The Science of Logic

A Course in the Formal and Material Principles of Right Reason

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I. Two-Membered
i. Its Nature
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II. Multi-Membered
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a. Two-Membered
I. Its Nature
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III. Its Figures and Moods
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Material Logic – coming next semester...

Prologue: What is Philosophy?

The Nature of Philosophy

According to Common Opinion

What is Philosophy? Is it a science? Is it a kind of poetry? Is it just a lower form of Theology? Surveying the various opinions about the nature of Philosophy reveals a term so widely abused that one is tempted to think that there is no such thing as Philosophy; that it is a myth as culturally specific as the boogeyman, occasionally popping out of dusty old closets to scare scientists and college freshmen. The special sciences today have so far rolled back the fog of the knowable universe that anyone who wants to breath the clear air of knowledge is told to take up instruments and measure something, while Philosophy is respectfully escorted to the deepest, darkest corners of your local cafe-bookstore—to be stumbled upon whenever political commentators go thumbing for useless rhetoric. When we think of philosophers we think of tussled hair, tweed jackets, and pipe smoke. But this is an image which, though eerily autobiographical, I must insist is a stereotype. Philosophy is not only scientific, it is the perfection of all sciences. And the philosopher is not only a crazy old windbag, he's the craziest of old windbags. But ridiculously well worth listening to.

According to Many Laymen

Most people outside the academic community use the term 'philosophy' to mean any sort of clever maxim, usually suggesting a rule for making decisions. Thus, someone will say, "well, *my* philosophy is seize the day." Which really just means, "I've decided that whenever I doubt the prudence of an action I will take the course which is more pleasurable and worry about the consequences later." Is this sort of axiomatic nonsense all that we mean by Philosophy? Go to any corporate website and you'll see something similar—it's usually on a page titled 'Our Philosophy'. But again all we really find on the 'Our Philosophy' page is a list of nice sounding words; words that potential customers would really like honestly to use if they ever had to describe their experience of this company to someone else: 'loyal', 'friendly', 'excellence', 'focus', 'commitment', 'innovation'. Potential customers then feel good about these words and decide to do business. Philosophy for the layman has become a catchall word for nonsensical drivel. But at least they respect it.

According to Many Scientists

Scientists, on the other hand, generally have a much lower opinion of Philosophy. Devoted to observation and experiment, most scientists view philosophy as dealing with the diametrical

opposite of what they perceive to be true knowledge. They think Philosophy concerns things that cannot be observed, cannot be controlled, cannot be measured and tested. In other words, Philosophy has absolutely nothing to do with science. Even if it is considered to be a legitimate area of study, it most certainly is not science. We'll learn presently that the reason Philosophy is thought to be totally separated from modern science is because the whole of Philosophy has come to be identified with what is in reality only a part: namely, Metaphysics.

According to Many Philosophers

Philosophers are perhaps the worst people to ask if you ever want to know what Philosophy is. They cannot seem to distinguish between Philosophy and History. Philosophers today seem so utterly unsure that there is any true opinion that when you take a Philosophy course at most universities, you will be learning in fact the history of Philosophy. You will learn what Kant thought, or what Hegel thought, or what Plato thought, etc. etc. The one thing that you will not learn is whether or not any of these philosophers was right. You will be asked on every exam, "What did Kierkegaard think about such-and-such?", and you will be expected to quote book and chapter to prove that this is indeed what Kierkegaard thought. But you will not be asked (neither may you ask) "was it true?"

Unfortunately, most so-called Thomistic Philosophy programs are no exception. They do not teach Thomism, they teach the biography of St. Thomas. And the ultimate test for whether or not something is 'true' is whether or not you can find a quote somewhere in St. Thomas's works that *says* it is true.

So in academia, you've got the science department which thinks that Philosophy is too abstract and aloof to be scientific, and you've got the Philosophy department which thinks that Philosophy is too subjective to be certain; we can't really know for sure, so we must just be tolerant.

For my part, when I use the word 'Philosophy' I have a very strict meaning. And it is the traditional meaning used by the Greeks and accepted by the Scholastics. It is neither a mystical thesaurus of questionable maxims, nor the transcendental antithesis to scientific inquiry, nor history. But enough of what it isn't, let's take a look at what it is.

According to the Scholastics

Whenever we undertake to study something, we really ought to know at least in general way what that thing was; no one would ever set out to study the parts of a cleome unless he knew, at least in the vaguest fashion, what on earth a cleome was—if you can't point to a cleome, I don't know how you expect to study it. Hence, it makes sense that before we go on to study Logic, which is a part of Philosophy, we outline at least in a general way what Philosophy itself is. And to know what a thing is, is to know its nature or essence, even if only in its most general characteristics—even if I only know that a cleome is that plant out in my garden with pink and lavender petals and long, spindly arms, I at least know something about its nature, albeit imperfectly.

Now, one of the things we'll learn in Logic is 'definition'. And one of the things that we'll learn about definition is that there are two types: nominal definition and real definition. Nominal

definition does nothing more than single something out for us: a cleome, for example, may be defined as that plant out in my garden with such-and-such features. Again, a nominal definition of a square might be 'the shape of that building's face over there'. A real definition, as we'll learn, gives us some insight into the real nature of the thing; so a real definition of a square would be a quantity terminating in four sides of equal length, or something of the sort. So a real definition, properly done, gives us the nature of a thing by separating that thing from all others. Therefore, to give you insight into the nature of philosophy we'll look at its definition; first, its nominal definition, then its real definition.

Some writers don't believe that we should treat of the definition of philosophy at the beginning of philosophical studies. They hold, instead, that the definition of philosophy comes at the very end of our studies; as kind of a corollary to Metaphysics. They would argue that, for example, a real definition of 'man' cannot be given until you've studied man and his properties and can conclude to his real nature (his nature being, as I said, enshrined in the real definition). There is some truth to this, but we need to make a distinction. In the order of human discovery, yes, naturally the understanding of what man is and, in our present case, what philosophy is won't properly be a proven conclusion until all of its parts are distinguished and examined; but for the purposes of pedagogy, i.e., for the purposes of teaching new students, once we have the real definition it is better to share it with them at the outset to give them an idea of where their knowledge of the subject will be taking them—it's an aid and a courtesy to the students. The rest of their studies, then, will be a continuing proof of this definition. Besides, it seems a little ridiculous to have students talking about philosophy for years before anyone ever tells them what philosophy is.

The Nominal Definition

So let's start with the nominal definition and try to point out (from its name and etymologically) what the Scholastics hold philosophy to be.

The name 'philosophy', as is often pointed out, comes from the Greek, and it means 'love of wisdom', or 'philos' (love) 'sophia' (wisdom). According to Cicero, it was supposedly Pythagoras (the well known philosopher of mathematics) who first coined the term in response to his being called a 'wiseman'. Pythagoras pointed out (so Diogenes tells us) that only God is truly wise, whereas a person such as was he could only ever hope to be called a 'lover of wisdom'. Well, the name stuck. And philosophy came to mean the search for wisdom itself, but only insofar as this wisdom is accessible to rational human nature. That is, knowledge of reality insofar as man can attain by long, laborious, processes of observation, induction, and deduction; philosophy is imperfect wisdom always in pursuit of perfect wisdom. Or in other words, philosophy came to mean knowledge tending toward a comprehensive grasp of all reality. "For while the ancients who pursued the study of wisdom were called sophists, i.e., wise men, Pythagoras, when asked what he professed himself to be, refused to call himself a wise man as his predecessors had done, because he thought this was presumptuous, but called himself a philosopher, i.e., a lover of wisdom. And from that time the name "wise man" was changed to "philosopher," and "wisdom" to "philosophy." This name also contributes something to the point under discussion, for that man seems to be a lover of wisdom who seeks wisdom, not for some other reason, but for itself alone. For he who seeks one thing on account of something else, has

greater love for that on whose account he seeks than for that which he seeks."[1] So it was that philosophy used to mean *the entirety of human intellectual pursuits, always tending to a unifying vision of reality which is called 'wisdom'*.

Already, here with this first nominal definition we can see a huge divergence between what philosophy use to mean (i.e., all human knowledge as tending toward a complete understanding of reality) and the very miniscule role that philosophy is given today (i.e., empty maxims which cannot by verified by observation or experiment).

The Real Definition

How, then, are we really to define philosophy according to this older view? The most common way to define it is by saying that philosophy is the knowledge of all things through their first or highest causes. A noted philosopher by the name of Jacques Maritain has this to say in his celebrated 'An Introduction to Philosophy': "Philosophy is the science which by the natural light of reason studies the first causes or highest principles of all things—is, in other words, the science of things in their first causes, insofar as these belong to the natural order." And more often than not, this definition is given by most modern philosophers who claim to subscribe to the traditional view.

However, there is a huge problem with this definition: it identifies ALL of philosophy with what is but a single BRANCH of philosophy, namely, Metaphysics. Maritain knew that he was doing this, and he was explicit about it: "we shall take philosophy to mean philosophy *par excellence*, the first philosophy or Metaphysics." But how does he know that Metaphysics is philosophy *par excellence* until he can give a basic definition of philosophy in general? So he shirked the whole responsibility of giving an adequate definition of philosophy in general, and as a consequence an entire generation of Thomistic philosophers identified philosophy with Metaphysics.

Furthermore, this definition entirely contradicts the nominal definition that had been accepted by everyone since the time of the ancient Greeks. To possess Metaphysics, you see, *is* to be a wise man because it orders everything in light of their first and ultimate causes, as we'll learn at the end of this course. But the older understanding encompassed not only the actual possession of human wisdom, but also all those other fields of study which are directed toward that wisdom as their final goal. The common understanding today would entirely separate modern 'sciences' from philosophical investigation accept insofar as the conclusions of Metaphysics could be applied to them.

Finally, this definition would go further than just identifying all the branches of philosophy with Metaphysics, but it would also reduce all the branches of Metaphysics to the study of Natural Theology; because Natural Theology studies the First and Highest Cause of all beings. Because of this view, Thomistic Philosophy has today been completely divorced from any science which does not make explicit reference to God. Thus, the Thomistic philosopher Etienne Gilson held that all Philosophy is necessarily subordinate to Supernatural Theology, and all philosophic investigations must be studied in light of revealed principles. Well, since there's precious little way that modern science can be directly studied in relation to revealed principles, Philosophy for

[1] In I Meta., lect. 3, n. 56.

modern Thomists has very little to do—if not nothing—with empiriological sciences (i.e., sciences of experimentation).

So what then is the real definition of Philosophy? Well, according to the older view (and this is the sense in which 'Philosophy' will be used in this book) Philosophy refers to all possible reasoned knowledge put in order and directed to a complete, comprehensive grasp of reality. Hence, the real definition of such knowledge would be along the lines of this: Philosophy is the *synthesis, or complex, of all sciences which deal with beings knowable by human reason*.

Let's look at each part of this definition to help you understand it.

Philosophy is a s*ynthesis, or complex, of sciences*. Sciences are processes of reasoning which lead to true and certain conclusions from true and certain principles. Now, philosophy is not one particular science, but it is a whole which has particular sciences as its part. There are other complexes of science which are similar to this: math, for example, is not a single science, but it is a term for a collection of sciences contains underneath itself, namely, arithmetic (along with its kindred studies) and geometry (along with its kindred studies)[2]. Natural science, to give another example, is a single name which refers to all the sciences dealing with the natural order, and these sciences are its parts. So what 'math' is to the various mathematical sciences, Philosophy is to *every science possible to the unaided human mind*. It is a synthesis or complex or structure or system or totality or network of all the particular sciences as properly ordered amongst themselves. And so to be a philosopher as compared with being, say, a molecular biologist, is like being the captain of the ship as opposed to being, say, the guy down in the boiler-room. It is the captain who knows where everyone on the ship should be (and why), and it is the captain who knows where the ship is going. It is the philosopher who knows how all the sciences should fit together and to what end they are ordered. Now, knowing how one science is related to another is properly the work of the logician, as we shall see. Hence, philosophers must first, foremost, and forever be logicians. That is why Logic is of the utmost importance.

So Philosophy is not formally distinct from science. In fact, philosophy is the sum of all the sciences insofar as these sciences are properly ordered and subordinated amongst themselves. So when we speak of Philosophy, we are speaking of science. But note that Philosophy is not itself a science. In other words, the particular sciences, such as physics, math, metaphysics, ethics, etc. are not simply parts of a larger science which is called 'philosophy'. No, each one is a distinct science; Philosophy is the ordering of these sciences one to the other in a great logical structure, conglomeration, or synthesis. But we'll get deeper into this later.

Philosophy *deals with all beings*. Now, a being is anything which does exist or can exist; and existence is either outside the mind, or inside the mind only (so, for example, a horse with a long spiral horn on its head could possibly exist outside the mind, while, say, '-3' can only ever exist in the mind). So philosophy is concerned with every actual and possible being, whether it is a 'real being' or simply a 'being of the reason.' And it deals with these beings not only in their highest or ultimate causes (as the other definition insists) but also in their lower and proximate

[2] That real mathematics is divided ONLY into arithmetic and geometry is something we will learn towards the end of this course in Logic.

causes. Hence, the other definition (i.e., the science of things in their first causes) is formally included in what we understand to be Philosophy.

Philosophy *deals with all beings knowable by reason*. That's not to say 'all beings that can be reasonably or rationally investigated', but rather all beings that can be discovered and examined by unaided reason. In this way, Philosophy is distinguished from Supernatural Theology which takes its principles from truths which are inaccessible to human reason. So for example, that God exists is something knowable by unaided reason, as you'll discover when you advance in your courses. But the inner life of God (that God is Triune, for example) is not a truth that can be discovered by reason acting alone. Nevertheless, once Divine truth is revealed, we can certainly reason about that subject.

Perhaps now would be a good time to explore further the relationship between Philosophy and Sacred Theology, which is—as a conclusion to all we've said up to this point—really the distinction between rational human science and Sacred Theology. Perhaps no one so well summarized the distinction between the two as did the eminent Cardinal Mercier, a greatly esteemed Thomistic scientist (though often wrongheaded and certainly not infallible)[3] of the late 1800's. I quote him liberally:

"In the eyes of theologians philosophy is regarded as 'natural', in this sense that it deals with an order of knowledge to which man can attain by the light of unaided reason and is opposed to that order of knowledge which, because it surpasses the power and needs of created nature, is called 'supernatural'. The latter order of knowledge deals with the truths proposed to our faith by divine revelation and the profound study of this concerns not the philosopher but the Christian theologian. Yet that there is a certain connexion between human sciences and revealed truths we may see from the fact that both these natural and supernatural truths spheres of knowledge meet in the mind of the Christian scientist or philosopher.

"It is important to determine the relations between them.

"1) Philosophy, and hence science, is a study formally independent of all authority. Indeed, for the constitution of a science two things are essential: that it have certain principles and the means of drawing such conclusions from these principles as are contained by them in germ. All sciences have their own principles and distinctive methods. They deduce their principles from the analysis of a given subject-matter, which so analyzed discloses the existence of various relations; the simplest and most general of these furnish the formative principles of our knowledge. The mind recognizes these relations with certitude because they furnish their own evidence. When the combination of these simple relations leads the mind to more complex conclusions, it is precisely the evidence of the connexion between the latter set and the former that is the sole motive which induces the reason to assent to the results obtained by demonstration. Hence, the essential elements of science—principles, conclusions and the certainty of the evidence between them—are independent of all Church authority.

[3] Though I will, indeed, often be citing His Excellency in this work because of his profound attempts to reunify philosophy and science, I would like it to be understood that I do not endorse his work in its entirety. In fact, quite often he missed the mark so widely that it's laughable to read him. For example, he believed that Logic, which teaches the method of procedure in the sciences, should actually be studied AFTER Metaphysics, which is the culmination of all scientific investigation.

"This general argument is confirmed by the fact that science and philosophy existed before the foundation of the Church, and the Author of Christianity came not to destroy the natural endowment of man but to enrich it with better gifts. Moreover, when in the first half of the last century De Bonald and La Mennais sought to oblige the human reason to receive its first principles and its primary motives of certitude from revealed teaching, Gregory XVI, far from accepting this dutiful subjection offered to the Church, publicly reproved and condemned the mistaken loyalty of its authors.

"2) Are we to conclude that the Christian scientist and philosopher may show a complete disregard of the teachings of revelation? Certainly not, for the Church has received from God the deposit of revealed truths and it is her mission to it intact. Thus when in the name of science or philosophy the imprudent or the rash advance theories which contradict the teachings of revelation, the Church cautions those who trust to her for guidance, and denounces the error the acceptance of which would run counter to the belief in divine revelation. Her guardianship is thus negative and she herself does not *positively* teach either science or philosophy. She leaves entire liberty to those who study them, and history and individual experience testify to her zeal in encouraging them. She uses no voice of authority in such matters; men are left to their own reflection and research; her only authoritative mission is teach the dogmas of revelation. But such being her mission she cannot allow, still less approve, anything that may be detrimental to the divine teaching. As long as scientists and philosophers do not put themselves in opposition to what she knows to be revealed by God, and in consequence most certainly true, she respects the freedom of human learning; but when any one puts forward as science what is only mistaken conjecture, she calls for a revision of such hasty conclusions, and thus shows herself the helpmate of the human reason by her assistance in disclosing to it its errors.

"In short philosophy and the sciences are autonomous in this sense that in their case the supreme motive of certitude is the intrinsic evidence of the object they study, whereas in matters of faith the ultimate motive of belief is the authority of God, the author of supernatural revelation. Revelation is not a motive of assent, a direct source of knowledge for the scientist and the philosopher, but rather a safeguard and a *negative* standard. The Christian philosopher from the moment that he undertakes his investigations has full liberty of interrogating nature or his own consciousness and of following the direction of his reason. But if it should happen that he finds his conclusions at variance with revealed truth as proposed to his belief by legitimate authority, he is bound alike in the interest of faith and of scientific truth to trace back his inquiries until his difficulties find a solution in accord with the teachings with which at first sight they seemed to conflict. Divine truth cannot be erroneous; whatever is a certain contradiction of a dogma certainly revealed cannot but be error and to repudiate error is surely an act of reason.

"3) But, it may be asked, if the case should arise of an evident contradiction between faith and reason, must we abdicate the rights of reason? We who are believers do not admit the possibility of such a contradiction. To answer the unbeliever, we must make an appeal to experience. Can he bring a proof, even a single proof, of a manifest contradiction between an evident truth of reason and a dogma of the Church? We confidently assert that there never has been found a manifest conflict between a dogma and a certain conclusion of science. Where discrepancies have arisen and doubts have been introduced they have always been the outcome of hasty observation, premature induction or ill-considered hypothesis, or, on the other side, of inaccurate definition of belief or the personal opinion of isolated theologians. When it is not immediately

apparent wherein lies the explanation of a seeming disagreement between what is put forward as of faith and what is put forward as a scientific conclusion, the prudent and wise Catholic scientist will for the time suspend his judgment and await with confidence for the real truth to be brought to light.

