into its parts. If we consider the example of water itself, it is generated by the combination of hydrogen and oxygen atoms. The hydrogen and oxygen atoms would remain in the water with their powers under the principal causality of the substantial form of water. However by means of decomposition, the oxygen and hydrogen are able to be retrieved from the water. The powers which these atoms retained would act as dispositions which would dispose their prime matter for the eduction of their individual substantial forms after the decomposition of the water.

If we return to the objection of Nichols, we recall that he had argued that because water in a body retains the properties of water, such as its power to dissolve solutes such as sodium chloride in blood, the water must therefore retain its substantial form or, as he had argued, its subsidiary form as a holon. It should firstly be said that it is debatable whether the presence of water in blood is an assimilation of the water such that it becomes a true part of a living thing. It could be argued that the water in the blood has not been assimilated. However, if we take the position that it has been assimilated, St Thomas's explanation of how elements in a mixed body are able to retain their powers by virtue of the single substantial form of the mixed body helps to explain this

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[333] *Aquinas on Matter and Form*, p. 126. As Bobik also states regarding the instrumental causality of elements in a mixed body: "To say that a mixed body could not be without a certain number of certain kinds of elements (and atoms and molecules) is to say that without their intervening dispositional presence, prime matter could not have acquired a given sort of substantial form (nor continue to possess it), and so the mixed body could not have come to be, nor continue to be, what it is. To say that the mixed body could not act without a certain number of certain kinds of elements (and atoms and molecules) is to say that it depends on their instrumental presence, i.e., that it needs the powers of the elements (and of the atoms and the molecules) as the means, the instruments, the instrumental agent causes, through which it performs its proper activities. Thus, elements (along with certain sorts of atoms and molecules) are not only material causes of a special sort, they are also agent causes of a special sort, i.e. instrumental agent causes." p. 140-1.

phenomenon without requiring a mixed body to have multiple substantial forms or so - called subsidiary forms.

It is worth adding at this point that St Thomas holds that a more perfect substantial form is able to do what a less perfect substantial form can do and more besides. In relation to the human soul he states the following:

> Whence we must conclude, that there is no other substantial form in man besides the intellectual soul; and that the soul, as it virtually [*virtute*]contains the sensitive and nutritive souls, so does it virtually contain all inferior forms, and itself alone does whatever the imperfect forms do in other things. The same is to be said of the sensitive soul in brute animals, and of the nutritive soul in plants, and universally of all more perfect forms with regard to the imperfect.[334]

This response arose in reply to those who argued that there must be more than one substantial form in man because man also has the powers of the nutritive or vegetative substantial form as well as the powers of the sentient substantial form. However, by an analysis similar to what we have seen above, St Thomas argues that these lower, more imperfect forms need not be actually present with the higher and more perfect intellectual form, but rather that the lower forms are present virtually or by their powers by virtue of the more perfect form. This more perfect form therefore contains the powers of the lower forms and more. As St Thomas adds this applies not only to the human soul but also to all more perfect forms in relation to the more imperfect.[335]

This analysis based on perfect and imperfect substantial forms can help us explain another phenomenon with which we began this section, namely the death of a living thing and its substantial change into a corpse. In the event of this substantial change, the numerically same parts of the living body, such as the organs and muscles, seem to remain in the corpse. However, if upon the death of the living thing its substantial form departs, an explanation needs to be given as to why these same parts seem to remain. In explaining this St Thomas states:

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[334] *ST* I, q. 76, a. 4. *Cf.*, *ST* I, q. 76, a. 3; *In de Gen.*, Bk. 1, *lectio* 10.

[335] As Kent states regarding this: "according to St. Thomas's theory, a higher substance like a man has one substantial form (in the sense in which a substantial form is a "form"), but that form has certain powers that are also associated with other substances (in the sense in which substances have "powers") *and more powers in addition*." *Op. cit.*, p. 302.

> Form, however, is of two kinds: one is perfect and completes the species of a natural thing, as in the case of the form of fire or water or man or plant; the other is an incomplete form which neither perfects any natural species nor is the end of the intention of nature, but is something on the road to generation and corruption. For it is plain in the generation of composites, for example, of an animal, that between the principle of generation, which is the seed, and the ultimate form of the complete animal, there are many intermediate generations (as Avicenna says in his *Sufficiency* [= *ash-Shifâ'*, Healing]) which have to be terminated to certain forms, none of which makes the being complete in species, but rather an incomplete being which is the road to a certain species.
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> Likewise, on the side of corruption there are many intermediate forms that are incomplete: for the body of an animal is not, as soon as the soul is separated, immediately resolved into the elements; rather this takes place by means of many intermediate corruptions in which many imperfect forms succeed one another in the matter, such as the form of a dead body, then the form of a putrefied body, and so on. When, therefore, through corruption a privation is reached that is joined to such a form in matter, there is absolute corruption in the strict sense; when, from the privation to which is attached an imperfect form which was the road to generation, there is arrival at the complete form, there is absolute generation.[336]

St Thomas is arguing that we can distinguish between two types of substantial forms, namely a perfect form and an incomplete form. The living body prior to death would have a complete or perfect form and the corpse would have an incomplete substantial form. As he describes, the departure of the perfect form upon death does not lead to an immediate resolution into the elements which make up the body, the elements being regarded as the most basic constituents of the whole body. Rather, the corruption takes place in stages, progressing from one incomplete form to another. For example, immediately following death the corpse has very much the appearance of the living body, but then over time putrefaction sets in.