"The Vatican Council sums up Catholic teaching concerning the relations of rational conclusions and revealed dogmas in these words: 'Although faith is above reason there can never be a true discord between faith and reason; for the God Who reveals mysteries and bestows the gift of faith is He Who has also illuminated the human mind with the light of reason; but we cannot find contradiction in God and neither can truth be opposed to truth. If the vain appearance of such contradiction should arise, this is either because the dogmas of the faith have not been understood and expounded according to the mind of the Church or because arbitrary opinion has been mistaken for judgment founded on reason."[4]

So in the light of what has been said we can come to a number of conclusions. First, Philosophy (and therefore each and every human science) is formally distinguished from Sacred Theology because Theology proceeds under the light of revealed principles. Philosophy, on the other hand, proceeds from natural principles; i.e., from principles gathered from experience and known by reason.

Second, Philosophy is distinguished from faith and opinion. "Faith implies assent of the intellect to that which is believed. Now the intellect assents to a thing in two ways. First, through being moved to assent by its very object...Secondly the intellect assents to something, not through being sufficiently moved to this assent by its proper object, but through an act of choice, whereby it turns voluntarily to one side rather than to the other: and if this be accompanied by doubt or fear of the opposite side, there will be opinion, while, if there be certainty and no fear of the other side, there will be faith.

Now those things are said to be seen which, of themselves, move the intellect or the senses to knowledge of them. Wherefore it is evident that neither faith nor opinion can be of things seen either by the senses or by the intellect."[5]

In other words, sciences, as we'll explain towards the end of this course, ultimately force the mind to assent to their conclusions because the intrinsic evidence is so obvious that the mind has no choice but to assent, under pain of contradiction. It excludes any relation to the will. Faith and opinion, on the other hand, always include a reference to the will in some way or another. The evidence given by the object of faith and opinion may sway the mind to believe it or doubt it, but ultimately it is the will which chooses to believe one side of an argument or another.

So to sum up, "Philosophy, in its widest meaning, comprises every single science; for it is called a kind of 'love' 'or 'friendship of knowledge' for which reason human wisdom is called Philosophy by St. Thomas in his introduction to his commentary on the Ethics. And thus Philosophy is a generic knowledge comprising under itself every science which can be naturally acquired, especially the speculative sciences [i.e., sciences which study things that man does not

[4] A Manual of Modern Scholastic Philosophy, Volume 1.

[5] II-II, q. 1, a. 4, c.

create; we'll examine these later], the love of which is properly called the 'love of knowledge' because they are loved for the sake of knowing alone."[6] This is what Scholastics mean when we use the term 'Philosophy'. Every science that man can study falls under it.

Now, when a thing by nature grows and develops, we understand it better by examining its natural tendencies. From its natural tendencies, we can reason to where it is trying to go. By studying the growth of a plant, say, for example, our old acquaintance the cleome, we can form an idea of what a perfect cleome should look like once all its growing is finished. Now, sciences develop in the intellect just as plants develop and grow in the soil. So to better understand Philosophy—and, most especially, to understand what perfect Philosophic Science should look like—let's examine how it is formed within the human mind and see if we can discover what it should look like when it is fully developed.

All animals have senses. However, some animals only have a few senses, while other animals have all the senses. An oyster, for example, has the sense of touch, which is a fundamental sense and is found in all animals; but it does not have memory. In fact, it doesn't need memory because it doesn't need to seek things out for its survival and nourishment. Other animals, though, do need to seek things out and make provisions for the future, as a squirrel needs to store its food for the winter. These animals are endowed with memory. And because they have memory they can acquire a certain habit of association which resembles learning. Thus, an animal who has been shocked a number of times by an electrical fence will associate a certain visual object (namely, the fence) with an unpleasant sensation; and since natural desires compel the animal to flee what is unpleasant and seek out what is pleasant, it will avoid what resembles its past unpleasant experience.

Man, however, can go far beyond this association. From a number of catalogued experiences in his memory and imagination, man can abstract universal notions. While the animal sees the fence and feels the pain, man can abstract the notion of 'fence', of 'pain', of 'electricity' of 'causality' (e.g., the electricity in the fence CAUSED my pain). Man can understand universal notions, while animals understand only the particular things of sense. This understanding of universal notions is the distinctive feature of the intellect.

But even beyond merely understanding these universal ideas (e.g., the ideas of 'electricity' and 'pain'), man can induce propositions from his many experiences (e.g., 'electricity can cause pain'). And then from these propositions, man can arrive at new knowledge which is potentially contained in the old (e.g., 'What has electricity running through it can cause pain; but this fence has electricity running through it; therefore, this fence can cause pain'). This is the process of reasoning which is distinctive to man.

Now when an object is presented to man, he cannot grasp everything about it at in a single glance. Instead, he examines various noticeable features of the thing one by one. When the mind sees a certain rock, for example, it doesn't know everything about that rock but must content itself with examining its attributes singly. It looks at its color, its hardness, its weight, perhaps even its ability to conduct electricity. Each of these attributes goes to making up man's idea of this particular kind of rock; these various intelligible objects we are going to call 'notes'

[6] John of St. Thomas, Cursus Philosophicus Thomisticus, Vol. 2

throughout this course. Each of these notes is abstracted from the rock which is sensed, and each note is separated from all the others so that the mind can examine them. But if they were kept separated one from the other, then the mind wouldn't have knowledge of reality; after all, these notes don't exist separately (they are combined in the rock), they are only considered separately by the mind. So the mind, in order to know reality, must unite all these various notes which it has grasp into a single concept: namely, the concept of the rock. So the mind first distinguishes, then unites. All the notes that make up the concept of the rock (that is, all of the notes taken together) constitute what we will call our comprehension of the rock (from 'cum-prehendere' or 'to grasp together'). We will discuss this thoroughly later on. The point to understand here is that by the simplest notions, we come to understand the most complex objects. And from these simple notions, we gradually build up our knowledge of real things.

Sciences come about when our will, by its power to control the other faculties of our body, turns our mind to one particular object and concentrates our thought on it. So, for example, concentrating our mind on the various notes of rocks and minerals, and gradually perfecting our comprehension of them, will give us geology. Concentrating on cataloguing the various properties of the cleome and other plants will give us botany. But no science of this sort can ever go beyond that proper object which it studies; the botanist will never become the geologist as long as his mind is directed to plants. The botanist, as a botanist, has only the most limited kind of knowledge of reality. But the mind does not rest in this. Everything, you see, is naturally inclined to its proper operation—heat is naturally inclined to diffuse itself, plants are naturally inclined to grow—and it will pursue that operation even when inhibited—e.g., you can't stop a plant from *trying* to grow except by killing it. Now, the proper operations of the intellect is to understand reality. And as we said, understanding for the intellect is not simply knowing something in its various intelligible parts, but it is comprehending all those parts in a unified whole; its putting back together all the parts that is has separated. Even if the mind possessed a vast knowledge of all the various particular sciences, it wouldn't rest until it put all those particular sciences into a unified and systematic whole; this is the mind's natural tendency to find a unified, comprehensive, systematized vision of all reality. This systematization is called Philosophy, and its tool is called Logic.

Now, science is not *simply* a cataloguing of the various attributes of objects and reality. That would only be preparatory to science. Science seeks the principles, causes, and reasons of what it observes. Since the mind necessarily grasps the notion of causality (as we'll learn later), it necessarily asks of everything, 'why?' And it asks this because in knowing that there must be a cause, while at the same time not knowing what that cause is, it knows that it doesn't have a unified vision; and as I said, the mind naturally seeks this unity. In other words, the mind naturally flees ignorance; but when it doesn't know a cause while knowing that there *is* indeed a cause, the mind knows itself to be ignorant.

We express causes very frequently. Every time we say 'because' we are leading the mind to a cause. Why is grass green? Because it contains chlorophyll. This doesn't seem very significant, but that's because we've yet to examine the power of what is called the 'syllogism' (one of the primary focuses of this course). This explanation of why grass is green actually contains an abbreviated syllogism. If we blow it up and make explicit the syllogism which is now only implicit, we get:

Everything which contains chlorophyll is green.

But grass is something containing chlorophyll.
Therefore, grass is green.

Hence, the notion of containing chlorophyll is the 'middle term', or the unifying idea by which 'greeness' is united to 'grass'. Chlorophyll is the principle of greeness in the grass; it is the cause of greeness in the grass, and it is the reason why the grass is green. The purpose of each science is to seek out these unifying terms in their own particular subject areas. That is, every science seeks out the principles, reasons, and causes of the subject it is studying.

Now, principles, reasons, and causes do not mean the same thing. 'Principle' is a very broad term that means only a beginning or rather that from which a thing proceeds in any way at all; so the kitchen is a principle of my motion into the living room because I started in the kitchen. Nevertheless, 'being in the kitchen' is not a *cause* of my being in the living room. A cause is something upon which another depends for its continuing existence or for its coming into existence. Thus, the movement of my legs is a cause of my moving into the living room. While it is true that every cause is at the same time a principle, it is not true that every principle is at the same time a cause. If a cause is removed, the effect is removed. If my legs don't move, neither do I. But the same is not necessarily true of a principle. Even if the kitchen were turned into, say, the dining room, my motion would remain what it is. Science must distinguish between what is truly a *cause* of a thing, from what is merely a *principle* or, in other words, from a phenomenon which just happens to occur first.

Now, when a cause is considered in relation to the mind, we call it a reason. The reason why the grass is green is the fact that it contains chlorophyll. The reason why a triangle has three interior angles equal to two right angles is because of the very nature of a three-sided plane figure, etc.

We won't be discussing causes again until we treat of reasoning processes much later on in this course. But I'd like to introduce you to the four chief kinds of causes right now so that we might forestall any future difficulties.

A cause, as I said, is a principle in virtue of which a being exists or comes into existence. A cause is the reason why a thing is what it is.

1) *The Formal Cause*: Think of a statue. Let's say a statue of Aristotle. Then ask yourself, what makes this statue to be a statue of Aristotle and not a statue of, say, Plato. You might answer that the statue of Aristotle is smarter (and I'd probably agree!), but that's beside the point. What makes this slab of clay to be Aristotle is that it has been shaped into the form of Aristotle and not the form of Plato, or Socrates, or anyone else. This principle by which the shapeless clay is made to be this or that thing and distinct from everything else we call the *formal cause*. Whenever this formal cause is altered, it becomes something different—e.g., it ceases to be Aristotle and becomes someone else. But notice that the clay itself has its own form independent of any other form superadded to it; e.g., independent of the form of Aristotle or Plato. In fact, the clay would be what it is (i.e., clay) even if it was never shaped into a statue. The form of statue is not necessary for clay to be what it is. Hence, we say that the form which is imposed on the clay is accidental to the nature of the clay: it is an *accidental form*. The clay itself is, however, not an accident of something else, but is a specific kind of thing which exists as a thing independently of another subject into which it is received; in other words, the clay is a substance. And the formal cause of the clay itself (i.e., its 'clayness', if you will) is what we call a

substantial form. So the clay is a substance, and the form given to the clay is an accident. And for any given substance, there can be almost endless varieties of accidents; the clay can be Aristotle or Plato or Apollo or it can be white or red or hard or soft, etc. etc.

2) *The Material Cause*: The form of Aristotle does not exist by itself. It's not floating around somewhere and waiting for someone to shove it in the clay. It only exists when it is brought out of the clay by gradually molding the clay into the desired form. The clay itself is that *out of which* the statue of Aristotle is made, whereas the form of Aristotle is that *by which* the statue is this particular statue of the Philosopher. There is a real dependence of the form of Aristotle on the matter of the clay. If the clay starts to disintegrate, the form would disappear. Moreover, the matter (e.g., the clay) can receive many, many different forms, though not at the same time: it can be a statue of Aristotle at one moment, and then it is molded down and becomes a statue of Plato. So we have discovered *matter* which is that cause from which a thing is made since it exists in it. And have *form* which is the cause which determines and specifies the material cause.

Is that it? Nope. The clay can't give to itself the form. If it could, that would mean that the clay already has it (because you can't give something that you don't have) and hence the clay would both have the form and not have the form at the same time. So we need another cause.

3) *The Efficient Cause*. This would be the sculptor in our example. The efficient cause is the principle from which the motion that united the form to the matter (e.g., the form of Aristotle to the clay) first proceeded. Matter and form are never united except under the influence of an efficient cause (because the matter cannot give itself the form, as I said, and the form doesn't exist before it's united to the matter, as I said).

4) *The Final Cause*. The sculptor never acts without a reason. Maybe it was to make money, maybe it was for the sheer pleasure of sculpting, maybe it was just to do something rather than to do nothing! The reason that the sculptor sculpted is what we call the final cause. But we need to make a distinction here between the final cause of the worker and the final cause of the work. Let's take another example: scissors. The guy who makes scissors at the scissor factory has perhaps one goal in mind: to make a living. That is the final cause of his scissor making. But the scissors themselves also have a final cause: namely, to cut. Likewise, the statue of Aristotle has its own final cause: to be a good representation of Aristotle. Everything has a final cause, as you'll learn much later. What is the final cause of a cleome? To do all those things that a cleome is supposed naturally to do. For now, it's just important that you understand a final cause to be that for the sake of which a thing is or comes to be.

The material and formal causes are called *intrinsic* causes because as long as the statue exists, it will have matter arranged in some form. If the form disappears, it's no longer a statue, just a chunk of clay. And if the clay dissolves, the form of Aristotle goes with it. The efficient cause and the final cause, on the other hand, are called *extrinsic* causes. It's not always necessary that these two exist. Even if the cleome hasn't yet grown up to its full stature (part of its final cause), the cleome still exists. And even if the sculptor is long dead, the statue still remains.

To study all of these causes is the business of the sciences; each one focusing on the causes of its particular subject-matter. But sometimes, one scientific subject-matter will depend on another. For example, molecular biology will depend upon certain conclusions laid down by chemistry and general biology; in other words, the causes which the molecular biologist seeks are actually

the subject matter of a higher area of study. Hence, molecular biology is an area of study which is necessarily placed under more general areas of study. And when the whole conglomerate of these sciences, the whole ordering of scientific subject matter, is placed and approached and studied in the proper order, we have Philosophy. For the Scholastic, there is no distinction between knowing philosophically and knowing scientifically. Philosophy is just a general name that refers to the general rational, orderly, scientific inquiry into the causes of reality. For the Scholastic, every scientist is a philosopher; it's just that most of them today happen to be bad philosophers.

The Historical Origin of Philosophy

So, how is it that Philosophy today has come to mean anything but a systematic scientific inquiry into reality? Well, we've already dealt with one of the underlying causes, although only in passing: namely, the identification of Philosophy with only one branch of philosophical science, Metaphysics.

Now, we ought to bear in mind that a study of the history of Philosophy does not pertain to the philosopher properly speaking; rather, it pertains to the historian. In the same way, no one would fault a medical doctor for not knowing the old practice leeching. In fact, most of us might be grateful that he had never been trained in such things. Besides, history, as we'll learn in the course is a science only in the loosest sense of the term.

Nevertheless, seeing how Philosophy came to be regarded as a useless abstract will help us to avoid those opinions which lead to unhappy conclusion. So I'll present to you here a brief outline of the history of philosophic science with a special emphasis on why modern philosophy is, lamentably, modern philosophy.

Philosophy for the Greeks (six centuries before and six centuries after Christ)

The earliest Greek philosophers are also recognized as being the first scientists; this makes sense, of course, in the light of everything we've spoken of up until now. For them to be what we call today a scientist was to philosophize. Their chief concern was to investigate the causes of change in the external world and to discover what was the common element underlining the constant flux of reality. It was in this time period that the modern theory of atomic composition was first found in germ; pretty advanced stuff for lofty, head-in-the-cloud philosophers, indeed. There was no question that what they were studying was the reality that presented itself to our sensation, even if some of them ended up trying to deny that what they sensed was actually as things are. But little by little they started to inquire about things which were not so immediately evident to the senses; they began to wonder about celestial composition, phases of the moon, and in the end the entire arrangement of the universe as an ordered whole.

Generally this period of science is arranged in four periods: the Pre-Socratic (i.e., before Socrates), the Socratic (including Plato and Aristotle), the Post-Socratic until the rise of Neo-Platonism, and the Neo-Platonic.

The first question of the Ancient Greeks, as I said, was about the ultimate element from which the world is made; the 'material cause', to use the language to which you have now been

introduced. Thales, who is recognized as the first scientist-philosopher, believed that the ultimate element was water; Anaximenes and Diogenes thought that it was air; Heraclitus thought that is was fire; Empedocles thought that it was fire, air, earth, and water (the infamous 'four elements' which were a precursor to modern elemental chemistry); Anaximander thought it was infinite matter; and Anaxagoras thought that a conglomeration of infinitesimally small particles made up of all different substances on Earth comprised all things, and were arranged in various patterns by an immaterial intelligence.

The question of the ultimate material cause (to use our own language) led to the question of change, or rather the constant succession of formal causes (again, to use our terms). Where did the statue in the clay come from? It couldn't have come from the statue, because then it would have already been there and, hence, there would have been no change; but also it couldn't have come from nothing, because nothing comes from nothing. To solve this, Heraclitus taught that all things are in constant motion and there is no stable formal cause in the clay, or in anything else, for that matter. The Eleatic school, on the other hand, led by Zeno, Xenophanes, and Parmenides (to name a few), held that all change must be an illusion. And they went to very great lengths to show that all suppositions that things change leads to contradiction.

Now, while the first scientists were heavily debating the external world, a group of skeptical thinkers pointed out that the thinking subject, the person, was being ignored in their investigations. They were known as the Sophists, and they attempted to show that all inquiry into the physical world led to the destruction of knowledge; hence, we ought not even try to know truth from falsity, right from wrong. Chief among them were Protagoras and Gorgias.

In response to the scientific devastation wrought by the sophists, Socrates taught that proper grounding in concepts and scientific definitions was paramount. He returned to the scientific community determinate objects of investigation and he restored the dignity of the intellect. We have no works written by Socrates himself; instead, his teaching is relayed to us through his disciple, Plato.