Hence the corpse can be considered a substance, but one which has an incomplete substantial form. This explains the subsistence of the corpse as a unity and its organs within it as its parts. This recalls the two ways in which a substance, considered as a supposit or *hoc aliquid*, can be understood, as examined above in Chapter 1. As St Thomas states:

> "This particular thing" [*hoc aliquid*] can be taken in two senses. Firstly, for anything subsistent; secondly, for that which subsists, and is complete in a specific nature. The former sense excludes the inherence of an accident or of a material form; the latter

336 *In de Gen.*, Bk. 1, *lectio* 8.

> excludes also the imperfection of the part, so that a hand can be called "this particular thing" in the first sense, but not in the second. Therefore, as the human soul is a part of human nature, it can indeed be called "this particular thing," in the first sense, as being something subsistent; but not in the second, for in this sense, what is composed of body and soul is said to be "this particular thing."[337]

While a living body is a *hoc aliquid* in the second sense, in that it subsists and is complete in a specific nature, a part of a body, such as the hand would be a *hoc aliquid* in the first sense, in that while it subsists, it would not be complete in a specific nature. This is because a hand is meant to be a part of the body and not to exist apart from the body.[338] Similarly, we can say that a corpse would also be a *hoc aliquid* in the second sense, in that it subsists but is not complete in a specific nature since it is meant to be animated by a soul. As St Thomas states, by a similar reasoning, the soul is a *hoc aliquid* also in the first sense (although in the case of the human soul it does in fact subsist apart from the body.) This also helps explain another phenomenon referred to by Nichols, namely the transplantation of human organs.[339] These organs, when removed from a living person or a corpse, would subsist with their own incomplete substantial forms, which would explain how they are able to exist outside the body for a time.[340] However given the imperfection of their forms, these organs need to be kept under specific conditions in order to prevent further corruption.

3. Third Objection: That the same accidents seem to survive after a substantial change.

Whereas in the previous section we gave an explanation for how the same integral parts seem to remain after a substantial change, we now wish to give an explanation of how the same accidents seem to remain. For example, upon the death of a living thing, which we have argued is a substantial change, the same accidents seem to remain in the corpse. However an objection can be

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337 *ST* I, q. 75, a. 2 ad 1.

338 It could be said that some parts of a living body, such as bones, are not really part of the organism as a living thing. They could be said to be more like structural supports for other parts of the body. In this sense, they have a greater degree of independence and therefore it may not be necessary to refer to such parts as being true instruments of the living body. However modern medical science would indicate that bones are in fact living things more than at first may be realised. *Cf.*, D. Stojanovski, “Bone is a living thing”, AMSI Research, http://research.amsi.org.au/bone-living-thing/.

339 *Op. cit.*, p. 313.

340 *Cf.*, Arias *op. cit.*, p. 381.

raised that this is not possible, given that accidents are said to inhere in a substance understood as a supposit. With the corruption of the original substance and the change into a new substance, it would seem that the accidents which inhered in the original substance cannot remain but must also change. On this point St Thomas states:

> The accidental forms which inhered before and prepared for the soul are not indeed destroyed essentially [per se] but accidentally when the subject is destroyed. So they remain specifically but not numerically the same, as also happens concerning the dispositions of the forms of the elements which seem to reach matter first.[341]

We first note that accidents are said to be corrupted not *per se* but *per accidens*, in that only a substance can corrupt *per se* and change into another substance. An accident is corrupted only in so far as it happens to be in a substance which is corrupted and therefore is corrupted only *per accidens*. Given this, St Thomas states that while the accidents remain specifically the same, they are not numerically the same. Therefore, in the case of a corpse, the colour, shape, weight, height and all the other accidents are not numerically the same as in the living body but only specifically the same or the same in kind.

The reason for this claim is that the numerically same accident and accidental form is dependent on the numerically same substance in which it inheres and therefore on that substance's numerically same substantial form. With the corruption of the original substance and the departure of its substantial form, the numerically same accidental forms which inhered in that substance cannot remain in the new substance. This necessarily follows from the definition of an accident given by St Thomas:

> ...the definition of substance is not---"a being of itself without a subject," nor is the definition of accident---"a being in a subject"; but it belongs to the quiddity or essence of substance "to have existence not in a subject"; while it belongs to the quiddity or essence of accident "to have existence in a subject."[342]

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341 *Quod.*, I, q. 4, a. 1. *cf*., *In de Gen*., Bk. l, *lectio* 10; *ST* III, q. 77, a.1; *De Spir. Creat*. a. 3, ad. 19.

342 *ST* III, q. 77, a. 1 ad 2. The context of this text is a treatment of the existence of the accidents of bread and wine in the sacrament of the Holy Eucharist. St Thomas does not want to define an accident as a being in a subject because the accidents of bread and wine are not in the Body and Blood of Jesus Christ in the Holy Eucharist as in their subject but rather are kept in existence by divine power, that is, miraculously.