Plato once again took up the question of change and stability in the observable world. But to solve it, he posited the existence of two different realities: one of sensible things which are in constant motion, and another a world of ideas which are stable and universal. All the things of sense are but mere participations in the eternal ideas. The human soul, Plato taught, existed before it was joined to the human body, and in this pre-corporeal state it contemplated the eternal ideas. All knowledge, then, of the sense world is but a remembering of what the soul saw in a previous type of existence.

The greatest disciple of Plato—and perhaps the most influential figure in all philosophic history—was Aristotle. He was a scientist beyond compare and he did more than any before him to synthesize all the scattered truths contained in the earlier philosophers. He devised the four causes (to which I have already introduced you), he formulated the notions of act and potency (about which you will read a great deal), and most importantly for our course in Logic, he was the first to systematize the acts of the intellect and deduce the rules for proper thinking and reasoning.

After the death of Aristotle, scientists directed much of their attention away from the external world and concentrated on moral philosophy. Leaving speculative science aside and focusing

almost entirely on deriving rules of behavior, the four most recognizable schools of this time—the Peripatetic School, the Stoic School, the Epicurean School, and the platonic New Academy—eventually devolved into a new type of skepticism.

Next came the Neo-Platonic period which was to nearly bankrupt Greek science and profoundly influence the early Fathers of the Catholic Church. Focusing on religion and the spirituality of man, the Neo-Platonists admitted a kind of immediate communication between the human soul and the unfathomable, unknowable inner life of God. This interchange is brought about by means of mystical intuitions and poetical ecstasies which defy the use of logic. There is an easily recognizable similarity between the neo-platonic movement and the modern existentialist revolt. Plotinus and Porphyry were two of the leading figures of this time.

Philosophy for the Church Fathers (from the time of Christ to the seventh century)

When the Fathers spoke on philosophic and scientific matters, it wasn't for the sake of science itself, but for the purpose of defending the dogmas of Faith and reconciling the apparent inconsistencies between pagan wisdom and revealed truth. Hence, most of their works in philosophy took over the prevailing neo-platonic doctrines in defense of Catholicism.

During the time of the Anti-Nicene Fathers we encounter the great apologists Justin Martyr, Irenaeus, Tertullian, Clement of Alexandria, and Origin. Among the Greek Fathers we find Athanasius, Basil, Gregory of Nyssa, John Chrysostom, and Cyril of Alexandria.

Saint Augustine was by far the most learned and prolific of all these Fathers. But he never approached systematic and scientific inquiries into reality. It is impossible to compare his works to those of the philosophic scientists before him or after him: theirs were systems, his was not. Augustine never left the domain of faith and utilized whatever philosophy was available to him for the purpose of apologetics.

Philosophy for the Medievals (from the seventh century to the fifteenth century)

Anyone who wishes to understand Medieval philosophy must understand several important distinctions. First, Medieval philosophy and Scholastic Philosophy are not the same things. While it is true that Scholastic Philosophy had its strongest impetus during the Medieval period, there were numerous other philosophical systems in both the East and West, all vying for the spotlight. Hence, a proper analysis of Medieval scientific systems must be divided into a study of Scholastic systems and a study of the opposing non-Scholastic systems.

Also, we must make a very clear distinction between Scholastic Philosophy and Scholastic Theology. It is one of the greatest historical injustices ever perpetrated that a philosophy proper to Medieval Scholasticism has been denied by modern scholars. The confusion stems from a misunderstanding about the subordinate role that philosophy takes in explaining the dogmas of Faith. But on this distinction between science and philosophy, I've already written at length above.

Scholastic Philosophy

There's little need to discuss Scholastic Philosophy much here, since all that you will be learning in this course is Scholastic Philosophy! But let me at least point out some of the causes which

made this period especially fruitful in the domain of science. First, the works of the Greek philosophers—most importantly, those of Aristotle—were finally translated into Latin and diffused among scholars of the Western world. This was accompanied by the commentaries on Aristotle by the great Arabian scientists of the East. Among the most prominent were Alfarabi, Avicenna, and Averroes. The neo-platonic commentaries of Averroes would lead to one of the most controverted (and condemned) philosophic positions of the era: Latin Averroism. The most dangerous theory put forward by the Latin Averroists (and a theory which was introduced by the Islamic Averroes himself) was that of the 'two-fold truth'. According to this theory, what is true in Philosophy can be false in Theology, and what is true in Theology can be false in Philosophy. In other words, there can be a valid contradiction between Faith and science. Such an opinion was necessary for Averroes given the multifarious absurdities in the Islamic faith, but it was unacceptable for Christianity which held that it was the same God who created the universe as gave Divine Revelation; and there can be no contradiction in God. But this isn't to say that the 'two-fold truth' was the only danger of this system. Latin Averroism also denied personal immortality, the creative act of God, the individuality of the human intellect, etc.

Besides the introduction of the Greek works and the Arabic commentaries, the development of the great European universities was perhaps the most important factor in Medieval philosophic development; many of these universities, such as the University of Paris, still exist today. Finally, the foundation and growth of the Mendicant Orders must be marked also among the great causes of Scholastic growth; first and foremost among these Orders is to be placed the Dominican Order with its heavy emphasis on knowledge and truth. Thomas Aquinas was a product of the Dominican Order.

Non-Scholastic Philosophy

Non-Scholastic philosophy was more prevalent than was pleasant in the Middle Ages. From the pantheist neo-Platonism of John Scotus Eriugena, Bernard of Tours, and David of Dinant to the Jewish, Persian, and Syrian philosophy of the East, to the Latin Averroism of Siger of Brabant, to the rationalism of Raymond Lully and many, many others, Scholasticism and its ideal of science was far from triumphant during this period. In fact, the proliferation of non-Scholastic and profoundly irrational systems of philosophy—systems which were manifestly false in light of the new experimental techniques being developed—were one of the greatest causes of the Enlightenment's rejection of the old doctrines.

Philosophy During the Renaissance

The collapse of the Byzantine Empire, the revolt of the Protestants against the Catholic Church and the ideological rejection of her schools (including Scholasticism), and the resurrection of unadulterated Greek thought in all its rhetorical form was fatal for Scholastic science; Scholastic science which was, by its own fault, becoming corrupted and tedious. The Scholastics of this period were locked in endless dialectical debate about the most insignificant subjects, ever driving themselves from contact with new innovations. The universities became lazy and couldn't compete with the rise of new schools. And the humanists perverted the Scholastic synthesis into a degraded and eclectic Platonic-Aristotelianism. That's not to say that there weren't bright spots. Indeed, proper Scholasticism was still growing, though at an impeded rate, in France, Portugal, and Italy. In fact, some of the greatest Scholastic Thomists were to be found

during this period: Ferrariensis, Cardinal Cajetan, Francis of Vittoria, Melchior Cano, Banez, and the inimitable John of St. Thomas.

Philosophy for the Early Moderns

As decadent Scholasticism and neo-Platonic humanism took center stage, declaring themselves to be 'Philosophy', it's no wonder that in the time of Descartes and Francis Bacon we begin to see the first real wedge being driven between science and philosophy. Philosophy was being identified with the abstract and unattainable, the rhetorical and poetical, the lofty and intangible; while science, utilizing new techniques in induction and controlled experimentation, was holding itself to the ideal that we can only be certain of things which can be directly observed by the senses. Playing into the trap, philosophers came to equate all of their speculations with Metaphysics, such that by the time of Christian Wolff, philosophers were regarding all philosophy as a contraction or I should say and application of Metaphysics to some particular subject-matter.

But it wasn't until Kant came along that the divorce of Philosophy from science was inevitable. In his Critique of Pure Reason, Kant played on popular sentiment and explicitly identified non-experimental science with Metaphysics; and Metaphysics was being taken as the whole of philosophy. He then tried to show, in far too many words, that the subject of Metaphysics was entirely unknowable by the human mind. Unfortunately, many believed him. From that point on, Philosophers were effectively barred from the laboratory. Philosophy would no longer play any significant role in the scientific community. Philosophy and science were two separate disciplines.

Philosophy for the Contemporary Moderns

The split of Philosophy and science haunts us to this day. And the problem is ever worsening. In fact, with the rise in subjectivist systems, Philosophy itself is no longer being considered a discipline at all; even among so-called philosophers! Instead, Philosophy is being treated as though it were history. And the study of Philosophy is but the biographical overview of all those thinkers whom the scientific community refuses to accept as their own. We are not allowed to say that a certain philosopher was right or wrong, we are allowed only to explain what they taught and search for new interpretations of their texts. Even in Thomistic circles, Philosophy has nothing to do with science; it is merely, as I said before, the biography of St. Thomas. Thomists have become textual exegetes, busying themselves with new translations of his texts, and worrying about what it is that Thomas 'really meant', instead of asking themselves, 'is it true?'! Philosophic Science is, for all intents and purposes, dying.

The Neo-Scholastic Revival

An attempt to restore Scholastic Thomism and reconcile Philosophy with the partial sciences began in 1879 under the auspice of Pope Leo XIII after the publication of his encyclical Aeterni Patris. This movement was known as the Neo-Scholastic Revival. In the Encyclical, the saintly Pontiff wrote:

"Among the Scholastic Doctors, the chief and master of all towers Thomas Aquinas, who, as Cajetan observes, because "he most venerated the ancient doctors of the Church, in a certain way seems to have inherited the intellect of all."(34) The doctrines of those illustrious men, like the scattered members of a

body, Thomas collected together and cemented, distributed in wonderful order, and so increased with important additions that he is rightly and deservedly esteemed the special bulwark and glory of the Catholic faith. With his spirit at once humble and swift, his memory ready and tenacious, his life spotless throughout, a lover of truth for its own sake, richly endowed with human and divine science, like the sun he heated the world with the warmth of his virtues and filled it with the splendor of his teaching. Philosophy has no part which he did not touch finely at once and thoroughly; on the laws of reasoning, on God and incorporeal substances, on man and other sensible things, on human actions and their principles, he reasoned in such a manner that in him there is wanting neither a full array of questions, nor an apt disposal of the various parts, nor the best method of proceeding, nor soundness of principles or strength of argument, nor clearness and elegance of style, nor a facility for explaining what is abstruse.

"Moreover, the Angelic Doctor pushed his philosophic inquiry into the reasons and principles of things, which because they are most comprehensive and contain in their bosom, so to say, the seeds of almost infinite truths, were to be unfolded in good time by later masters and with a goodly yield. And as he also used this philosophic method in the refutation of error, he won this title to distinction for himself: that, single-handed, he victoriously combated the errors of former times, and supplied invincible arms to put those to rout which might in after-times spring up. Again, clearly distinguishing, as is fitting, reason from faith, while happily associating the one with the other, he both preserved the rights and had regard for the dignity of each; so much so, indeed, that reason, borne on the wings of Thomas to its human height, can scarcely rise higher, while faith could scarcely expect more or stronger aids from reason than those which she has already obtained through Thomas.

"While, therefore, We hold that every word of wisdom, every useful thing by whomsoever discovered or planned, ought to be received with a willing and grateful mind, We exhort you, venerable brethren, in all earnestness to restore the golden wisdom of St. Thomas, and to spread it far and wide for the defense and beauty of the Catholic faith, for the good of society, and for the advantage of all the sciences. The wisdom of St. Thomas, We say; for if anything is taken up with too great subtlety by the Scholastic doctors, or too carelessly stated-if there be anything that ill agrees with the discoveries of a later age, or, in a word, improbable in whatever way-it does not enter Our mind to propose that for imitation to Our age. Let carefully selected teachers endeavor to implant the doctrine of Thomas Aquinas in the minds of students, and set forth clearly his solidity and excellence over others. Let the universities already founded or to be founded by you illustrate and defend this doctrine, and use it for the refutation of prevailing errors. But, lest the false for the true or the corrupt for the pure be drunk in, be ye watchful that the doctrine of Thomas be drawn from his own fountains, or at least from those rivulets which, derived from the very fount, have thus far flowed, according to the established agreement of learned men, pure and clear; be careful to guard the minds of youth from those which are said to flow thence, but in reality are gathered from strange and unwholesome streams."

His call to intellectual arms was well heeded in some countries, and Scholasticism began once more to flourish in the universities. Among the ranks of the Neo-Scholastics we count Gredt, Hugon, Zigliara, Taparelli, Sanseverino, Pesch, Lorenzelli, Mercier, Cornoldi, Liberatore, Urraburu, Kleutgen, Matussi, and many, many others. Unfortunately, the great strongholds of Neo-Scholasticism were left barren by two world wars, and the last authority of this movement was wiped out by Modernist professors and clergy who had infiltrated the Catholic Church. Whatever hope there was to reconcile Philosophy with the sciences, has been severely weakened by the obliteration of the Neo-Scholastic movement.

The Division of Philosophy (i.e., the division of the sciences)

So, now that we've given the general definition of Philosophy, and now that we've seen, historically, why this definition is no longer the standard one in use, we are going to move on to enumerating the parts of Philosophy. And since the parts of Philosophy are, as we talked about above, the sciences themselves, the division of Philosophy is really the division of the human sciences. Now, it's impossible in this introductory session to give a complete division of all the sciences; that will have to wait until later. Besides, dividing the sciences in their entirety will be one of the last conclusions of Logic, as we'll see.

Sciences can be divided according to the objects with which they deal—and this would be to divide them in virtue of themselves, or formally—or they can be divided according to the order in which we should learn them—that is, in relation to ourselves. So let's look first at how the sciences are divided according to themselves, then according to how our mind should acquire them; keeping in mind that all of this will be dealt with in much greater detail at the end of our course.

In Itself

We can divide sciences according to their purpose, or rather their final causes (that for the sake of which they are acquired), and we can divide them according to their subject-matter, or rather their material cause.

By Reason of Purpose

Properly speaking, the end or final cause of all scientific knowledge is the contemplation of truth. And the intellect rests in this knowledge. This is called *Speculative Science*. It has as its end simply the contemplation of the truth attained. However, the intellect can also extend its knowledge in order to direct that something be done or made. When what is considered is not the nature of a thing in itself and absolutely, but how a thing is to be brought about, we have *Practical Science*. So, for example, when I study the nature of a healthy man, I'm studying a thing that already exists in reality without a view to creating it myself; this is a speculative science called Anthropology. If, however, I'm trying to determine what course of action I should take here and now in order to make this man healthy, I'm studying something that doesn't actually exist (i.e., this man is not actually healthy) but which I want to cause in reality (i.e., I want to *make* him healthy); this is a practical science called medicine. Both speculative and practical sciences study causes; however in the former we're studying the causes which are actually present, while in the latter we're studying the causes which *should* be present in order that some goal be achieved (e.g., the causes which need to be present in order for this man to become healthy).

To put it another way, speculative science remains in the mind contemplating, while practical science extends to the direction of other parts of the body. And it can do this in two ways. First, the intellect can extend this knowledge in order to create something distinct from ourselves—and this we call Art—or it can extend its knowledge in order to direct the will to act morally—this

we call Prudence. So the first division of Philosophy is into Speculative Philosophy and Practical Philosophy. Practical Philosophy is again divided into the Arts and Prudence.

Now, Speculative Philosophy considers everything that man can observe in reality. So how are the various speculative sciences to be divided? To give a full explanation at this point in our study would be very difficult—we'll cover this in depth only at the end of the course—but for now let me put it this way: sciences differ one from another because of a difference in objects. An object is that which is first and fundamentally impressed on a knowing faculty. For example, 'color' is the object of sight because it is what is first visible to us, and it is by means of color that we see everything else such as size and shape; if a thing had no color (i.e., if it didn't reflect light), we wouldn't see it. Again, the object of hearing is sound; if a thing didn't resonate, we wouldn't have any auditory knowledge of it. Now, every new and different kind of object determines or specifies a different kind of knowing. That is, formally different kinds of objects distinguish formally different kinds of knowledge. So because 'color' is formally different from 'sound' we can distinguish two different sensitive faculties; namely, sight and hearing. And it is *only* because we can observe different objects that we are aware of different powers. Thus, a man born without a sense of smell would never think to ask about smells until he realized that other people have something that he does not. So acts of knowing are formally distinguished according to the object that immediately confronts the knowing faculties.

Note well, though, that the 'object' is not the same as the 'thing'. One 'thing' can provide us with many different objects. The dog in front of me provides me with color when I look at him, with auditory vibrations when he barks, with a sensation of softness when I pet him, etc. One thing, many objects. Sometimes, though, we refer to both the thing and the object as 'objects', but we make a big distinction when we do this. The thing itself we call the 'material object' while the particular point of view we call the 'formal object'. So the material object might be the dog, but the formal object of sight is color and the formal object of hearing is sound; just as one material cause can receive several different formal causes, so one material object can present us with a number of different formal objects.

The intellect likewise is confronted with numerous types of objects which it pulls out, or abstracts, from the things we encounter. And just as sense knowledge differs according to a diversity in sensible objects which it encounters in the thing, so intellectual knowledge differs according to a diversity of intelligible objects which it abstracts from the thing. And as many specifically different objects of intellectual knowledge can be abstracted from the things we encounter, so many will be the objects that we can scientifically (that is, intellectually and rationally) investigate.

So how many scientifically intelligible objects can the intellect pull out? Well, first, you should notice that scientific knowledge must be certain and necessary knowledge; that is, scientific knowledge cannot be knowledge which might be false. Scientific knowledge must be true and certain. Otherwise, it's only opinion. 1+1=2. This is certain and necessary knowledge because it can't be in any other way; it isn't possible for 1+1 to equal anything else. But the things we encounter in reality don't provide us with that necessity. I can't say for certain that this dog will bark at the stroke of noon. This dog *might* bark at the stroke of noon. Then again it *might* be dead by 11:30. You see, the dog (and every other particular thing that we encounter with the senses) is always in motion, and a thing in motion is constantly changing; it is constantly other than it was. I don't just mean *local* motion—moving from place to place. But motion in a wide

sense meaning any kind of change. Learning is a kind of motion, nourishing one's body is a kind of motion, receiving visual impressions on the eye is a kind of motion, etc. All the things of the sensible world are in a constant state of motion and, therefore, do not provide us with the necessity and certitude that science demands. So, if knowledge is to be scientific then the object of scientific inquiry must be abstracted from this state of constant change: it must be immobilized. And there are as many different kinds of scientific objects as there are ways of conceiving things by immobilizing them. This process of intellectually immobilizing them is called abstraction.

As we'll learn in this course, there are three ways that the thing can be immobilized; that is, there are three kinds, or degrees, of abstraction.