With this definition of an accident, we see that it belongs to the very essence of an accident to have being in a subject, unlike a substance. In other words, by its very essence an accident, in the order of nature, cannot exist independently without its subject.[343] The very existence of the accident depends on the existence of the substance in which it inheres.[344] Further, each individual accident, and therefore each individual accidental form, depends on the substance of which it is an accident as its subject of inherence, such that its whole being and individual identity is dependent on its substance of inherence. As St Thomas adds elsewhere: "For substance is individualized by itself; whereas the accidents are individualized by the subject, which is the substance; since this particular whiteness is called "this," because it exists in this particular subject."[345] If it is the case that the existence of each individual accident is dependent on the existence of its individual substance as its subject of inherence, then it follows that the individual accidents of a substance cannot survive the corruption of a substance, as occurs with its substantial change. As St Thomas explicitly states regarding this:

> ...accidents do not pass from subject to subject, so that the same identical accident which was first in one subject be afterwards in another; because an accident is individuated by the subject; hence it cannot come to pass for an accident remaining identically the same to be at one time in one subject, and at another time in another.[346]

Given this, there is still the need to explain how similar, if not numerically identical, accidents are in the new substance. This explanation was given in Chapter 4, especially in Section 6. There we said that the accidents in the original substance were able to dispose the prime matter for the eduction of the new substantial form. When the ultimate disposition was attained, this disposition virtually contained all the previous dispositions preceding it, this disposition being the terminus and consummation of the previous dispositions. The new substantial form was then educed from

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343 This is the case on the natural level. However St Thomas states that by divine power the accidents can be kept in existence without their subject. *Cf. Ibid*.

344 As John of St Thomas states, an accident is said to inhere in a substance: "because it depends upon the very being of the subject, as upon a first being presupposed, but does not give first being" *Cursus Philosophicus, Phil. Nat.,* P. 3, q. 9, a. 1, p. 754.

345 *ST* I, q. 29, a. 1.

346 *ST* III, q. 77, a. 1.

the prime matter thus disposed, and because the matter virtually contained all the previous dispositions, the new substantial form was able to produce accidents in the new substance which where exact counterparts to those in the old substance right up to the instant of the change. The disposition in the prime matter, culminating in the ultimate disposition, was explained in terms of the transcendental relations of the prime matter, which relations remain throughout the change and culminate in the ultimate disposition. In this way the prime matter, as the substratum of the change, is able to carry over the dispositions for the new accidents found in the new substance without it itself having any accidents directly actuating it.

The fact that the accidents in the new substance appear to be numerically the same to our senses does not mean that they are in fact numerically the same. Reason tells us that they cannot be the same, and the rational explanation justifies us saying that they are in fact not numerically the same.

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By way of summation: In this chapter we have examined three objections which could be raised against St Thomas's account of substantial change. The first objection questioned how prime matter, which in itself is pure potency, could be the substratum of substantial change. Under this first objection we first considered Byrnes's objection that prime matter, as potency, was nothing, and nothing could not act as a substratum for substantial change. We said in reply that prime matter was not nothing, but that rather it was a real co-principle, though not a real actual thing but rather a real potency. We then also considered, under the first objection, the argument of Kronen *et al*, who maintained that the substratum of substantial change must be numerically the same throughout the change, and that since prime matter was pure potency, it could not be numerically the same and therefore could not be a substratum. We replied that the substratum need not be numerically the same and that indeed it was inappropriate to apply this term to prime matter considered as a potency. However, the fact that prime matter as a substratum remains a potency does not preclude that some of its potency is currently actualised by a substantial form, nor does it preclude there

being dispositions in prime matter whereby some of these potencies are brought closer to actualisation.

In replying to the second objection, we examined why the same integral parts seem to survive a substantial change. Under this objection we looked at the arguments raised by Nichols, who contended that the presence of things such as water with its properties in a body after ingestion indicated that it had somehow not fully lost its substantial form. He argued that this could be explained by such elements having subsidiary forms, midway between substantial and accidental forms. We replied that there cannot be such a midway form. Rather, the phenomenon can be explained using St Thomas's analysis of how elements can be in a mixed body. He argued they are present with their powers and that these powers act in virtue of the substantial form of the whole body. The phenomena of organs remaining in a corpse after death and of organ transplantation was explained in terms of intermediate substantial forms.

In replying to the third objection, we examined why the same accidents seem to survive a substantial change. We argued that the numerically same accidents could not survive, but that the dispositions in prime matter are responsible for the new substance having exact counterparts to the previous accidents in the new substance.

Conclusion

We stated in the introduction that the general purpose of this dissertation was to give a systematic exposition of St Thomas's account of substantial change and also an explanation and defence of this account. In particular the central aim of the dissertation was to explain how substantial changes are said to occur, which amounts to an explanation of the process of substantial change. This process involves a transition from potency to act, which constitutes the essence of change. This explanation was said to be a type of substratum theory, namely a hylomorphic substratum theory, which involved the postulation of two *per se* principles of nature, namely prime matter as the potential principle, and substantial form as the active or actuating principle, and one *per accidens* principle, namely privation, as the absence of the new substantial form in the prime matter. It is called a substratum theory because the prime matter is the permanent principle underlying the change and common to both the old and new substance. According to this theory, substantial change involves one substantial form replacing another in the underlying substratum of prime matter. The central focus of this dissertation was to explain how the prime matter undergoes the transition from potentially possessing a substantial form to actually possessing a substantial form, and this was covered especially in chapters 3 and 4.

The exposition, explanation and defence of St Thomas's account were covered in five chapters. In the first chapter some important preliminary matters were considered. Substantial change was defined generally as the change of one composite substance into another composite substance. This definition requires three things, namely that there indeed be such things as substances, that there are different substances and that such substances do change from one into another. Firstly, we saw that substance, in the primary sense, means a *hoc aliquid* or an individual subsisting thing, which can be termed a *suppositum*. Secondly we argued that the fact that there are different substances can be seen from the different accidents and properties of substances and from their different operations. Thirdly, we examined evidence that there are substantial changes which we experience. The chapter concluded by examining three possible explanations for such changes. The first was annihilation/creation, in which one substance is annihilated and the other created *ex nihilo.* The

second was transubstantiation, in which the whole substance is changed into another substance, with no common substratum of change from the old to the new substance, only the accidents remaining the same. The third was the substratum theory, in which there remains throughout the change a permanent substratum common to the old and new substance, namely prime matter. According to this theory, substantial change is a change that involves one form replacing another in the underlying substratum of prime matter. We concluded that St Thomas holds that the substantial changes we experience are explained by a substratum theory and in particular by a hylomorphic substratum theory.

In the second chapter the hylomorphic explanation was examined and a defence was made of the three principles of substantial change which are postulated to explain such change, namely the two *per se* principles of prime matter and substantial form and the *per accidens* principle of privation. The mode of proceeding in deriving these principles was to argue by way of analogy from accidental change to that of substantial change. The case of accidental change was therefore first examined and it was determined that in such changes there is an identifiably same subject or substratum of the change which remains unchanged throughout the change, which is a substance, considered as the *suppositum*.[347] The subject as lacking the new or acquired accidental form is the *terminus a quo* of the change, and the subject as possessing that form is the *terminus ad quem*. The absence of the form in the subject was termed the privation. Hence three principles of accidental change were identified, namely the subject, the privation and the accidental form. An excursus was then made to defend the knowledge we have of substance and accidents. This was seen as important since if the argument is one made by way of analogy from accidental change to substantial change, a defence of the existence of accidental change was needed. It was argued that the intellect first grasps the whole being of a thing, substance and accidents and then afterwards apprehends the real distinction between substance and accidents. This knowledge of the real distinction comes about from our experience of accidental changes in things and also from the

[347] The subject of accidental change is the substance considered as a *suppositum*, namely as the composite of prime matter and substantial form. By substance here is not meant the whole composite of substance and accidents.

experience of our own psychic acts. It was also argued that the subject or substratum must possess a potency or capacity to undergo the change, since otherwise that change would not be possible.

By way of analogy, three intrinsic principles were found also in substantial change, namely prime matter, substantial form and privation. The matter or substratum of the change was argued to be prime matter. This was not the identifiably same substance as in the case of accidental change. Rather it is a principle of a substance, which is "in potency to form" and is in itself pure potency. Three arguments were given as to why prime matter is in itself pure potency and not some rudimentary type of second matter, namely the Argument from Substantial Change, the Argument from Limitation and the Argument from Individuation. The substantial form was argued to be the intrinsic principle which confers substantial existence, in the order of essence. It is an act of the potency which is prime matter and confers *esse simpliciter* on a supposit and also determines the kind or species of a thing. The unicity of substantial form was also defended because of its importance for the explanation of substantial change, in that there is only one substantial form that is replaced by another with prime matter as the common subject. Six types of observational evidence for the existence and unicity of the substantial form were examined. Apart from the two intrinsic *per se* principles of change, the two extrinsic principles, namely the efficient and final causes, were briefly noted.

The second chapter concluded by listing five difficulties or objections that could be raised regarding the hylomorphic explanation. The remainder of the dissertation consisted in answering these five objections. The first objection is that prime matter must not be regarded as pure potency, since it seems that the matter or subject of the change is the integral parts of the original substance which remain throughout the change. This objection was answered in the second chapter by virtue of the three arguments given for why there must be a prime matter considered as pure potency, namely the Argument from Substantial Change, the Argument from Limitation and the Argument from the Principle of Individuation. The second objection follows from the first, namely that the same integral parts of the original substance seem to survive the substantial change. That is, the substratum of the change seems to be more than prime matter considered as pure potency. The

third objection is closely linked to the first two, namely that the same accidents seem to survive the substantial change. The fourth objection is that prime matter, considered as pure potency, cannot be a substratum of substantial change, since it is not something actual. The fifth and final objection is the difficulty of explaining the origin of the new substantial form in the new substance. This was regarded as the most difficult objection to answer and it constituted the principal problem addressed in this dissertation.