Natural Science

Notice that the things we sense in reality all have their own matter (i.e., material cause) with its own peculiar, individual characteristics; and because of this particular matter, the things in reality are constantly changing. That statue of Aristotle which is the subject of so much discussion has its own particular matter; namely, that singular chunk of clay that the sculptor used to make it. And that singular chunk of clay has its own characteristics. Maybe it's a little discolored, maybe the density isn't what it should be, etc. etc. This particular matter that goes to make up the singular thing we encounter in the real world is what we call individual sensible matter. It has unique qualities possessed by it and by no other. It is singular, one of a kind, and constantly changing.

But this individual is of no real interest to the scientist. Remember the scientist wants universal, necessary, and certain knowledge. He's not interested in saying 'this clay has such-and-such particular qualities at this particular moment', rather he wants to be able to say 'ALL clay has such-and-such properties at every moment, of this we are certain, and here's the reason why'. Hence, the scientist will intellectual leave behind the individual sensible matter and rise to what we call the first degree of abstraction. In this first kind of abstraction, the scientist leaves behind the individual sensible matter of the things we sense in reality but keeps what we call universal sensible matter. He leaves behind 'this chunk of clay' or 'that chunk of clay' and he keeps only the universal notion of 'clay'. So, once again, the statue in reality has a *form* (e.g., of Aristotle) which is individualized by some particular sensible *matter* (e.g., this chunk of clay sitting in front of me). But the first level of abstraction will abstract from the *particular* or *singular* sensible matter and retain only the *common* or *universal* concept of that matter (e.g., clay in general). Suddenly the scientist is no longer considering this unique statue over here in the corner of the room (i.e., this form in this matter), but rather all statues universally (i.e., form in matter). All scientific investigation into physical reality must make this first kind of abstraction. No scientist stops at 'this flesh' or 'these bones' in particular, because he's wants to know about 'flesh' and 'bones' universally. He leaves aside all the unique characteristics about 'this flesh' and 'these bones' in order to get at what is always and everywhere true about 'flesh' and 'bones' in general.

This first level of abstraction gives us the Physical Sciences. Physical science, as we'll learn, has many, many subdivisions, and all modern scientific investigation will find a place somewhere in these subdivisions.

Now, the physical scientist abstracts from individual sensible matter but he necessarily retains the notions of universal sensible matter. If the scientist is studying the properties which always and everywhere pertain to apple pie, he must abstract from the various apple pies on the table and rise to a universal understanding of apple pie in general. Although this universal notion does not contain any real, singular apples in it (nor individual scoops of sugar and flour), nevertheless, it must still contain the concept of 'apple' considered generally (as well as the common concepts of 'sugar' and 'flour'). If it didn't, then the scientist wouldn't be thinking about an apple pie: an apple pie must be conceived as containing apples (and flour, sugar, etc.). That is, to consider the physical world, we must always conceive of it as containing sensible matter; otherwise we would not be thinking about the natural, physical world.

Mathematics

However, there is another level of abstraction which not only leaves behind the particular sensible matter ('this apple' and 'that bag of sugar'), but also gives up the common/universal sensible matter ('apple' and 'sugar'). This new level of abstraction rises above all sensible matter and considers purely intelligible matter, or rather 'quantity' itself, independently of any material cause. This is the level of Mathematics and the Mathematical Sciences.

The object of Mathematics requires no material cause in order for it to be conceived. While 'apple pie' must necessarily be conceived as having 'apples' as its material cause, 'triangle' does not need to be conceived as 'wooden' or 'plastic' or 'clay' or anything else. The number 2 doesn't need to be considered as 2 apple pies or 2 dogs; but simply as a quantity. The mathematician has abstracted from all sensible matter and has pulled out of physical things an object which is specifically different from the object of physical science. Now, it's quite true that in order for the mathematical object to exist independently of the mind, matter will be required; in order that 'triangle' exist outside our minds it must be 'a wooden triangle' or 'a plastic triangle' etc.—you'll never see 'triangle' floating down the street, but you might see a brass triangle lying in the road. But to be conceived, to be understood, we must leave beside all considerations of sensible matter. Indeed, if we don't do this, we won't properly understand what a triangle is. A triangle existing in the wood (i.e., a wooden triangle) is not really a triangle. If you put it under a microscope, you'll see all kinds of ragged edges and imperfections. To understand the nature of 'triangle' as having three and only three sides, we necessarily have to abstract from all these physical imperfections. So while the physicist considers an object which requires both matter and form in order to be understood (e.g., the form of pie made up of apples, sugar, flour, etc.) as well as requiring matter and form in order for that object to exist, the mathematician considers form alone (e.g., the form of triangle); but a form which would need to have matter if ever it were to exist outside the mind. And both these intelligible *objects*—i.e., quantity, which is the object of Math, and sensible physical natures, which is the object of Physics—are abstracted from the same singular *things* existing in reality. That is, in Math and Physics, we have the same *thing* but looked at from two different points of view, just as sight and hearing both regard the same sensible *thing* but have two different *objects* or points of view. Or in other words, both Math and Physics have the same *material* object (e.g., apple pie), but they each have a different *formal* object (e.g., Physics considers the pie as being a real thing made up of real ingredients, while Math considers it as having height, width, volume, etc.)

Metaphysics

So, math considers beings which do not require matter in order to be conceived and understood but which *do* require matter in order to exist. Now, Physics is going to prove to us that there is another kind of reality; namely, immaterial reality. Once we prove that there *must* exist an immaterial Prime Mover, we will have learned that there are some things which not only *do not* require matter in order to be *conceived and understood* (such as mathematical objects), but which also *do not* require matter in order to exist: we will have discovered that there is a purely immaterial reality. Because of this, there is a level of abstraction which will leave behind not only singular sensible matter, and not only common sensible matter, and not only intelligible quantified matter, but *all reference to any matter whatsoever*. We will no longer be considering what is common to *physical or material being* nor will we be simply considering *immaterial being* but rather we'll be studying what is common to *all being* in general; or as it most often called, *being as being*. This is Metaphysics.

Now, properly speaking, acquiring the object of metaphysics is not really an abstraction, because we're not simply separating an intelligible object from the physical thing; we don't pull out of the physical thing a notion of 'being as being' in the same way we pull out the notes of 'colored' 'soft' and 'smelly'. Rather, it's a kind of separation because we are considering a wholly different sort of reality than the physical things we encounter with the senses. But this is way ahead of our brief introduction. For now just keep in mind that the object of Metaphysics is an object completely separated from reference to matter. Whereas Physics studies objects which require matter both in order to exist and in order to be understood (apple pie can neither be conceived nor can exist without 'apples'), and whereas Math studies objects which can be conceived without matter but cannot exist without matter ('triangle' which must be, for example, a 'wooden triangle' to exist), Metaphysics studies things which do not require matter either to be conceived or to exist (e.g., God, causality, relation, and in general being as being).

So the three most significant divisions of Philosophy based upon the objects which are studied is a division into 1) Physical Sciences, 2) Mathematical Sciences, 3) Metaphysical Sciences.

To sum up:

PHILOSOPHY

1. Speculative Philosophy
    a. Physical Sciences
    b. Mathematical Sciences
    c. Metaphysical Sciences
2. Practical Philosophy
    a. Art
    b. Prudence

In Relation to the Order of Learning

So we have seen how sciences are diversified according to three different kinds of abstraction that the mind can make from the particular things that we encounter in sensible reality. However, none of this means that, psychologically speaking, the sciences are best studied in this order; just because there are sciences of the First Degree of Abstraction, sciences of the Second Degree, and sciences of the Third Degree doesn't mean that we should study the Physical Sciences, then the Mathematical Sciences, and then the Metaphysical Sciences. Quite to the contrary, the learning process of the mind doesn't proceed according to abstractive levels, but

rather from what is better known to us, more general, and more vague, to what is less known to us, more specific, and more clarified. For this reason, if a man were properly educated from his youth he would learn Math before he learns the Physical Sciences, because the concept of the arithmetical 'unit' comes before the concepts used in the Physical Sciences. He would learn Moral Science (which is a specific type of Physical Science) after he learned Psychology (which is another specific type of Physical Science) because how man should act is less clear than what man is. And he should learn Metaphysics only much, much later because it is the most difficult science and it pertains to things which are the least known to us; i.e., immaterial realities. But there is one exception to the rule which demands we go from the easiest sciences to the most difficult: Logic. Logic teaches the method of procedure in *all* sciences and must therefore precede all other studies. Yet, it is an exceedingly difficult undertaking because it is a science objectively located on the Third Level of Abstraction; Logic, as we'll learn, deals with an immaterial reality, namely the *relationships* between our various concepts.

So the proper order of study for a young mind should be the following: Logic, Mathematics, Natural Science (including Psychology), Ethics, and then finally Metaphysics.

COROLLARY: Two Divisions to be Avoided

The Wolffian Division

Christian Wolff (1679-1754) was a German rationalist philosopher of the so-called Enlightenment period who sought a new division of the sciences based upon a very corrupted form of Scholasticism. According to Wolff, Metaphysics is not the last science to be studied. It was not for him the least known and most abstract of sciences. Rather, Metaphysics is the very first science known to man, and all other sciences are a contraction of Metaphysical notions. In other words, every speculative science is just an application of Metaphysics and Metaphysical notions (such as the principle of non-contradiction, Wolff thought) to some object that we encounter; and nearly all the facts of reality can be deduced from these fundamental concepts.

His division of speculative science is this:

METAPHYSICS

1. General Metaphysics (Ontology)
2. Special Metaphysics
    a. Metaphysics of Bodies
    b. Metaphysics of Spirits
        i. Of Created Spirits (e.g., the human soul)
        ii. Of Uncreated Spirits (i.e., God)

Wolff confused the logical and ontological order, and in doing so he inverted the natural progression of the human mind. Instead of beginning with sense knowledge and gradually building up scientific inquiries into reality, Wolff thought that we begin with an analysis of our fundamental notions and then deduce everything else that can be known about reality from these. But while it is true that primary principles such as non-contradiction are *defended* and *explained* by Metaphysics, we *use* these principles without giving them a second thought long before anyone ever questions them or brings them into doubt. So Metaphysics need not logically come

first, even if ontologically speaking it treats of principles which apply to all reality, material or immaterial.

Unfortunately, the Wolffian division of the sciences became very popular in European universities. Many, many scholastic thinkers accepted this division without question and tried to present Thomism along its lines. For them, since Metaphysics treats of all beings in general, the other sciences must just be specific divisions of Metaphysics treating of specific kinds of being. However, as I've already mentioned, and as we'll spend much more time on later, Metaphysics deals with a completely different formal object than does Physics or Metaphysics. Metaphysics isn't related to the other sciences as whole to part (for example, as sense is related to sight, touch, taste, etc.) but as part to part (as sight is related to hearing).

The Wolffian division contributed to the problem I've mentioned a number of times; i.e., identifying Philosophy only with Metaphysics, and leading to its divorce from empirical, observable, measurable investigation. We'll be returning to this division much later on, but for now I warn you to be on your guard when reading certain Scholastic material (especially Jesuit books) written after the time of Wolff. This division is just one example of the many perversions of sound thought which have twisted the old doctrine. The human mind naturally and slowly proceeds from imperfect knowledge to perfect knowledge, from sense knowledge to intellectual conception, from conception to the vast scientific synthesis. The Wolffian division would have us start with perfect knowledge and then work our way down to the things of sense!

The Existential Division

Much akin to the Wolffian division of the sciences (though not intentionally) is the modern existential approach to philosophy proposed by a large number of Thomists who follow the school of Etienne Gilson (1884-1978). Authoritarians claiming to have discovered new meanings in the texts of St. Thomas which somehow eluded each and every philosopher for nearly 800 years, the proponents of Existential Thomism (as it is often labeled) make the primary study of all philosophy a study of what they call 'esse'. Esse is a Latin word properly meaning existence or the act of existing. However, for the Existentialists, 'esse' is grasped intuitively and is a quasi-mystical concept. For many of them (following Gilson), modern science has made the traditional Scholastic sciences totally obsolete, and so Metaphysics is the only science for the Philosopher. Furthermore, all of his philosophic investigations are a gradual evolving of this primordial concept of 'esse' within which he will discover all things. So as Wolff thought we begin with a knowledge of all beings, so Existential Thomists think we begin with a knowledge of all beings as contained in the intuited concept of 'esse'. The truth is quite the opposite, we start with knowledge of material things (though under their most basic notions) and gradually build up to an analogical concept which will include both material and immaterial reality—we don't intuit it from the start; if we did, then we would have no real need to examine reality, but we would need only to examine our own consciousness. Metaphysics, then, is logically the only science for the Existential Thomist. Everything else is just a more specific clarification of our fundamental intuition. That is, there is no formal object in Metaphysics which is in any way different from the formal objects of Math and the Physical Sciences. Even if they refuse to admit it, Existential Thomists implicitly adhere to the Wolffian division and sever Philosophy from modern science.

The Properties of Philosophy

The properties of Philosophy are certain attributes or characteristics of Philosophy which follow from its nature. These are conclusions to what we've examined up until now.

To be the Most Universal Scientific Synthesis

This follows from the fact that Philosophy deals with all beings, whereas each individual science deals with one particular object. Of course, we have to remember that Philosophy deals with only those beings knowable by reason and is, therefore, specifically distinct from Sacred Theology.

To be a Perfect Scientific Synthesis

This follows from the fact that it gives true and certain knowledge of all of reality, whereas experiment and observation (with which most modern science is concerned) is only preparatory to a perfect knowledge of causes and gives us only probable conclusions. We'll discuss the defects of the modern experimental approach later on in the course.

To be a Perfective Synthesis for Man

This follows from the fact that Philosophy is divided into Speculative and Practical. As such man perfects not only his intellect with philosophic knowledge, but he uses this knowledge to create order in the acts of his will.

To be Necessary for Man

This follows from the previous property. Philosophy is necessary for man by teaching him the end of his rational human nature and how he is to pursue it. Furthermore, it teaches him the end of human society, both familial and civil, and the rights that must exist between men in order for the end of the family and state to be attained. Finally, it teaches him the natural obligations which exist insofar as he is a *created* being.

To be the Most Dignified Synthesis for Man

This follows from the fact this Philosophy treats of all beings, including the Divine. Any lower scientific synthesis treats only of created things.

To be Independent of Supernatural Theology

This follows from the fact that Philosophy proceeds under the light of unaided human reason. All sciences have principles, conclusions, and a connection between the two. In Philosophical Science, all of these are proven to the human mind on their own intrinsic merit independently of anyone asking that they be believed. On the other hand, the principles of Theological Science

ultimately depend upon the fact that God has revealed them; that is, they cannot be proven unless we *choose* to accept what has been revealed by God.

To be a Necessary Tool of Supernatural Theology

Though neither Theology nor Philosophy is subordinated to the other, at the very least, Logic will be necessary for the development of Sacred Theology because it is the tool of all sciences. Logic, as we'll see, teaches the universal method by which reason is perfected, allowing man to proceed with ease, order, and without error in any process of reasoning. Theological reasoning is no exception. Furthermore, Theology often borrows principles which are learned from the Philosophical Sciences (e.g., the nature of man) in order to better explain its object. For this reason, Philosophy is often called the handmaid of Theology.

The Causes of Philosophy

Given everything that we've said about Philosophy up to this point, and recalling our discussion of the four causes, we can now lay out in general what the causes of philosophy are.

1. The Intrinsic Causes of Philosophy

    a. *The Material Cause*: The material cause, as we said, was that out of which a thing is made and remains in it. So what makes up Philosophy? What is the matter out of which the Philosophic Sciences are constructed? Subjectively speaking, it is the human intellect, because it is the intellect which is perfected by Philosophy. Objectively speaking, the matter of Philosophy is the object of philosophic inquiry: in general, all beings. The material cause of Philosophy is every being about which we can have human knowledge. Specifically, the matter is physical beings, mathematical beings, and metaphysical beings.

    b. *The Formal Cause*: And what is added to all beings to transform them from what they are into a synthesized and intelligible whole? Human Reason. So when human reason is applied to an understanding of all beings in their entirety we get Philosophy; just as when the form of Aristotle is applied to the clay, we get a statue.

2. The Extrinsic Causes of Philosophy

    a. *The Efficient Cause*: And what is the cause which unites the form and matter; the cause which applies human reason to examining all beings? The human intellect which perceives itself to be in ignorance of a complete and comprehensive grasp of reality. It naturally flees this ignorance and begins to put things together. So the necessary efficient cause of Philosophy is the human intellect, because it is the intellect which investigates reality rational; that is, which applies reason to the understanding of all beings. And the occasion or situation which prompts the intellect to do this is what we call the occasional efficient cause. And there are

two types: the fundamental occasional efficient cause is the state of ignorance in which the intellect finds itself—the proximate occasional efficient cause is *wonder* or the puzzlement of the intellect when it realizes it is in a state of ignorance.

b. *The Final Cause*: And what is the goal in creating Philosophy? Why does the intellect seek to perfect itself? Well, immediately, the goal of the intellect is to rid itself of its ignorance. So we say that proximate final cause is knowledge, or rather perfection of the intellect. And since this knowledge can be used to direct the acts of the will, moral activity (i.e., the perfection of the will) is another final cause. So the proximate final cause of speculative philosophy is the perfection of the intellect, while the proximate final cause of practical philosophy is the perfection of the will. But the intellect and will are only parts of man, and, properly speaking, it isn't the intellect or will which is acting, but rather it is man who is acting *by the use* of his intellect and will. And since the part is always for the sake of the whole, the remote final cause of Philosophy isn't merely the good of the intellect or the will, but the good of man as a whole.

So to summarize all that we have said about the nature of Philosophy, the human intellect in a state of ignorance applies its power of reasoning to all knowable beings, creating sciences and synthesizing them into a comprehensive view of reality, for its own perfection and ultimately for the perfection of man as a whole. Every science finds its place in Philosophy, as every part finds its place in the whole.

FORMAL LOGIC

Introduction

The Definition of Logic

REASONING AND THE SYLLOGISM—What is logic and so what? Is it emotionless criticism worthy of the Vulcan name? If so, it would seem that the logician is almost *inhuman;* at least, that's the message that Spock seems to give. The logical person, he seems to say, denies all those areas which distinguish man from other animals and it turns him into a cold, analytical computer. Quite to the contrary, as we'll see in this course, Logic perfects man in that precise area which makes him to be specifically human: namely, reason. And the emotions aren't denied or destroyed by Logic, but rather, a logical and prudent man will use what Logic teaches to properly discipline the emotions—in this way, anger, love, desire etc. will not be buried deep in the human personality, but instead they will only appear at the right time and in response to the right objects. Logic will actually make man *more* human by perfecting his reason and making it act as it should, just like the medical doctor will perfect the human body and make it perform and function as it should.