The third and fourth chapters were devoted to answering this most difficult fifth objection and principal problem. This constituted the central part of the dissertation, since the focus of the dissertation was to explain the process of substantial change, which process involved the transition from the prime matter potentially having a substantial form to actually having such a form. In chapter two a defence was made of the proposition that the three intrinsic principles of change, namely matter, form and privation, are necessary in order to enable to give a coherent explanation of change. It was demonstrated that substantial change could be seen as prime matter's first having a privation of a substantial form and then later coming to possess a new form. Substantial change could be also seen as prime matter's having a potency to acquire a new form and then having that potency actualised by a new substantial form. These two chapters were concerned with giving a coherent explanation for the origin of the new substantial form.

Chapter three began with an examination of accidental change. In this type of change, the matter or subject of the change is a substance, which first has a potency or capacity to change, which potency is then actualised by a new accidental form. This type of change was said to occur with respect to three accidents, namely place, quality and quantity, and this type of change was referred to as motion. It was also said that this type of change can be referred to as a *secundum quid* or qualified generation or corruption of a thing, in that the same substance remains throughout this type of change, with a change only in the accidental form. The terms of accidental change were said to be two positive and contrary *termini* in a subject, and the change or motion between these *termini* was said to be successive and gradual through a series of intermediate accidental forms. Accidental change was then compared with substantial change. In this latter type of change the

matter or subject of the change is prime matter, which in itself is pure potency, which potency is then actualised by a new substantial form. This type of change can be referred to as *generatio* or *corruptio simpliciter* or unqualified generation or corruption, in that one substance changes into another substance. The terms of substantial change were said not to be two positive and contrary *termini* as in accidental change, but rather the privation in prime matter and the new substantial form in that matter. These *termini* were said to be contradictories. The transition or change from the privation in prime matter to the substantial form in the matter was said to be instantaneous, unlike accidental change, which is successive and gradual.

The chapter then concluded by examining three possible explanations for the origin of the new substantial form in prime matter, namely that the form was actual but latent in the matter, that it was created by an external agent or that it was educed or drawn out from the potency of matter. St Thomas argues for the third explanation of eduction. Prime matter is said to contain these forms in its potency. The new substantial form is educed or drawn out of this potency and comes to actualise the prime matter. Following John of St Thomas, eduction was said to be a transmutative production of a substantial form, in that the new substantial form is produced *per accidens* in the production of the new composite substance. This *per accidens* production of the form is transmutative in that it involves changes in the dispositions in the prime matter in the original substance, whereby the prime matter is disposed for a new substantial form.

Chapter four examined in more detail the explanation of eduction as a transmutative production of a substantial form. In particular the question was examined as to how prime matter can be said to be disposed for the eduction of a new substantial form from its potency. Prime matter was said to be indirectly disposed by means of changes in the accidents inhering directly in the composite supposit. It is able to be so indirectly disposed because, as John of St Thomas states, prime matter is the *principium quo recipiendi* while the supposit is the *principium quod recipiendi*.

To help understand how prime matter can be indirectly disposed, the nature of prime matter was examined in more detail. Prime matter was said to be in its very essence a transcendental relation

or order to substantial form. This was also expressed in terms of prime matter having an innate or natural appetite for substantial form. However, while prime matter in its very essence is a transcendental relation to substantial form in general, what makes the prime matter disposed for a particular form is another transcendental relation, namely the relation of prime matter to quantity. Prime matter is transcendentally relative to this particular form inasmuch as it is transcendentally relative to this particular quantity. The quantity it is related to is indeterminate quantity, and as so related the prime matter is said to be signed by quantity and is a principle of individuation of a substantial form. However through changes in the determinate quantity of the composite whole, the relation of prime matter to indeterminate quantity can be said to be affected which changes the disposition for another form. In this way prime matter can be said to be indirectly disposed. This disposition does not add any act to prime matter itself, which remains pure potency and indeterminate. This disposition is able to do this because it is the result of a transcendental relation or ordering of prime matter to indeterminate quantity. It was also noted that changes in other accidents, such as quality, can also dispose prime matter since these accidents are in turn dependent on quantity.

The notion of eduction was also examined in terms of two transcendental relations, namely the relation of prime matter to the existence of a new composite supposit and to the new substantial form. Prime matter is a potency to substantial existence and therefore is in its essence a transcendental relation to such existence. The new form can be said to be educed from the more fundamental and primary relation of prime matter to the existence of the new supposit. The chapter concluded with a brief examination of the roles of the efficient, exemplary and final causes in bringing about substantial change.

While chapters three and four were dedicated to examining the difficulty regarding the explanation for the origin of the new substantial form, the fifth and final chapter was dedicated to examining the other three difficulties or objections raised at the end of chapter two. The first objection regarded the question of how prime matter, considered as pure potency, could be a substratum of substantial change, since it is not something actual. It was argued that while prime matter is not

something actual, it is however a real co-principle in a thing, since potential being is real being even though it is not actual being. As such it is able to act as the substratum in substantial change. It was however admitted that the reference to prime matter as the substratum or subject of substantial change does carry the danger of implying that prime matter is something actual. What needs to be kept in mind is that the composite supposit is what actually exists and that the matter and form, which are co-principles of the composite, do not exist independently of this composite.

The second objection was that the same integral parts seem to survive a substantial change. It was argued that sometimes the presence of things such as water in a newly formed substance was due to the fact that the thing has not been assimilated into the composite whole. Where however they can be said to be assimilated, the presence of such integral parts can be explained using St Thomas's analysis of how elements can exist in a mixed body, namely that they are present with their powers and that these powers act in virtue of the substantial form of the whole. The presence of organs remaining in a corpse after death and the ability to transplant organs was explained in terms of intermediate substantial forms.

The third objection was that the same accidents seem to survive a substantial change. It was argued that the numerically same accidents could not survive the change, but that rather the dispositions in prime matter are responsible for the newly generated substance having the exact counterparts to the previous accidents in the new substance.

As we have seen, the explanation of many things is necessary to give an exposition and explanation of substantial change according to St Thomas, an explanation which we have called a hylomorphic substratum theory. It has been shown that St Thomas's explanation is an adequate and coherent one, which was the objective of this dissertation. This objective was met not only by giving an exposition and explanation of St Thomas's account, but also by addressing certain difficulties and objections. Further, there was an engagement with some modern scientific and philosophical considerations in order to show that St Thomas's account is indeed coherent and plausible in the light of these considerations.

Bibliography

Alvira, T, L. Clavell and T. Melendo. *Metaphysics*. Manila: Sinag-Tala Publishes, Inc., 1991.

Aquinas, St. Thomas. *Aquinas on Being and Essence*. Translated by J. Kenny. http://dhspriory.org/thomas/english/DeEnte&Essentia.htm.

_____. *Aquinas on Being and Essence*. Translated by A. A. Maurer, 2nd ed. Toronto: Pontifical Institute of Medieval Studies, 1968.

_____. *Commentaria in Octo Libros Physicorum*. vol. 2, ed. Leonine Commission. Rome, 1884; http://www.corpusthomisticum.org/iopera.html.

_____. *Commentary on Aristotle's De Anima*. Translated by K. Foster and S. Humphries. http://dhspriory.org/thomas/english/DeAnima.htm.

_____. *Commentary on Aristotle's Generation and Corruption*. Translated by P. Conway and R.F. Larcher. http://dhspriory.org/thomas/english/GenCorrup.htm.

_____. *Commentary on the Metaphysics*. Translated by J. P. Rowan. http://dhspriory.org/thomas/english/Metaphysics.htm.

_____. *Commentary on Aristotle's Physics*. Translated by R.J. Blackwell *et al*. http://dhspriory.org/thomas/english/Physics.htm.

_____. *Commentary on the Posterior Analytics of Aristotle*. Translated by F.R. Larcher. http://dhspriory.org/thomas/english/PostAnalytica.htm.

_____. *Compendium of Theology*. Translated by C. Vollert. http://dhspriory.org/thomas/english/Compendium.htm.

_____. *De Ente et Essentia*, vol. 43, ed. Leonine Commission. Rome: Santa Sabina, 1976; http://www.corpusthomisticum.org/iopera.html.

_____. *De Mixtione Elementorum*, vol. 43, ed. Leonine Commission. Rome: Santa Sabina, 1976; http://www.corpusthomisticum.org/iopera.html.

_____. *De Principiis Naturae*, vol. 43, ed. Leonine Commission. Rome: Santa Sabina, 1976; http://www.corpusthomisticum.org/iopera.html.

_____. *In Librum Aristotelis de Generatione et Corruptione Expositio*, vol. 3, ed. Leonine Commission. Rome, 1886; http://www.corpusthomisticum.org/iopera.html.

_____. *In Librum Beati Dionysii De Divinis Nominibus Expositio*, ed. C. Pera, O.P. Turin and Rome: Marietti, 1950; http://www.corpusthomisticum.org/iopera.html.

_____. *Miscellaneous Questions*. Translated by S. Edwards. Toronto: Pontifical Institute of Medieval Studies, 1983.

_____. *On the Power of God*. Translated by English Dominican Fathers. http://dhspriory.org/thomas/english/QDdePotentia.htm.

_____. *On the Truth of the Catholic Faith*. Translated by A. C. Pegis *et al.* http://dhspriory.org/thomas/english/ContraGentiles.htm.

_____. *Opera Omnia.* Available at website entitled "Corpus Thomisticum: S. Thomae de Aquino: Opera Omnia." Ed. Enrique Alarcon. Fundación Tomás de Aquino, 2013. http://www.corpusthomisticum.org/iopera.html.

_____. *Quaestio Disputata de Anima*, vol. 24, 1, ed. Leonine Commission. Rome, 1996; http://www.corpusthomisticum.org/iopera.html.

_____. *Quaestiones Disputatae de Malo*, vol. 23, ed. Leonine Commission. Rome, 1982; http://www.corpusthomisticum.org/iopera.html.

_____. *Quaestiones Disputatae de Potentia*, vol. 2, ed. P. Bazzi. Turin: Marietti, 1953; http://www.corpusthomisticum.org/iopera.html.

_____. *Quaestiones Disputatae de Veritate*, vol. 22, ed. Leonine Commission. Rome, 1970-1976; http://www.corpusthomisticum.org/iopera.html.