But what is reason? And how is it perfected? Perhaps its easiest to explain what reason is by first giving some examples. I have a son, Liam. He's three months old. And one of the things that my wife has impressed upon me is that I need to constantly check his diaper. If it feels wet, then I need to change him. So, about every hour I examine his diaper. And I'll say something to myself along these lines:

His diaper is wet.
Therefore, I need to change it.

In saying this, I've actually gone through an informal process of reasoning. By saying 'therefore' I'm indicating that the second statement follows from the first as a consequence. But there's a third element implicitly contained in my hourly process of reasoning: namely, the command of my wife—if Liam's diaper is wet, then I need to change him. If we were actually to state this command as it implicitly appears in the reasoning, we would get the following:

If Liam's diaper is wet, then I need to change him.
But Liam's diaper is indeed wet.
Therefore, I need to change him.

This fully stated process of reasoning is called a *syllogism*. It's a movement of the intellect from two truths that we know (e.g., my wife's command, and the fact that Liam's diaper is wet) to a third truth that we previously did not know: namely, the conclusion that I need to change Liam now. Before I joined my wife's command with the fact that Liam's diaper is wet, I didn't know for sure whether or not I needed to change him. But by knowing that a wet diaper means 'change him', and by knowing that, in fact, his diaper is wet, the conclusion is *caused* in my mind by certain logical laws. It's these logical laws connecting the statements and the conclusion that we'll be studying in this course.

We go through reasoning processes like this all the time. Whenever we intellectually analyze something, or make decisions about what to do, we use reasoning processes similar to the one above. If we walk outside and see that the ground is wet, we might reason to the conclusion that it rained. We might say:

The ground has become wet.
But a wet ground might be caused by rain.
Therefore, it might have rained.

And to strengthen the likelihood that rain was the cause, we might add other processes of reasoning:

A wet ground is caused by rain if I observe nothing else that could have moistened it.
But I don't observe anything else that could have moistened it (e.g., no sprinklers, no broken water main, etc.).
Therefore the wet ground is caused by rain.

Even when we try to decide where to go out to dinner, we use processes of reasoning. 'Should we go to the steakhouse for dinner?' 'No, I don't like their food'. That is:

We shouldn't dine at a place which gives me displeasure.
But the steakhouse is a place which gives me displeasure.
Therefore, we shouldn't dine at the steakhouse.

And a plethora of examples can be found in political debate:

What leads to a shortage of needed doctors is bad for health care.
But nationalization of health care coverage leads to a shortage of needed doctors.
Therefore nationalization of health care coverage is bad for health care.

Of course, we very rarely state the syllogism in this long, explicit form. We usually just resort to an abbreviated form of the syllogism (e.g., 'Why shouldn't we nationalize coverage? Because it leads to a shortage of doctors.'). And though this might make conversation a lot easier (and a lot more colorful!), it also leads to a lot of mistakes. Often times, what we mean in that abbreviated syllogism contains logical errors of which we aren't aware. Hence, Logic will help us to avoid error by 'blowing up' and exposing the syllogisms that we employ to examine them closely. You'll be surprised just how many arguments used in the political arena are totally fallacious! Then again, maybe you won't be... The point is that all human discourse employs this syllogistic reasoning. Literature, poetry, and scientific inquiry cannot escape from the fact that the mind, in coming to new knowledge, always works in syllogism. And in this course we will take examples from each to 'blow up' the syllogisms and analyze them. This 'blowing up' is what we call putting arguments into *strictly syllogistic form*.

Let's take a passage from St. Thomas to see the process of reasoning contained within it:

"It is natural for man, more than for any other animal, to be a social and political animal. For all other animals, nature has prepared food, hair as a covering, teeth, horns, claws as means of defense or at least speed in flight, while man alone was made without any natural provisions for these things. Instead of all these, man was endowed with reason, by the use of which he could procure all these things for himself by the work of his hands. Now, one man alone is not able to procure them all for himself, for one man could not sufficiently provide for life, unassisted. It is therefore natural that man should live in the society of many."[7]

The argument contained in this passage might be 'blown up' as follows.

[7] De Regno, L. I, c. 1, n. 5

A creature which cannot procure all the natural provisions for life without assistance of others, is a creature which is naturally ordered to live in society.
But man is a creature which cannot procure all the natural provisions for life without assistance of others.
Therefore, man is a creature which is naturally ordered to live in society.

Putting the argument in this very clear form we see that the inability to procure all of life's necessities is being used to compare two things: namely, man and the natural ordering to live in society. In this example, Thomas is arguing syllogistically that providing for all of life's necessities is the final cause or reason why man is naturally ordered to live in society.

The arguments of St. Thomas are some of the clearest ever written. Pick out a few other passages in Thomas's writings and see if you can put them in this strictly syllogistic form.

LOGICAL RELATIONS or SECOND INTENTIONS—THE OBJECT OF LOGIC—When a thing exists outside of the mind, it has certain physical properties and characteristics. A baseball, for example, has a certain weight, diameter, hardness, temperature, etc. But when it is conceived, it takes on certain logical characteristics which belong to it precisely in this mental existence. For example, the baseball becomes a 'noun', and in the statement, 'a baseball was pitched' it becomes a 'subject' while 'pitched' is the predicate. So everything has a twofold set of properties: one set as it exists outside the mind, and another which are added to it only when it is conceived by the intellect.

Take the following example of reasoning:

If Joe is a pitcher, then he is baseball player.
But Joe is a pitcher.
Therefore, he is a baseball player.

Joe and the game of baseball are real things that exist independently of the mind. You can see Joe, you can go to a baseball game, you can throw out a pitch, etc. But there is something in the syllogistic argument that can't be touched, or watched, or tasted, or in any way sensibly experienced. There is something in the argument that exists in the mind along and is known only by the intellect. Namely, the relationship between *if* and *then.* The if-then statement is nothing real; it doesn't exist outside the mind and you'll never encounter it walking down the street. Joe is a physical reality and exerts a real cause on the motion of the baseball he is throwing. This force which he exerts as a pitcher can be studied, measured, and varied. The physics of throwing out a baseball has its own properties and determinable laws. But the physicist will never bottle up the 'if-then' relationship and put it under a microscope. Nevertheless, it has its own laws which can be known and studied. The 'if-then' relationship with all its knowable properties and laws is just one example of a *logical relationship*. While the physicist might be interested in the density of the ball, the speed of the pitch, and the relationship between the two, Logic is interested in things like the relationship between 'if' and 'then'. Imagine if we were to say:

If Joe is a pitcher, then he is baseball player.
But Joe is a baseball player.
Therefore, he is a picher.

As we will learn later, this violates a special law of reasoning. Just because Joe is a baseball player it doesn't follow that he is a pitcher. He might be a right fielder, for instance. If the argument were true, then everyone playing baseball would be a pitcher. So we have two kinds of orders that can be

examined here. We have the real physical order with which the physicist deals when examining the velocity of the ball, or the ability of Joe to toss out a pitch; and we have the logical order which considers Joe, not as a physical being, but as a part of the if-then relationship. Studying this non-physical way of existence is what concerns the science of Logic.[8] And as we'll learn there are determinate rules which govern these logical relationship; not only the 'if-then' relationship, but the subject-predicate relationship, the principle-conclusion relationship, and many, many others.

Let's take a few more examples.

Every corporeal (i.e., bodily) being is corruptible (i.e., can be broken apart).
But every man is a corporeal being.
Therefore, man is corruptible.

Man and bodily beings are real things that exist outside the mind. But in this syllogism bodily being is related in a special, logical way to man and corruptibility. As we'll learn later, this special way of being related is called the 'middle term'. Corporeal being, in the syllogism, is related as the middle term which joins man and corruptibility. And because the relationship of corporeal being to the other terms is employed validly here (i.e., it doesn't violate any logical rules), the conclusion follows from the premises. Because the logician knows what a middle term is, and because he knows the rules for uniting two terms by means of a middle term, he can look at this syllogism and pronounce that the reasoning is good. But what happens if we are to switch a few things around? What if we said:

Every corporeal being is corruptible.
But every man is a corruptible.
Therefore, every man is a corporeal being.

Well, the conclusion is perfectly true, but this is not a good process of reasoning. One of the rules of logical relationships is being violated here. As we'll learn a little later, 'corruptible' is being used as a middle term uniting man and corporeal being, but it's not supposed to be doing this. Let's use a more obvious example to illustrate the point:

Every plant is corruptible.
But every man is corruptible.
Therefore, every man is a plant.

The process of reasoning used here is exactly the same as the previous example, but we can clearly see that an error has been made. It's not necessary that you know right now exactly what that error is, but you need to understand the importance of examining the logical relationships that exist between our various concepts. An improper change of relationships will lead to a very troublesome reasoning process. These relationships are the object of the Science of Logic.

The rules governing logical relationships are not always easy to see. As with the laws governing physical reality, it often takes much laborious inquiry and a long time at study in order to determine them with precision. Only a person who makes the effort to know and understand these rules will be able to reason well; and he who devotes the time necessary to mastering these rules will not only be able to

[8] In I Post. Anal, lect. 2.

reason well, but he will be able to defend everything that he says, and he will be able to destroy the erroneous arguments of others.

THE SCIENCE AND ART OF LOGIC—Now, when it comes to judging that rain causes the ground to be wet, as we used in an earlier example, most people have no problem with this reasoning process. It's quite easy to see that no other explanation will adequately account for the outdoors being so hazy and wet. Even people who have never taken a course in Logic can make such simple syllogistic processes. In fact, some of the greatest scientists have never been formally schooled in Logic. Yet, they are generally competent in making rather complex rational arguments. This is because everyone has the natural ability to reason. Since we first formed propositions as children we have been actively reasoning about the world. This innate, native ability to move from previous knowledge to new knowledge by means of syllogizing is as natural a function of the mind as growing and nourishing is to the body. But there is still a big difference between the two.

The growing body is naturally ordered to grow in a certain way; it is determinate in its processes and these natural inclinations cannot be changed. The body will always to tend to grow in one way, and any variation will mutilate the body. But the intellect is not so determined. In fact, in judging about things—that is, in saying that such-and-such is true or such-and-such is false—the intellect is not at all determined by nature. It may judge something to be true which really is true, but then again, it might judge something to be true when in fact it's false. Though the intellect naturally judges and naturally reasons, it doesn't always reason correctly about this or that particular material. In a similar fashion, our fingers naturally move, but they don't naturally move in a manner required for, say, playing the piano. If they did, then everyone would naturally be a pianist. But we aren't all pianists. To become a pianists we have to learn specific rules for moving our fingers in such-or-such a pattern in order to strike the keys in the right way. The movement of the fingers is indeterminate to playing any instrument (be it piano, or trumpet, or violin), and we require—in addition to our natural ability to move them—the art of piano playing by which our fingers are determined to move in a way suited to playing the piano.[9] So by examining the motions of the fingers we develop certain rules by which the fingers are best disposed to playing the piano; we might call this 'piano theory' or the 'science of piano playing'. And by consistently moving our fingers according to the rules laid down in the 'science of piano playing' we will gradually develop the habit or 'art of piano playing'. Only then will we be pianists.

The intellect works in the same way. Though we all have the natural ability to reason (just as the natural ability to move our fingers), we don't always employ this properly to get the desired effect; namley, true and certain knowledge. Occasionally, by the natural ability to reason alone we get lucky and reach true and valid conclusions—just as occasionally the new piano student can play a passage perfectly—but we only possess the art of reasoning when we can do it consistently and without much effort—just as the student only becomes a pianist once he can consistently and easily play the same passage without making any mistakes. So in addition to our natural ability to reason, we will require a habit of consistently reasoning well and without error. This is what we call the art of Logic. And just as the rules for playing the piano have to be laid down first before we can knowingly practice piano playing in agreement with those rules (i.e., the 'science' of piano playing must precede the 'art'), so the 'science of reasoning well' must precede the 'art of reasoning well'. In other words, we only get the art of reasoning well when we know the rules laid down by the science of reasoning well and we make a concerted effort to reason according to those rules until we have developed the habit of good

[9] I-II, q. 57, a. 3

reasoning. The term 'logic' then refers to the Science of Logic which studies the logical relationships present in the syllogism and lays down rules for reasoning well; but it also refers to the Art of Logic which is the habit of reasoning well that we acquire but constantly reasoning accordance with the laws laid down by the Science of Logic. Our course is in the Science of Logic. We will examine the various logical relationships that exist in the syllogism and we will lay down the laws for proper reasoning. But we learn the Science of Logic in the hopes that you will practice thinking in accordance with the laws until you develop the habit of thinking clearly, orderly, and error-free: we study the Science in hopes that you will acquire the Art.

From all that we've said, it's easy to see why Logic has come to be nominally defined as 'Rational Science' or 'the science and art that directs the acts of reason'. It's not only concerned with studying the acts of reason or determining what these acts are—such is really the domain of psychology—but it's interested in determining how these acts of reason *ought* to be ordered so that reasoning is right and true. Logic is called rational science not only because it is reasoned knowledge (*all* science is reasoned knowledge) but because its final cause is to determine how best to exercise and coordinate our mental operations for the sake of acquiring truth while exploring the various areas of the knowable universe. Hence, according to its etymology, Logic is nominally defined as the art or science of reason.

St. Thomas puts all this very succinctly:

> In the beginning of his Metaphysics, Aristotle state that the human race lives by art and reasoning. He seems to touch here on something properly human, which distinguished man from the other animals. For while the brute animals are moved to their actions by natural instinct, we direct our actions by rational judgments. To enable us to carry out these actions easily and in an orderly way, we have invented many arts. For an art is nothing other than a certain ordering of reason by which human acts achieve a suitable end through determinate means.
>
> Now reason is able to direct not only the acts of inferior faculties, but also its own acts. For the capacity to reflect upon itself is proper to the intellectual power; the intellect understands itself and, similarly, reason can reason about itself. Now, if by reasoning about the acts of the hand, we discovered the art of building, and this art enables us to build easily and in an orderly way, then, for the same reason, we need an art to direct the acts of reason, so that in these acts also we may proceed in an orderly way, easily, and without error. This art is logic, the science of reason.
>
> Logic concerns reason not only in the sense that it is according to reason (this is common to all the arts), but also in the sense that it is about the acts of reason itself as its proper matter. Therefore, it seems to be the art of arts, inasmuch as it directs the acts of reason, from which all the arts proceed.[10]

So to give the real definition of the **Science of Logic** we would say that it is *the rational investigation of logical properties determining the rules by which the operations of the intellect are directed to attaining truth.* And the real definition of the **Art of Logic** would be *the habit by which man may proceed with ease, order, and without error in the very acts of reason themselves.*

The Divisions of Logic

[10] In I Post. Anal., prooem.

So we've seen that Logic is divided into the Art of Logic and the Science of Logic. How else is it to be divided?

Logic is a kind of mental construction; it builds up in our intellects a complex construct of various relationship; it builds arguments and sciences. Now, in any kind of construction we have to consider two things: namely, the material or matter out of which the construct is built, and the form which is given to that matter. So in building a house, we have to consider what will be used to build the house (e.g., stone or wood or brick, etc.) and we have to consider how that material is going to be arranged (e.g., four walls, a proper foundation, a roof which will protect from the elements, etc.). Knowledge of both the matter and form will be required to properly construct a house. Even if an architect has an exact knowledge of blueprints and knows precisely how to arrange all the parts to create a perfect home, nevertheless the house isn't going to stand if he picks an inferior material. On the other hand, even if he knows the strongest and best materials to use in building a house, even if he knows the absolute best material for constructing a roof, this won't matter at all if he doesn't have any knowledge of the blueprints. Hence, both matter and form are necessary in the construction of something.

Logical constructions are no different. The matter of the syllogism, and hence the matter of reasoning, is the concepts and propositions that go to making up the argument; while the form of the syllogism is the particular disposition of those concepts and propositions within the syllogism itself. So in the syllogism:

Every animal has senses.
But man is an animal.
Therefore man has senses.

'Animal', 'having senses', and 'man' are the matter, but also the propositions 'every animal has senses' and 'man is an animal' are the matter. The form, however, has to do with the arrangement of this matter within the syllogism. The form in this example might be expressed as follows:

Every A is B
But C is A
Therefore, C is B.

If we want to have a good and proper syllogism we need to know not only how the concepts and propositions should be arranged (i.e., the form of reasoning), but we also need to know what types of concepts and propositions these should be (i.e., the matter of reasoning). Take the following example:

Every bird can fly.
But pigs are birds.
Therefore, pigs can fly.

Notice that this follows the *exact same form* of the previous argument (Every A is B, but C is A, therefore, C is B); from the point of view of this form we have a perfectly valid reasoning process. No one can deny that if A is B and C is A then C will be B. Yet the conclusion isn't true. Pigs don't fly. For true reasoning it isn't enough that the form be *valid* but the material which is plugged in for A and B and C must be the right kind of material. Take the following examples:

Every man is an animal.

But all animals require nourishment.
Therefore man requires nourishment.

All soccer balls are donkeys.
But all men are soccer balls.
Therefore, all men are donkeys.

Both examples follow the exact same form of reasoning—all A is B, but all B is C, therefore all A is C—and consequently they are both *valid* processes of syllogizing. But there is a big difference between the two. In the first example, every statement is true and as a consequence the conclusion is true. But in the second example, *none* of the statements is true; the matter is not what it should be. So there is a big difference between the form of reasoning and the matter of reasoning. When the form is as it should be a syllogism is said to be *valid*. When the matter as well as the form is as it should be the syllogism is said to be *true.*

Let's take three more examples:

1) Every animal has senses.
But man is an animal.
Therefore man has senses.

2) Every animal is rational.
But a dog is an animal.
Therefore, a dog is rational.

3) Every animal is living.
But every living thing has senses.
Therefore, everything with senses is living.

In the first example, all the statements are true and the reasoning process is valid. It's a good syllogism in regard to both matter and form. In the second example, the reasoning process follows the same form as the one before it, but one of the statements is false; i.e., it fails to be a good syllogism because of its matter. Hence, it is valid but not true. In the third example, we have defects in both matter and form: it's not valid to argue Every A is B, but every B is C, therefore, every C is B. And it's not true that every living thing has senses (some living things are plants).

So the science of Logic studies both the form and matter of reasoning. *Formal Logic* is that part of Logic which studies what must be the disposition or arrangement of concepts and propositions so that reasoning be correct and valid. *Material Logic* is that part of Logic which teaches what the content and mode of expression of concepts and propositions must be in order that the conclusion of reasoning be true and certain. This semester we will be studying Formal Logic, next semester we will be studying Material Logic.