_____. *Quaestiones Disputatae de Virtutibus*, vol. 2, ed. E. Odetto. Turin: Marietti, 1965; http://www.corpusthomisticum.org/iopera.html.

_____. *Quaestiones de Quodlibet*, vol. 25, ed. Leonine Commission. Rome, 1996; http://www.corpusthomisticum.org/iopera.html.

_____. *Scriptum super Sententiis*, vols. 1-2, ed. P. Mandonnet. Paris: P. Lethielleux, 1929; vols. 3-4, ed. M. F. Moos. Paris: P. Lethielleux, 1933-1947; http://www.corpusthomisticum.org/iopera.html.

_____. *Sententia Libri De Anima*, vol. 45, ed. Leonine Commission. Rome, 1984; http://www.corpusthomisticum.org/iopera.html.

_____. *Sententia Libri Metaphysicae*, ed. M. R. Cathala, O.P. and R. M. Spiazzi, O.P. Turin: Marietti, 1971; http://www.corpusthomisticum.org/iopera.html.

_____. *Summa Contra Gentiles*, vols. 13-15, ed. Leonine Commission. Rome, 1918-1930; http://www.corpusthomisticum.org/iopera.html.

_____. *Summa Theologiae*, vols. 4-12, ed. Leonine Commission. Rome, 1888-1906; http://www.corpusthomisticum.org/iopera.html.

_____. *Super Boetium de Trinitate*, vol. 50, ed. Leonine Commission. Rome – Paris, 1992; http://www.corpusthomisticum.org/iopera.html.

_____. *The Principles of Nature to Brother Sylvester*. Translated by R.A. Kocourek. http://dhspriory.org/thomas/DePrincNaturae.htm.

_____. *The Soul*. Translated by J.P. Rowan. http://dhspriory.org/thomas/english/QDdeAnima.htm.

_____. *The Summa Theologica.* Translated by English Dominican Fathers. http://dhspriory.org/thomas/english/summa/.html.

_____. *Thomas Aquinas: Selected Writings*. Translated by R. McInerny. London: Penguin Books, 1998.

_____. *Truth*. Translated by J.V. McGlynn. http://dhspriory.org/thomas/english/QDdeVer.htm.

Arias, D. *Rediscovering the Principles of Nature: An Explanation of St Thomas Aquinas's Hylomorphic Doctrine and Defence of this Doctrine against Some Ancient and Modern Objections*. Doctoral Dissertation, University of St Thomas, Houston, 2011.

Aristotle. *Physics*. Translated by R.P. Hardie and R.K. Gaye in *The Basic Works of Aristotle* ed. R. McKeon. New York: Random House, 1941.

_____. *Metaphysics*. Translated by W.D. Ross in *The Basic Works of Aristotle* ed. R. McKeon. New York: Random House, 1941.

Bobik, J. *Aquinas on Matter and Form and the Elements*. South Bend, IN: University of Notre Dame, 1998.

Bobik, J. *Aquinas on Being and Essence: A Translation and Interpretation*. Notre Dame, IN: University of Notre Dame Press, 2004.

Brock, S.L. "St Thomas and the Eucharistic Conversion." *The Thomist* 65 (2001), pp. 529-65.

Brower, J.E. *Aquinas's Ontology of the Material World: Change, Hylomorphism and Material Objects.* Oxford, UK: Oxford University Press, 2014.

Brown, C.M. *Aquinas and the Ship of Theseus: Solving Puzzles about Material Objects*. London: Continuum, 2005.

_____. "Artefacts, Substances, and Transubstantiation: Solving a Puzzle for Aquinas's Views." *The Thomist* 71 (2007), pp. 89-112.

Byrne, C. "Prime Matter and Actuality," *Journal of the History of Philosophy*, 33 (1995), pp. 197-224.

Cassell's Latin Dictionary. London: Cassell & Company, Ltd, 1948.

Catalano, J. *The Eduction of Substantial Forms According to St Thomas Aquinas*, Doctoral Dissertation, St John's University, New York, 1962.

Clarke, W.N. *The One and the Many: A Contemporary Thomistic Metaphysics*. Indiana: University of Notre Dame Press, 2001.

Connell, R.J. *Substance and Modern Science*. Houston, TX: Center for Thomistic Studies, 1988.

_____. *Matter & Becoming*. Chicago, Ill: The Priory Press, 1966.

De Koninck, C. *The Writings of Charles De Koninck*. Translated by R. McInerny. Vol. 1. Notre Dame, IN: University of Notre Dame Press, 2008.

Dewan, L. *Form and Being: Studies in Thomistic Metaphysics*. Washington, D.C.: CUA Press, 2006.

Edmondson, C.H. “Autotomy and Regeneration in Hawaiian Starfishes.” *Bishop Museum Occasional Papers* 11 (8), pp. 3-20. http://hbs.bishopmuseum.org/pubs-online/pdf/op11-8.pdf

Elders, L.J. *The Metaphysics of Being of St. Thomas Aquinas in a Historical Perspective*. Leiden: E.J. Brill, 1993.

Feser, E. *Philosophy of Mind: A Beginner’s Guide*. Oxford: Oneworld Publications, 2010.