Formal Logic

Now, Formal Logic is subdivided according to what we will call the three operations of the intellect. So far we have seen a good number of examples of the syllogism or reasoning. This is the process by which

the mind gradually progresses from old knowledge to new knowledge which was potentially contained in the old[11]:

Every man is an animal.
But all animals require nourishment.
Therefore man requires nourishment.

But before it can undertake this rational process of combining judgments together, the mind must first *make* those judgments; that is, it must judge that 'every man is an animal, ' and it must judge that 'every animal requires nourishment.' But that's not all. Before it can judge that 'every man is an animal' and 'every animal requires nourishment', the intellect must know what man, animal, and nourishment are. It must apprehend the concepts of 'man', 'animal', and 'nourishment.' So in order to reason, the intellect must first judge, and in order to judge the intellect must first apprehend. So we have three operations of the intellect, one ordered to the next.[12] And these are:

Simple Apprehension
Judgment
Reasoning

Simple apprehension is the intellectual act whereby you conceive of something without affirming or denying anything about it. So I think 'animal' without asserting or denying anything about the nature of animal. I don't think 'animals are living' or 'animals are not plants'. I simply apprehend a nature or essence or, what we will call, a 'quiddity'. Quiddity means the essence of a thing. It's derived from the Latin question 'quid est?' or 'what is it?' A quiddity is anything which can be conceived by the intellect and manifests what a thing is. Thus, man, whiteness, learned, animal, nourishment, etc. are all quiddities. In simple apprehension I conceive of a quiddity, even if only vaguely and obscurely, without affirming or denying anything about it.

Judgment is the act of the intellect whereby is composes or divides concepts by affirming or denying them of each other.[13] Hence, 'animals require nourishment' composes or joins together the simply apprehended concepts of 'animal' and 'nourishment' by affirming (or 'predicating', as we will call it) nourishment of animal. Again, 'no animal is a plant' divides or separates the concepts of 'animal' and 'plant' by denying or negating plant of animal. When I say 'man is an animal' my intellect is assenting or approving or 'seeing' the composition of the predicate 'animal' with the subject 'man' in the same subject; that is, the intellect is apprehending not just the concepts but its understanding that the thing represented by the subject (i.e., man) and the thing represented by the predicate (i.e., animal) are found together in reality outside the mind identified in the thing being observed and considered (i.e., the man being studied). Whereas there is no logical truth in simple apprehension (e.g., the concept 'nourishment' is neither true or false), there is indeed truth and falsity in the judgment (e.g., it is false to deny nourishment of animal, and it is true to deny plant of animal). When we compose what is separated in reality or separate what is composed in reality, we have falsehood.

[11] I, q. 79, a. 8.; De Veritate, q. 15, a. 1

[12] In I Post. Anal., lect. 1, n. 4; In I Periherm. (De Interp.), lect. 1, n. 1-2; In III De Anima, lect. XI; I, q. 85, a. 5.

[13] De Veritate, q. 14, a. 1

Simple apprehension and judgment are the elements of reasoning. And everything composed of elements depends on the integrity of those elements for its own integrity; as they say a chain is only as strong as its weakest link. So in order to properly build up the syllogism we must deal with each operation in turn. That is, if Logic wishes to perfect the intellect's ability to reason, it must also perfect (insofar as it can) the intellect's ability to apprehend and to judge. For this reason, Formal Logic is divided into the Logic of the First Operation (i.e., simple apprehension), the Logic of the Second Operation (i.e., judgment), and the Logic of the Third Operation (i.e., reasoning).

Material Logic

Material Logic is also subdivided. The goal of logical training is to lead the mind to perfect knowledge; knowledge which is not only true, but certain as well. That is, knowledge which cannot possibly be false. When we have a syllogism that leads to knowledge that cannot possibly be in any other way then we have demonstrative knowledge. In demonstrative knowledge, the intellect has no choice but to assent to the conclusions; it sees why the conclusion necessarily follows from the premises and it sees why the opposite cannot possibly be true.

So: a plane figure with three sides necessarily has three interior angles equal to 180 degrees.
But an isosceles triangle is a plane figure with three sides.
Therefore, an isosceles triangle necessarily has three interior angles equal to 180 degrees.

This syllogism is absolutely certain; the premises are certain because this is definition of a triangle and the conclusion is certain because it validly follows from the certain premises. The conclusion is demonstrated.

But sometimes, the intellect is not so compelled by the evidence given to it that it necessarily assents to the conclusion. Sometimes the propositions or judgments that make up the syllogism are not unquestionably certain and true, but they are only *probable.* To be probable means to be 'open to debate'. A probable premise is one which might be true but nevertheless doesn't exclude the possibility that it is false. So when we say,

All mothers love their children.
But Jane is a mother.
Therefore, Jane loves her children.

The first proposition, namely, that all mothers love their children, is not necessarily true. Though nature gives each mother a natural inclination to care for their children, we know from sad experience that some mothers violate this natural tendency and despise their children. So the conclusion that Jane will love her children just because she is a mother follows only with a certain amount of probability, but it's open to debate. Syllogisms that don't remove all demonstrate something, that is, syllogisms that lead to a conclusion which may be true but may be false pertain to what we call Dialectic. Dialectic is the part of Logic which establishes a method of arguing from probable principles. Most modern science makes use of dialectic. When the botanist notes that plant A exerts a certain gas, and plant B exerts the same gas, and plant C as well, and then notices the same gas being given off by plants D, E, F, and so on, he might conclude that *all* plants give off this gas. But his conclusion is only probable. Why? Look at his argument:

What is true of plants A-Z is true of all plants.
But giving off this gas is true of plants A-Z.
Therefore, giving off this gas is true of all plants.

His first proposition is only probably true. Perhaps plant YYY doesn't give off this gas, but the botanists stopped just before examining plant YYY. As it stands, his conclusion is only probable; that is, it might be false. He will require more evidence to demonstrate his conclusion. It must be proven, which is why a probable proposition might also be called *provable* ('probable' comes from the Latin 'probare' meaning 'to prove').

Now, Demonstrative Logic and Dialectical Logic appeal directly and exclusively to the intellect. In demonstration the intellect is compelled to assent to the conclusion because it sees that something is true and it sees that the opposite must be false; in dialectic the intellect sees that the conclusion is *possible* but makes no irreversible commitment to the truth or falsity of the conclusion. However, there is a lower level beneath dialectical argumentation which appeals not only to the intellect, but to the will as well. And we call this Rhetoric.

In Rhetorical argument, the intellect is not compelled by the evidence to believe one side or another just as in dialectic, but the arguer intends to *persuade the will* (not the intellect) to *choose* one side over another; to accept a conclusion not because the intellect sees evidence to support that conclusion, but because it is proposed to the will as something which is *good* to believe. In other words, the rhetorician doesn't want to prove anything to you. Rather, he wants you to believe that it is a *good* thing to accept his position and a *bad* thing not to accept it. He is not concerned with truth, but with desire. Rhetoric makes up the bulk of modern political debate. Rarely will you here a politician or political commentator appeal to the intellect through cogent, reasoned arguments defending and proving his position. Instead, he will try to persuade you that undesirable things will follow if you don't believe him and accept his position.

Now, even lower than Rhetoric we have the domain of Poetics (sometimes called 'Literary Argument). Poetics is the lowest form of reasoning. It makes almost no appeal to the intellect; its syllogisms are fraught with abuse and equivocation or, sometimes, missing entirely. Poetics is an attempt to persuade you to accept a position because of a pleasing or displeasing representation. Describing an event with harsh and unpleasant words is a poetic tool; by using words that upset us, it is hoped that you will reject what is taking place at that event. Speaking of a political proposal with words that make us feel good is the same kind of argument. It is hoped that we will accept it because of the way it makes us feel. Poetical argumentation, then, makes no appeal to the intellect or to logical proof. It is aimed at the emotions; it is an attempt to manipulate the passions in the hope that we will follow *them* instead of reason. Hollywood documentaries are a prime example of poetics. We accept the charge to combat global warming because we feel sorry for all the images of polar bears stranded on melting ice. Never mind the scientific evidence in favor or against man-made global warming, and never mind the rational examination of our obligations to animals; no, we accept global warming and our duty to end it merely because the images make us feel guilty. Poetical argumentation, for all its beauty and use, becomes an insult to man's rational nature when it forces him to act contrary to the dictates and commands of reason. And spotting poetical argumentation can be very simple: it usually involves the word 'feel' (as in 'don't you feel...' or 'I just feel that...').

Now, sometimes reason fails completely in making an argument because of some defect or substantial error in its reasoning. This is called Sophistry. We won't study this in Material Logic. Instead, we study it at the end of Formal Logic because all sophisms, as we will see, are defects in the *form* of reasoning, not in the *matter* of reasoning.

So depending on the matter which is used, reasoning can either be Demonstrative, Dialectical, Rhetorical, or Poetical. Hence, Material Logic is divided into those four branches. In the second semester of our course, however, we will only study Demonstration and Dialectic. The reason is because Rhetoric and Poetics require a knowledge of the passions and the will, and these aren't studied until you reach Psychology. Demonstration and Dialectic, on the other hand, make no appeal to the passions or will, but only to the intellect.

St. Thomas summarizes what we have seen while commenting on Aristotle:

The parts of Logic must therefore correspond to the different acts of reason, of which there are three. The first two belong to reason insofar as it is a kind of intellect [i.e., insofar as it simply *understands* without moving itself through a syllogistic process]. The first of these is the understanding of indivisible or simple things [i.e., the simple apprehension of a quiddity], the act by which we conceive what a thing is (some call this act 'intellectual representation' or 'intellectual imagination.') Aristotle's teaching in the *Categories* is ordered to this act of reason. The second act of the intellect is the composition or division of things that are understood, the act in which truth or falsity is found [i.e., judgment]. Aristotle considers what pertains to this act in his *On Interpretation*. The third act is proper to reason itself; it is the act by which we proceed from one thing to another, so as to arrive at a knowledge of the unknown from the known. The remaining logical treatises [of Aristotle] pertain to the third act of reason.

In certain respects, the acts of reason are similar to natural acts (hence, art imitates nature as much as possible). Now, natural acts differ in three ways. In some of them, nature acts with necessity so that it cannot fail. In others, it usually achieves its proper act, although it sometimes fails. Here there are two possible acts. One takes place for the most part, e.g., when a physically complete animal is generated from the germ cells. The other takes place when nature fails to achieve the appropriate result, e.g., when an abnormal animal is born, because of a defect in the generative process.

This threefold difference is also found in the acts of reason. One process of reasoning leads to a necessary result where truth cannot fail [i.e., Demonstration]. Through this process we acquire the certitude of science [by which Thomas means true and certain knowledge demonstrated by the syllogism]. Another process attains truth for the most part but not with necessity [i.e., Dialectic, Rhetoric, and Poetics]. A third process fails to attain truth because of a defect in some principle which should have been observed in the reasoning process [Sophistry].

The part of Logic concerned with the first process of reasoning is called the 'judging' part, because judgment achieves the certitude of science. Now, we cannot judge about effects with certitude unless we resolve them into their first principles [i.e., all demonstrative syllogisms must ultimately rest on self-evident judgments which cannot be doubted, as we'll learn later]. Therefore, the judging part of Logic is called 'analytics,' i.e., the analyzing or resolving part [i.e., tracing the processes of reasoning back to the self-evident judgments on which they are based]. The certitude of judgment achieved through analysis is based either on the form of the syllogism alone or, together with the form, on the matter of the syllogism, i.e., on propositions which are *per se* and necessary [we'll learn about these later]. The analysis based on the form [i.e., Formal Logic] is treated in the Prior Analytics, which considers the syllogism in itself, and the analysis based on matter [i.e., Material Logic] is treated in the Posterior Analytics, which considers the demonstrative syllogism.

The part of Logic which pertains to the second process of reasoning is called the 'inquiring' part. Inquiry does not always arrive at certitude; hence, what is discovered by inquiry must be submitted to judgment before certitude is possible. Just as among the natural processes which occur for the most part, there are various degrees (for the stronger a natural power is, the rarer its failure to achieve its proper effect), so, among the rational processes which lack certitude, there are various degrees, depending on how closely each on approaches to perfect certitude.

One such process, while falling short of science, *does* achieve belief or opinion because of the probability of the propositions from which it argues. Reason fully embraces one part of a contradiction, though not without some

fear that the other part may be true. The part of Logic which is called 'topics' or 'dialectics' is ordered to this rational process, since the dialectical syllogism proceeds from probable premises. Aristotle treats of it in his Topics.

There is another process which does not fully achieve belief or opinion, but only a kind of suspicion. Reason does not fully embrace one part of a contradiction, although it does tend more towards one part than the other. The art of Rhetoric is concerned with what pertains to this rational process.

Sometimes we are moved towards one part of a contradiction by nothing more than a kind of regard or esteem resulting from the way something is represented. This is analogous to the way in which a particular food appears disgusting when it is represented in the image of something disgusting. The art of Poetry is ordered to this. For the poet's vocation is to guide us towards what is virtuous by representing it as attractive.

All of these pertain to the part of philosophy which concerns reason, since it is by reason that we are led from one thing to another.

The part of logic concerned with the third rational process is called 'sophistics' and is treated by Aristotle in his On Sophistical Refutations.[14]

EXERCISES: Before we start learning the rules of reasoning, let's test your Natural Logic and see just how well developed it is. In the following arguments, pick out the conclusions which validly follow from their premises and those which do not follow. For the latter, give the reason why they do not follow from their premises.

1. Since Americanism is opposed to Socialism and Socialism is opposed to Fascism, if follows that Americanism is opposed to Fascism.
2. Every vegetative being is living; but every sentient being is living; therefore, every vegetative and every sentient being are living.
3. Since no triangle has five sides, neither can any square have five sides, for no square is a triangle.
4. No ape is rational, because some animal is rational, and no ape is an animal.
5. What's immaterial is inconsequential; thus thought is inconsequential, since thought is immaterial.
6. Since all Socialists are threats to the integrity of our country, then all juvenile delinquents are Socialists, because all juvenile delinquents are threats to the integrity of our country.
7. The poor have little money; but John's health is poor; therefore, John's health has little money.
8. Since no rectangles are three-sided, it follows that some plane figures are not rectangles because some plane figures are three-sided.
9. No illegal immigrant has the right to vote in the U.S. This man is not an illegal immigrant, and therefore he has a right to vote in the U.S.

[14] In I Post. Anal., Proem.

10. All men are intelligent beings, and all intelligent beings are possessed of free will; hence, all beings possessed of free will are men.

11. Football players are the campus ideal. But John is a football player. Therefore John is the campus ideal.

12. Since no syllogisms are inductive, and some syllogisms are probable arguments, then some probable arguments are not inductive.

13. Since all men have the right to health care, and since the government must ensure that to which everyone has a right, it follows that the government must provide universal health care coverage.

14. Since it is true that all Texans are American, it follows that:

    a. It is false that all Americans are Texans

    b. It is true that all who are not Americans are not Texans.

    c. It is true that some Texans are Americans

    d. It is true that no Texans are non-Americans

    e. It is false that some Texans are not Americans

State whatever conclusions validly follow from the premises given below:

1. Courteous people are not always talking on their cell phones; irritating people are always talking on their cell phones; therefore...
2. Clever politicians rarely admit a controversial position; careless politicians always say too much; therefore...
3. Nothing that is useful should be avoided; internet theft is useful; therefore...
4. Congress should do nothing that doesn't benefit the good of the American people; but this stimulus bill is for the good of the American people; therefore...
5. Eminent domain gives the government the moral right to take private property which is not being used in the best interests of all; but this private property is not being used in the best interests of all; therefore...

The following is a short passage from John of St. Thomas' book, *Ars Logica*. In the text, he argues briefly for the necessity of Logic. See if you can put this argument into a syllogism:

"The necessity of this art is the greatest both for the reason general to all arts which are necessary, so that a man be directed correctly and without error in his works; and especially because Logic directs the works of reason on which all inference and reasoning depend in order to be correct and to proceed with order and without error. Certainly this is exceedingly necessary for a man using his reason."

Formal Logic of the First Operation: Simple Apprehension

As we've seen, Formal Logic sets forth the rules and laws governing the arrangement of our concepts in the syllogistic process of reasoning. And since we can't reason without judging, and since we can't judge without simple apprehension, Formal Logic is divided into three parts: The Logic of Simple Apprehension, or what pertains to simple apprehension, The Logic of Judgment, or what pertains to sentences and propositions, and The Logic of Reasoning, or what pertains to the syllogism.

So the first operation of the intellect, the first act which is elicited by our mind is called Simple Apprehension. It's the operation by which we 'perceive' or 'simply know' the nature of a thing in an abstract way; i.e., in a way which leaves behind all of that thing's peculiar, individual characteristics. And following our general method of procedure, we will start by asking what simple apprehension is in general (i.e., we will inquire into its definition); then we will examine it specifically by looking at all the different kinds of simple apprehension (i.e., we will examine its divisions). Now, the kinds of simple apprehension are varied according to the kinds of *concepts* produced by simple apprehension. Hence, our division of simple apprehension will be a division of the concept. Furthermore, since language is the external sign which is expressed to communicate our concepts to others, after we examine the concepts themselves, we will examine the signs by which they are communicated.[15]

The Definition of Simple Apprehension

Simple apprehension is defined as the operation by which the intellect knows (i.e., cognizes, perceives, understands, etc.) some quiddity (i.e., essence) without affirming or denying anything about it. By this knowledge or apprehension the *concept* is produced.

Explanation of the Definition

So let's take that definition apart and look at each element. First, simple apprehension is an *operation of the intellect*. This is common to simple apprehension, judgment, and reasoning. All three of these acts are, as we said, operations by which the intellect gradually perfects itself in understanding reality. Second, by this operation the intellect perceives some *quiddity*. A quiddity is the essence or nature of a thing. It is anything that the intellect can understand in a thing and which manifests what the thing is. So 'whiteness', 'humanity', 'knowledge', etc. are all quiddities. Even the notion of 'thing' is a quiddity but in a most imperfect and vague manner. Third, when simple apprehension perceives this quiddity, it stops at that knowledge; it *does not affirm or deny anything about it*. In this way simple apprehension is distinguished from judgment (later on we will call this distinguishing characteristic the 'specific difference' between simple apprehension and reasoning). Judgment is always a uniting or a separating of two concepts, whereas simple apprehension is the conceptual knowledge which precedes this joining or dividing.[16] So I can conceive of an oak tree without affirming that 'oak trees are useful for building', or 'oak trees are tall', or even 'oak trees exist'. It's often very difficult to catch ourselves simply apprehending. Because our mind is always active and naturally developing itself, almost immediately after apprehending 'oak tree' we judge something about it; we associate the concept of 'oak tree' with other concepts almost straight away. Nevertheless, simple apprehension indeed exists. We can't affirm or deny 'tallness' of 'oak tree' unless we understood, at least in the most general way what these things were.

[15] In I Periherm., lect. 1.

[16] In III De Anima, Lect. 11.

So, I've pointed out three parts of this definition to keep in mind: 1) simple apprehension is an intellectual operation; 2) by it the intellect knows a quiddity or essence; 3) nothing is affirmed or denied by it.[17] Now, the second and third parts can be combined in the definition so that we might say: simple apprehension is the operation of the intellect by which *an indivisible* is perceived. That is, by simple apprehension we perceive only one unified essence, not several things composed or divided. A quiddity is a single unified concept. 'Man' or 'whiteness' or 'tree' is a single object of the mind and makes up a single idea or concept. But this doesn't mean that we only simply apprehend individual things. Otherwise, we would never understand the concept of 'forest' or 'football team'. A forest is not a single thing, but rather it is a conglomerate of many things. A forest is a collection of individual trees. A football team is a collection of players. Nevertheless, when we say 'forest' and conceive it by simple apprehension, we aren't simply apprehending the natures of all the individual kinds of trees. When we conceive 'football team' we aren't knowing and cognizing all the individual players that go into making up the team. Instead, we are understanding the individuals under an indivisible formality, or notion. A forest contains many individual trees, but I conceive them all as though they were a single thing; I conceive them all according to an indivisible unified notion—that of 'forest.' The object of apprehension in these cases is not the individual but all the individuals taken as a single whole. The notion of 'forest' is logically or conceptually one 'thing' or quiddity which can be understood, even though in reality it is made up of many individual things, each with its own quiddity. Recalling the distinction we made earlier of the material object and the formal object, the intellect simply apprehends many individual material objects under one common formal object, namely 'forest' or 'team'. When we look at a dog and conceive 'animal' for instance, we are considering the material object (i.e., the dog), under a particular formal aspect (i.e., its animality). And even though 'animal' is something which can pertain to any sensitive living thing, the concept of 'animal' is itself a single, unified concept. And when we conceive 'animal' we are neither joining it nor separating it from any other concept. That is, the formal object 'animal' is an indivisible notion, being neither joined nor separated from anything extrinsic to the concept of animal itself.[18]

This isn't to say that the concept cannot have several elements. When I say 'learned man' I'm referring to a single quiddity, a single essence—I'm not referring to several quiddities as I would be when saying 'a learned man is wise'. Nevertheless, 'learned man' has several elements which make it up; i.e., man as qualified by learning. If I were to say 'man is learned' then we have a different story. That would be a judgment. So the object of simple apprehension can actually be quite complex, yet it is conceived precisely as a single, undivided essence, a single quiddity. Not only is the concept of 'four-legged featherless robot fueled by vodka', the understanding of a single essence (though very complex) but even the concept 'every man who ever lived' is the concept of a single unified quiddity. In this last case every individual man who ever lived is conceived by the mind not individually—I don't consider one person then another then another and so one until I think about every man who ever existed—but they are apprehended by the mind under a unifying formality; namely, 'having lived'. Simple apprehension, then, is apparently not so simple.

So, simple apprehension abstracts some one intelligible formal object out of the many material objects that we know by the senses. We saw in the introduction to Philosophy that the mind cannot grasp all the intelligible characteristics of a thing at once. Instead, it has to separate each attribute one by one and examine them singly. And this process of separation, this abstraction of the intelligible notes, leaves

[17] In VI Meta., lect. 4, n. 1224, 1232.

[18] In II Periherm., lect. 3, n. 3; De Spirit. Creat., a.9, ad 6.; In I Post. Anal., lect. 1, n. 4;

behind all the singular traits of the individual. Thinking of 'man' abstracts from every particular man; from John and Peter and Mary and everyone else. It gives us a universal intelligible object that can be applied to an infinite number of individuals, be they real individuals or only imagined individuals. Now, existence is an individual trait. Not every man exists; some men *did* exist but are now dead. Some men *will* exist but don't yet. So the object of simple apprehension, by being abstracted from all individual aspects, also abstracts from the very act of existing. That is, when I conceive 'man' I don't necessarily conceive of man as existing. Hence, the concept of man is open to existence but this existence need not be realized in any particular object in order for me to have the concept. Take the dinosaurs. They are long gone. But I can still ponder the possibility that dinosaurs might one day walk the earth again. And I can do this because the concept of 'dinosaur' is 'existence-neutral', if you will. And when I conceive 'dinosaur', I neither conceive dinosaur as *actually* existing nor do I conceive dinosaur as *incapable* of existing. Existence, as an individual characteristic of those dinosaurs that lived so long ago, is not a necessary note of the concept 'dinosaur'. The concepts of the mind abstract from the notion of existence. Hence, we make a distinction between the *essence* of something and its *existence*. The essence is the object which is abstracted from individual characteristics and can be applied to all real and possible men; whereas existence is the act of an essence individuated in some particular—the *essence* of dinosaur has *existence* in this tyrannosaurus; the essence of man has existence in John.

But there is something very important to notice here. Abstraction means to separate one thing from another. And it can take place in two ways: *objectively* and *subjectively.* When I think 'dinosaur' I don't have to be thinking 'existence' at the same time. In fact, I can separate the two and consider one or the other. In the same way, I can think 'cake' without thinking of 'white cake' or 'brown cake' etc. I'm not saying that cake is not brown or white, but in simply apprehending the quiddity of cake I abstract from any consideration of its color. I'm not thinking 'cake is not white', I'm just not thinking about its color at all. This is called *objective abstraction*. In objective abstraction I am simply considering one intelligible object within the subject without thinking about any other object. So when I look at an oak tree and think 'brown' without thinking 'tall', I'm *not* thinking that an oak tree has color but not height. I'm simply *not thinking about height at all*. I'm abstracting one object—namely, the color—from the tree, which is the subject under consideration, and I'm not considering any other objects—neither the height nor the width nor the temperature nor the health nor anything else. I'm am simply *understanding* one object apart from the other. This is the kind of abstraction that we're talking about in the abstraction of simple apprehension.[19]

The case is different if I were to conceive of 'oak tree' precisely as something which excludes 'height' or 'browness'; that is, if I conceive of 'oak tree' as something which cannot possibly be brown then I have *subjective abstraction*. I'm not thinking about two different objects in the same subject as when I consider the color of cake apart from its sweetness, but I'm considering things which must exist in separate subjects. This kind of abstraction is had by *negative judgment*. For example, when I judge that man is not a stone, then I have an existential separation of two subjects. Man and stone can never be identified (that is, found together) in the same subject. This is not to conceive separately of two different objects, but to conceive of two things precisely as separate in reality.

Now, objective abstraction is always permissible for the mind as long as the two objects are intelligibly different. I can consider the whiteness of the cake without considering the sweetness of the cake and I haven't in any way falsified what I know. On the other hand, subjective abstraction is allowable only when the two notions are separated in reality. If I consider that this cake doesn't include whiteness in it

[19] I, q. 49, a. 3

when in fact the cake is white, then my mind is misrepresenting reality. The object of simple apprehension is never the whole of the thing under consideration; I don't know all about oak trees in a single intellectual glance. But considering the attributes of an oak tree one by one doesn't necessarily give me a false understanding of reality: partial knowledge is not false knowledge. If I consider the whiteness of the cake apart from its sweetness, I haven't misrepresented reality any more than the eyes have misrepresented it by seeing the cake apart from its taste. But if I judge that this cake exists without whiteness, then indeed I have distorted the way things are.

So, simple apprehension separates certain intelligible objects from the subject under consideration and it considers these abstracted objects one by one. Each of these objects provides the intellect with an understandable formality, such as 'whiteness' or 'height' or 'dogness' or 'humanity' etc.. And the intellect represents this formality within itself by means of the *concept*.

The Concept[20]

The concept is a representation constructed in the mind and by the mind in which we understand or perceive a thing. It's by means of our concepts or ideas that we understand the quiddity or nature of things. But remember that we don't understand everything about that quiddity or essence all at once. Let's make a few distinctions. First, there is the material object in reality (e.g., a dog). Second, there is the formal object which we perceive in the material things (e.g., the sight perceives the color, touch perceives softness, and the intellect knows 'dogness'). This formal object really is an aspect of the material thing (the color and softness really exists within the dog), but it is being considered separately by the intellect. Even though the material object is in reality a single, simple thing, it nevertheless offers many perfections or attributes according to which it can be considered by the intellect.[21] So 'man' can be considered as 'animal' as 'rational' as 'species' etc. Each of these is a different formal object abiding in the same material object. And, if you'll recall, all of these distinctive objective aspects by which man is made known to us (i.e., by which we distinguish the concept of 'man' from all other concepts) are what we call the 'notes'. Notes are the objective characteristics from which our complete concepts are constructed. So if man is conceived as a rational animal, then animality and rationality are the notes that go into our concept of man. If man is conceived as a 'featherless bipedal animal' then 'featherlessness' 'bipedal' and 'animality' are the notes of the concept of man.

The Properties of the Concept: Comprehension and Extension

Now, the sum total of all the objective notes (i.e., the entire complex of intelligible aspects that we perceive in the thing) are what we call the *comprehension* of the concept. It is the collection of notes which constitute the concept. For example, the comprehension of man must include rational, animal, living, corporeal, and substance. The more notes that a concept has, the richer that concept will be. So if someone had a concept of man which only included animal and living, he would have a pretty vague idea of what man is. Take another example: parallelogram. The concept of parallelogram has a number of intelligibly distinct notes which make it up. It has the notes of plane figure, four sided, rectilinear, and parallel opposite sides. If someone had a concept of parallelogram which only included the note of 'plane figure' then his concept would be very general and imperfect. All that he would know is that a parallelogram is some kind of shape. He wouldn't even know that a parallelogram was different from a circle because a circle as well is a plane figure. To perfect his concept, he must discover the remaining

[20] In I Perih., lect. 3, n. 13; SCG, L. II, c. 75.

[21] I, q. 15, a. 1; SCG, L. I, c. 53; SCG, L. IV, c. 11.

characteristics of a parallelogram, gradually enriching his knowledge. The concept of square will be one which is even richer than that of parallelogram; besides plane figure, four sided, rectilinear, and parallel opposite sides, the perfect comprehension of square would also include the note of 'equilateral' and 'rectangular'; that is, all sides being equal and meeting at 90 degrees. So our concepts become more complex and richer the more objective notes that they contain. However, don't make the mistake of thinking that all of these notes exist separated from one another in reality. No one part of a square is a plane figure while another part is a parallelogram. Rather the whole square is a plane figure and the whole square is a parallelogram. It is, remember, the mind that separates these aspects (or formal objects) by abstraction. These notes may not be distinct in reality, but they are intelligibly distinct; i.e., they can be understood apart from the others. And the complete comprehension of our concepts is the sum total of all these notes taken together.

Now, when a note is added to a concept it makes that concept to be less and less general, and more and more specific. That is, the notes are related to each other as general to specific. Take two of the comprehensive notes of man, corporeal and living. Now, corporeal is a general note which applies to every physical substance: every substance which exists in physical reality is corporeal (i.e., it is a body). But not every substance in the physical world is alive. Rocks are not alive; chemicals are not alive, etc. So by adding the note of living to the note of corporeal, we are making the concept of man more specific, we are taking the general notion of corporeal and determining it to be a specific kind of corporeal thing; namely, a *living* corporeal thing. And we can even add the note of sentient to the comprehension and specify the concept further. It now becomes a *sentient* living corporeal thing. Each note further determines, perfects, and specifies the general and vague concept that we have of man.

Now, we very often are not aware of all these notes distinctly. Nevertheless, they are present in our concept and our concept is precisely the concept of this or that thing because of these notes—it's because of a difference in notes that the concept of man is different from the concept of dog. If there was no difference in the intelligible content of our concept of dog and the content of the concept of man, then we would conceive all men to be dogs and all dogs to be men. So all the notes are indeed contained in the concept, even if confusedly. One of the goals in Logic is to teach us how to spell out very clearly all the notes that should be present in a concept; we'll learn how to do this when we learn about definition. Defining, as we'll see, is the act of making explicit all the comprehensive notes which are contained in our concepts implicitly. In fact, all scientific investigation into the nature of a thing is to determine what notes always and everywhere pertain to it and what notes do not. All rational inquiry into the essence of a thing is a gradual building up of its intelligible notes until we have exhausted everything that can be known about it. So simple apprehension doesn't immediately pull out the entirety of a thing's essence; we don't abstract everything there is to know about something at a single glance. Our intellectual knowledge is at first very obscure. As babies we possess only the most basic notes within our concepts: ideas such as 'something' or 'body'. Little by little, our sense knowledge, and especially our memory, will help us to tell what observable traits in a thing always and everywhere pertain to this thing. Then we abstract the notion of that trait and include it in the comprehension. So at first children have only the simplest concept of their parents and so they call all men 'dad'. Slowly, they add notes which will help them understand what it means to be a father until they identify their father with only one particular male. Oftentimes, though, it is quite impossible to pull out every single comprehensive note; as we'll see, some things cannot be properly defined because they elude our minds.

Comprehensive notes are a bit like clues in a detective story. The fewer clues I have, the more suspects I have. So, if I have a concept which includes only the note of corporeal substance, then my concept can refer to any physical body. But if I add to this comprehension the note of living, then I've narrowed

down the number of things that this concept can extend to. Now, it doesn't refer to every physical body, but only living physical bodies; i.e., plants and animals. The collection of things to which any given concept will apply is called the *extension* of the concept. You see, because the concept is abstracted from particulars it is universal. And as a universal concept it can apply to any number of singular things. So, the concept of man can be said of Joe, John, Mary, Peter, etc. All those subjects to which the concept applies is called its extension. The extension of plane figure would include circle, square, triangle, etc. And the extension applies not only to existing things, but to possible things a well. Man can be said of Sherlock Holmes even though he never really existed. Now, the fewer notes contained in the comprehension of concept the greater will be the extension of that concept. So if a concept contains only the note of *substance*, then it will pertain to every possible substance, including immaterial substances. If however the note of *material* is added to the note of substance, the we will have excluded immaterial realities from the extension; i.e., the concept can no longer be said of immaterial realities. Again, if we were to add the note of *living* to the comprehension, then the concept would apply to an even smaller multitude since it would exclude all inanimate things. So there is an inverse proportion between the richness of our concepts (i.e., the number of notes they contain) and the number of things to which they can apply. That is, there is an inverse proportion between comprehension and extension.

Take a look at the following at the following diagram to help you understand this:

CONCEPT	COMPREHENSIVE NOTES					
Man	Substance	Material	Living	Sentient	Rational	Man
Animal	Substance	Material	Living	Sentient	Brutes	Man
Organism	Substance	Material	Living	Plants	Brutes	Man
Body	Substance	Material	Inanimate bodies	Plants	Brutes	Man
Substance	Substance	Spirits	Inanimate bodies	Plants	Brutes	Man
	EXTENSIVE SUBJECTS					

Scientific inquiry is a gradually adding up of all the notes in our concepts of reality. So originally it was thought that there were only four elements. But new properties (i.e., new notes) were discovered in various chemical elements that differentiated one element from another. From general and vague knowledge of elemental composition we came to clearly distinguish elements; we came to perfect our concepts of elemental reality. Slowly the table of the elements grew from four up to its present state. As children we didn't start out with a knowledge of the various types of birds. We would point to a bird and say 'bird'. We wouldn't point to a bird and say 'wood warbler', because our concept of bird included no notes that would distinguish a wood warbler from a mockingbird, or a mockingbird from a magpie. No, our original concept of bird was, comprehensively speaking, very pathetic. It perhaps contained the notes 'winged' and 'small'. The rest of the notes came only much later and after observing many different birds.

We shouldn't make the mistake, though, of thinking that all the comprehensive notes we pack into our concept are of equal value. Not everything we can say about a thing will perfect our knowledge of that thing's nature or quiddity. As we'll see later, some notes pertain to the comprehension essentially, while others non-essentially or accidentally. Having two-legs, for example, is certainly an attribute of man. Nevertheless, it isn't a note which pertains to him essentially; otherwise cutting off a leg would

destroy his human nature. As we'll learn, science is only interested in what pertains to the essence or quiddity of a thing, not to any accidents or non-essential characteristics.

Now, all those subjects which fall into the extension of some concept are called inferiors. While the concept itself, together with all its comprehensive notes, is called the *superior*. So 'living being' is a superior and 'plants and animals' are the inferiors which fall under superior concept. A superior can be *said of* an inferior. Thus, 'animal' can be said of my dog, because she falls within the extension of 'animal'. This is also called *predication*; animal can be *predicated* of my dog; organism can be predicated of my son; substance can be *predicated* of every human being. We also call superiors 'logical wholes' while the inferiors are 'subjective parts'. So 'sentient being' is a logical whole and it may be divided into subjective parts of 'brute' and 'man'. Now, a logical whole is different than what is called an integral whole. Consequently, subjective parts are different than integral parts. An integral whole is physical composite which is really the sum total of all its parts. So the human body is really composed of a head, a chest, arms, legs, etc. And if these parts are separated the body is destroyed. A logical whole, on the other hand, is not the sum total of its parts. The concept of bird for example is not a concept that is arrived at by adding up all the various types of birds. In fact, even if there was only one type of bird, the concept 'bird' would not in any way be altered. Likewise, animal has for its subjective parts 'brute' and 'man'. But even if brutes didn't exist and man was the only animal, the concept of 'animal' wouldn't be cut in half; whereas if a circle is divided into two integral parts, the removal of one part would halve the circle. We don't get the concept of animal by adding together man and brute.

Furthermore, objects which are inferior to one concept may be superior to another. Animal is a logical whole in relation to the logical parts of brute and man—it is a superior. But in relation to 'living being' animal is an inferior; living being, or organism, is a superior which is divided into plant and animal as its logical parts. Singular things, however, cannot ever be superiors. Why? Because they have no extension. The nature of Peter can never be applied to Mary; that is, the particular concept we can form of Peter can never include Mary within itself.

Comprehension and extension are two examples of the logical properties that we mentioned in the introduction to Logic; they are *second intentions*. The extension of 'man' doesn't exist in John, rather it exists only insofar as John's human nature is conceived by my mind. John in reality doesn't have 'animal' in one part of himself and 'man' in another; its the intellect which separates these notes and creates the comprehension. Likewise, John has no extension. 'Johness' can't be said of anything but John himself; he is a singular, incommunicable, 'un-predicatable' individual. The relation of the notes to each other as the constituent elements of our concept is a purely logical relationship. So in addition to the logical second intentions that we've already mentioned as example—noun, verb, subject, predicate, proposition, and so on—we must now include comprehension and extension. Neither of these has something exactly corresponding to them in reality. They are relations between formal objects that can be understood in the thing (comprehension) and relations between superior and inferior concepts (extension), and these relations exist only in the mind.