_____. *Scholastic Metaphysics: A Contemporary Introduction*. Piscataway, NJ: Transaction Books, 2014.

Goyette, J. “St Thomas on the Unity of Substantial Form.” *Nova et Vetera* 7 (2009), pp. 781-790.

_____. “Substantial Form and the Recovery of an Aristotelian Natural Science.” *The Thomist* 66 (2002), pp. 519-533.

Gredt, J. *Elementa Philosophiae Aristotelico-Thomisticae.* Barcelona, Spain: Editorial Herder, 1951.

Grenier, H. *Thomistic Philosophy: Philosophy of Nature*. Charlottetown: St Dunstan’s University, 1950.

_____. *Thomistic Philosophy: Metaphysics.* Charlottetown: St Dunstan’s University, 1950.

Hawkins, D.J.B. *Being and Becoming: An Essay Towards a Critical Metaphysic*. London: Sheed and Ward, 1954.

Hugon, E. *Cursus Philosophiae Thomisticae: II Philosophia Naturalis.* Paris: P. Lethielleux, 1935.

_____. *Cosmology*. Translated by F.J.R. Carrasquillo. Heusenstamm: editiones scholasticae, 2013.

Hume, D. *A Treatise of Human Nature,* ed. Selby-Bigge. Oxford: The Clarendon Press, 1975.

_____. *A Treatise of Human Nature,* ed. P.H. Nidditch. Oxford: Clarendon Press, 1978.

John of St Thomas. *Cursus Philosophicus Thomisticus,* ed. P.B. Reiser, 3 vols., 2nd ed. Turin: Marietti, 1948.

Kane, W.H. “The First Principles of Changeable Being.” *The Thomist* 8 (1945), pp. 27-67.

Kent, M.A. *Prime Matter according to St Thomas Aquinas*, Doctoral Dissertation, Fordham University, New York, 2005.

Kronen, J.D., S. Menssen, T.D. Sullivan. “The Problem of the Continuant: Aquinas and Suarez on Prime Matter and Substantial Generation.” *The Review of Metaphysics* 53 (2000), pp. 863-885.

Ledinich, S. *The Eduction of Substantial Forms According to St Thomas Aquinas and as Explained by John of St Thomas,* Thesis for the Licentiate in Philosophy, University of St Thomas, Rome, 2016.

Locke, J. *An Essay Concerning Human Understanding* ed. J.W. Yolton, vol. 1. London: J.M. Dent & Sons Ltd, 1961.

Maurer, A. *On Being and Essence*. Toronto: The Pontifical Institute of Medieval Studies, 1968.

McInerny, D.Q. *The Philosophy of Nature*. Lincoln, Nebraska: The Alquin Press, 2001.

Mill, J.S. *A System of Logic*. London: Longmans, Green, Reader and Dyer, 1872.

Nichols, T.L. "Aquinas's Concept of Substantial Form and Modern Science." *International Philosophical Quarterly* 36 (1996), pp. 303-318.

Oderberg, D.S. *Real Essentialism*. New York: Routledge, 2007.

Owens, J. *An Elementary Christian Metaphysics*. Milwaukee: The Bruce Publishing Company, 1963.

Pasnau, R. *Metaphysical Themes: 1274-1671*. Oxford: Clarendon Press, 2011.

Phillips, R.P. *Modern Thomistic Philosophy: An Explanation for Students, vol. I: The Philosophy of Nature*. London: Burns Oates & Washbourne Ltd, 1948.

Robinson, H. "Substance." *The Stanford Encyclopedia of Philosophy* , Spring 2014 Edition, Edward N. Zalta (ed.). http://plato.stanford.edu/archives/spr2014/entries/substance/.

Simpson, W.M.R, R.C. Koons and N.J. Teh (eds.), *Neo-Aristotelian Perspectives on Contemporary Science.* New York: Routledge, 2018.

Spangler, M.M. *Logic: An Aristotelian Approach*, rev. ed. Eugen OR: Wipf & Stock, 2012.

Stojanovski, D. "Bone is a living thing." AMSI Research. http://research.amsi.org.au/bone-living-thing/.

Svoboda, D. "Thomas Aquinas on Whole and Part." *The Thomist* 76 (2012), pp. 273-304.

Torrell, J.P. *Saint Thomas Aquinas: The Person and His Work*, vol. 1, rev. ed. Washington, D.C.: The Catholic University of America Press, 2005.

Wallace, W. *The Modelling of Nature: Philosophy of Science and Philosophy of Nature in Synthesis*. Washington, DC.: CUA Press, 1996.

Wippel, J.F. *The Metaphysical Thought of Thomas Aquinas*. Washington, D.C.: The Catholic University of America Press, 2000.

Woodbury, A. M. *Metaphysics - Ontology*, unpublished manuscript (c. 1945-1975).

Woodbury, A. M. *Natural Philosophy*, unpublished manuscript (c. 1945-1975).

Woodbury, A. M. *Metaphysics - Natural Theology*, unpublished manuscript (c. 1945-1975).

Wuellner, B. *A Dictionary of Scholastic Philosophy.* 2nd ed. Milwaukee: The Bruce Publishing Company, 1966.