Furthermore, comprehension is the logical foundation for extension. That means comprehension has a kind of logical priority over extension; it is the number and type of comprehensive notes that determines the number of members within the extension. And an alteration in these notes will alter the extension. The comprehension of our concepts determines the extension of our concepts. In other words, extension is a *logical effect* of our comprehension.

One more point, the comprehensive notes given in the chart above are not the only comprehensive notes. 'Four-legged' might be a note that makes up your concept of dog; 'spiritual' might be a note that

makes up your concept of man. And each of these notes will have its own extension: four-legged extends not only to dogs, but to elephants, to cats, even analogously to chairs and tables, etc. But some of these notes are *essential* or pertain to the very essence of the thing under consideration; while some are only *accidental* or incidental to the essence. So 'fat' is note that can extend to any given man who happens to be soggy around the midsection; but it isn't an essential note of the universal concept of 'man'. 'Four-legged' isn't essential to the dog and hence isn't an essential note of our concept of dog; a dog can have three legs and still be a dog. The chart above only uses the notes of 'substance', 'material', 'living', etc. as *examples* of intelligible notes. Later when we deal with what are called the 'predicables' and the 'predicaments' we'll learn that the examples given in the chart are the most *perfect, essential,* and *direct* divisions of these concepts, but certainly not the only divisions. Furthermore, don't make the mistake of thinking that the notes in the chart above are *ultimate*, or that they can't be themselves broken up into further intelligible notes. 'Living' for example can be itself analyzed into various comprehensive notes which make up our concept of 'living'; e.g., 'self-moving' is a note that goes into the comprehension of 'living'. All of this will become much more clear when we deal with the *predicables*, and especially with what are called 'genus', 'species', 'difference', and the 'tree of Porphyry'. For now, just understand that each concept has distinct, intelligibly knowable elements, the sum total of which we call *comprehension*. While the sum total of members of which this concept can be said is called the *extension*. 'Fruit' has its own comprehensive notes different from what we've given above, and we might divide its extension into 'red fruit', 'green fruit', etc. Or we might divide its extension into 'sweet fruit', 'sour fruit', etc.

A Warning: The Concept and the Phantasm

To clear up any difficulties before we go on, a distinction must be made between the concept and what is called the *phantasm*. The phantasm is that sensible image that you have 'in' your head. It's caused by the imagination and it generally has some hazy sensible qualities. If you're thinking about 'man' for instance, your thought might be accompanied by a blurry image of a medium build individual with the outlines of a face and perhaps a hint of color. Most of the features are a bit unclear, but you definitely have the image of some individual in your head. This is most certainly not what we mean by the concept! This murky image is called the phantasm and it is the representation of a thing produced by the imagination. Now, the imagination is one of our internal senses; and, if you'll recall, sense knowledge is always of some particular thing, not the universal. So the phantasm is always an image or a conglomeration of images which represent some particular material thing, whereas the concept is in the intellect and can represent the universal. The image in the imagination is always some particular man, whereas the concept can be of 'man' in general. The phantasm is a sensible representation which is infinitely variable depending on what sense qualities you decide to include in it. The concept represents 'what' man is and is always the same. To prove that the phantasm and the concept are distinct, consider the following: you cannot imagine a chiliagon. And what on earth is a chiliagon? It's a thousand-sided plane figure. Now, you understand what I mean by a thousand-sided plane figure: it's a two dimensional shape having 1000 sides. You can certainly conceive the concept; but I challenge you to picture it. You can't imagine exactly what it looks like, you can't form a representation of it in the imagination, nevertheless you have the concept. So you can separate the image from the idea. But things which are separable are distinct. Hence, the phantasm most assuredly is not the concept.

At this point, we've given a general overview of simple apprehension and its product: the concept. Now we will look at the division of the concept. And the concept can be considered in two ways: absolutely and according to what it is in itself, or in relation to other concepts (i.e., how two or more concepts are related to each other). So we will look at, first, the division of the concept in itself; and, second, the relation of several concepts among each other.

EXERCISES: Let's give you a little practice in recognizing comprehension and extension.

1. **Which has greater extension, animal or man? Animal**
2. **Which has more comprehensive notes, animal or man? Man**
3. **Which has greater extension, substance or plant? Substance**
4. **Which has more comprehensive notes, substance or plant? Plant**
5. **Which has greater extension, organism or body? Body**
6. **Which has more comprehensive notes, organism or body? Organism**
7. **Give the comprehensive notes of man: Substance, Material, Living, Sentient, Rational**
8. **What do you comprehend of a person you see walking down the street? I *comprehend* his human nature (i.e., man) while I *sense* his individual characteristics (e.g., his size, color, the speed at which he travels etc.)**
9. **What do you comprehend of Gandalf? (Remember our distinction between the concept and the phantasm) I *comprehend* his human nature (i.e., man)—and perhaps I also understand 'wizard' or some other quiddity found in him—and I *imagine* his individual characteristics (e.g., tall with a white beard and a pointy hat, etc.).**
10. **What are some of the intelligible elements of dog? Substance, material, living, sentient, four-legged, hairy, long-snouted, noisy, etc. Note that there are both essential notes here (such as living) and non-essential (such as hairy) but they are all intelligible (i.e., understandable) elements that might make up my concept of dog.**
11. **And of mineral? Substance, material, durable, chemically compound, etc. Again, there are essential notes here (e.g., material) and non-essential notes (e.g., durable—some minerals may be very soft) but they are all intelligible elements which might go into my concept of mineral.**
12. **By investigating reality what does the scientist seek to do with comprehensive notes? The scientist seeks to *add* comprehensive notes to a concept, thereby enriching his understanding of some object.**
13. **What is the extension of substance? All beings—except God—which can exist in themselves (and not in another like 'white' exists in 'cake') fall under the extension of substance—e.g., men, dogs, trees, bacteria, stones, etc. Even *possible* beings (i.e., beings which do not exist but might conceivably exist) could be substances.**
14. **And of animal? All things which have senses, whether these beings are real (like dogs) or only possible (like unicorns).**
15. **And of man? All animals which have reason, whether these animal are really existing or only possible existing (like Gandalf).**
16. **And of John Smith? The concept of John Smith extends only to John Smith—the concept cannot be applied to any other being.**
17. **Of WHAT is extension the sum total? The number of inferiors which possess the comprehensive notes of a given concept.**
18. **Of WHAT is comprehension the sum total? The number of distinct intelligible elements (or notes) which the intellect has perceived in a thing and added to its concept of that thing.**
19. **If you comprehend man, do you comprehend animal? We make a distinction: if you comprehend man *perfectly* (i.e., according to all his essential notes) then, yes, you would also comprehend animal. But if you comprehend man *imperfectly*, then you might not comprehend animal; for example, if you only know that 'man' is some kind of *living thing* then you don't understand that 'man' is a *sentient* living thing.**
20. **If you understand the quiddity of animal would you thereby understand the essence of man? No. The concept 'man' adds something over and above the concept of animal, something**

which is not included in the concept of animal—namely, the note of 'rational'. A perfect understanding of animal nature would never include this note; it only includes the notes of substance, material, living, and sentient.

21. Arrange each of the following in the order of DECREASING extension:
    a. Substance, body, living being, coniferous, tree, fir Substance, body, living being, tree, coniferous, fir.
    b. Frenchman, European, man, Parisian Man, European, Frenchman, Parisian.
    c. Italian, European, Earthly, planetary, roman, northern Planetary, Earthly, northern, European, Italian, Roman.
22. Explain why comprehension and extension are *logical* properties and not *physical* properties. Logical properties are properties which attach to a thing only when it is known and conceived, not as it exists independently of the mind. Independently of the mind, you cannot identify one part of man as a substance, another part of man as his animal part, and another part as his living part, etc. The distinction between these comprehensive parts is made only by the mind. Therefore, it is a logical property. Furthermore, things in reality are all singular things, not universal, hence they extend only to themselves. Natures become universal (and thereby capable of extending to many) only when the mind abstracts them from singulars, and this occurs only in the intellect. Hence, extension is a logical property.
23. Give at least two examples of the extension of each of the following concepts: athlete, bird, school, horse, element, planet, nation, money, paper, vegetable. Athlete: football players and baseball players; Bird: vulture and eagle; School: college and elementary; Horse: mare and gelding; element: platinum and iridium; Planet: Earth and Mars; Nation: USA and Ireland; Money: dollars and euros; Paper: paper bags and paper cups; Vegetable: carrots and peas.
24. Give, in whole or in part, the comprehension of each of the following concepts: the mosquito and the fly; the Secretary of State and the Secretary of Defense (and, yes, political satire is appreciated here); hydrogen and oxygen; the rose and the violet; the magazine and the newspaper; the circle and the square; red and blue; the house and the church; a gun and boxing gloves; an airplane and an automobile.

Division of the Concept

So we've examined very generally what simple apprehension is and what a concept is; and we've discussed two attributes or properties that every concept has: comprehension and extension. Now, we are going to look at the various kinds of concepts there are; i.e., we are going to divide the concept into its specific types—first, according to the various kinds of concepts that there are when the concept is considered singly and in itself, then, according to the various kinds of relations one concept can have to another. Why do we have to do this in order to perfect our reasoning (the goal of Logic)? Because oftentimes, confusing various types of concepts will render our syllogism invalid, as we will see later. To give a very obvious example of this: Every triangle has three interior angles equal to 180 degrees; but John's love situation is a triangle; therefore, his love situation has three interior angles equal to 180 degrees. Obviously, 'triangle' here refers to two different concepts. Though this is a fairly obvious error, many mistakes involving a confusion of concepts are more subtle and require training to spot.

Now, a concept can be looked at in two ways, materially and formally. Considering the concept *materially* is to consider the concept according to the object in reality that the concept makes known; for example, the concept of a dog, or of a car, or of a man, etc. etc. If we were to divide the concept according to the things it makes known—that is, if we were to divide the concept materially—there would be as many concepts as there are things in reality that can be known. In Material Logic, we will arrange all things in reality that can be known into ten ultimate categories called the 'predicaments' and hence we will have divided the concept materially. But this doesn't concern us right now. In Formal Logic, we're interested in what pertains to all concepts in themselves regardless of any particular thing that they make known to us. We are interested here only in how the concept can be divided *formally;* that is, according to the nature of a concept itself, not according to the nature of the things in reality. Now, a concept is essentially a representation—to stand as a substitute in our mind for the realities that we know and to represent those things is of the very nature of a concept. Hence, to divide the concept formally is to divide it according to *how* it represents the things in reality to our mind. In this way, the concept is divided according to the different ways that one and the same thing can be known or represented. And this happens in three ways: 1) from the point of view of the *logical (or formal) object*, according to whether the thing's comprehension or extension is represented; 2) from the point of view of *perfection*, according to whether the concept well or poorly gives us knowledge of the thing; 3) and from the point of view of *origin*, according to how we get the concept.

Division of the Concept by Reason of the Way it Represents Objects

The formal or logical object can be considered in two ways, as we've seen: either comprehensively or extensively. Comprehensively, the object is certain totality or indivisible constituted by a number of intelligibly distinct notes. Extensively, the object is taken for all those subjects and individuals to which the whole set of comprehensive notes can apply. The concept can make known or represent both the comprehension and the extension, and it does so in different ways. And since comprehension is the foundation for extension (as I pointed out in the last section), we'll start with the different ways that a concept signifies the comprehension of the object; then, the different ways that the concept can signify the extension of the object.

Division of the Concept by the Ways it Signifies or Represents Comprehension

Incomplex and Complex Concepts

By reason of comprehension, the concept is first divided into *incomplex concepts* and *complex concepts*. An **incomplex concept** is one which *represents strictly one, single quiddity or essence* (e.g., the idea of 'man', the idea of 'learnedness', the idea of 'whiteness') and so one collection of comprehensive notes; whereas the **complex concept** *represents strictly several essences or quiddities conceived as a single quiddity* (e.g., learned white man), and so represents two or more collections of comprehensive notes as though they were one. Remember, both of these kinds of concepts are known by simple apprehension; in other words, 'learned white man' is still a single *concept* though it is composed of several elements which are separable in reality. It is not a judgment—I'm not saying 'the man is learned and white.' The complex concept not only has all the intelligible comprehensive notes of 'man' but it has other notes besides (i.e., learnedness and whiteness) which are over and above the notes required to conceive 'man'. And all of these notes (learnedness, whiteness, and man), though in reality different and separable, are conceived as a single indivisible quiddity. So, how do we know if what we are conceiving has one or several quiddities? For example, if we were to conceive of man as 'rational animal' would this be a complex concept since it has two elements, 'rationality' and 'animality'? No. We have multiple quiddities only if one is not contained within the essential comprehensive notes of the subject we're considering. Rationality and animality pertain essentially to the nature of man, and so conceiving of man as 'rational animal' doesn't join two quiddities but simply makes explicit two aspects of one and the same quiddity. 'Learned', on the other hand, does not pertain essentially to man—some men are idiots (I'll give you a list of examples, if you'd like). So by joining 'learnedness' to 'man', you aren't simply pointing out a note which is implicitly contained in the concept 'man' but you're adding to that concept of 'man'; you're pointing out one real thing, man, which is qualified by another real thing, learning. Later, we'll learn that each distinct essence is distinct precisely because it can be placed into a different category or *predicament*: man will be placed in the predicament of substance, while learnedness will be placed in the predicament of quality. So we need to make a distinction between *incomplex concepts* which are *incomplexly stated*, and *incomplex concepts* which are *complexly stated*. So, the concept of 'man' is an incomplex concept because it refers to a single nature; i.e., that of man. But when I express this concept as 'rational animal', I'm *stating* the concept complexly. Again, we have to distinguish between *complex concepts* which are *complexly stated*, and *complex concepts* which are *incomplexly stated*. So 'learned man' is a complex concept because it signifies two essences which are distinct in reality; i.e., learnedness and man. And it is also complexly stated because each of those elements is given very clearly. However, if we were to state the concept of 'learned man' as simply 'scholar', then the complex concept is being stated incomplexly; i.e., without distinct parts. And keep in mind that each complex concept (i.e., a concept which refers to several really distinct essences) can be broken apart so that each of the distinct essences can be considered as incomplex things: in other words, the complex concept of 'learned man' can be broken up into the incomplex concepts of 'learnedness' and 'man'.

Now, concepts always represent various comprehensive notes, as we've seen. And these comprehensive notes exist together within the thing under consideration: 'living', 'sentient', 'rational', etc. all together make up the nature of man. But these notes can be represented by the concept in two ways: precisely as notes and as parts making up the whole quiddity of man; or else as separated from the quiddity of man and considered as things in themselves. That is, an intelligible attribute can be understood or conceived as a *part* of the object in which it was discovered—as a comprehensive note of the thing—or as *completely separated* from that object—not as a comprehensive note, but as a new thing. From this point of view, concepts are either **concrete** or **abstract**. So, in the comprehensive notes of 'man' we find the note 'sentient' or 'having senses'. We can, however, consider 'sentient' not as it is a comprehensive note, but as it is a thing in itself and totally abstracted from the other notes. In that event, 'sentient' becomes 'sentience'; or 'rational' becomes 'rationality'. Furthermore, some incomplex concepts include within their comprehension *a relation* to another subject besides the object

that they immediately represent, while others do not include within their comprehension a reference to another subject beyond themselves. From this point of view, concepts are either **connotative** or **absolute**.

Concrete and Abstract Concepts

So, *incomplex* concepts are of two kinds: *concrete* and *abstract.* The difference is between the ways the concept represents the thing we encounter in reality. When a concept represents a substance in reality, then it is called concrete, because it can be said of concrete, individual things. So, man is a concrete concept because we can say 'Peter is a man'. Likewise, when the concept represents what really is a part of a substance *precisely as* a part, the concept is also concrete. When I think 'rational' I'm conceiving a part of man precisely as a part. Hence, it can be said of concrete things: Peter is rational. On the other hand, when the concept represents what is really part of a substance not *as* a part but *as though it were a substance itself*, we have an abstract concept. When I think 'rationality' I'm no longer considering what is but a part of man's comprehension (i.e., rational) precisely as it is a part; rather, I'm thinking of it as though it were a single thing itself. So, a concrete concept, most generally speaking, is one which represents or signifies a substantial thing or a comprehensive note of a substantial thing considered precisely as a comprehensive note; whereas the abstract concept signifies or represents a note considered *apart* from that substance and as a thing in itself. This is the difference between 'rational' and 'rationality'; between 'man' and 'humanity'; between 'living' and 'life'; between 'white' and 'whiteness'; between 'strong' and 'strength'.

Recall, once again, that the intellect doesn't know everything there is to know about an object at a single glance. Instead, it distinguishes various intelligible or formal objects from the material objects that we encounter in reality; thus, man can be considered as living, as animal, as rational, etc. And all these notes *taken together* constitute the comprehension of our concept man. When I consider 'rational' in the concept 'man' I'm considering it precisely as one of the notes, as an element making up the concept 'man'—'rational' is known as a part of the nature or quiddity of man, as a part of that external thing encountered in reality. This is what we call a concrete concept, and it is had by a very simple process of abstraction from the individual thing (so, every adjective is a concrete concept because it refers to a trait or characteristic precisely as it exists within the thing—strong, black, smelly, etc.). But we can also perform *another* abstraction by which 'rational' is separated entirely from the thing we've encountered in reality and is, instead, considered as a thing in itself. By this second abstraction, the mind knows an intelligible object (i.e., some attribute which was first found in the external thing) apart from the quiddity of the thing. 'Rationality' is considered precisely as a thing and not as a part of the comprehension of 'man'. This is what we call an abstract concept. 'Man' is a concrete concept because it represents what the thing is in reality, and it is an aspect of the thing *considered as an aspect*. 'Humanity' is an abstract concept because it refers to human nature *considered as a thing* in itself and apart from the other notes of 'living', 'sentient', etc. Likewise, 'living' is a concrete concept because it is considered as part of the substance man, but 'life' is an abstract concept which is separated from every other note in the comprehension of man.

Now, any given concrete concept can be made abstract by further separating it from that thing of which it is a part; that is, by separating it from the other comprehensive notes. Organism has the notes 'substance, material, and living'. 'Living', then is considered as a part of the comprehension of organism and as such it is concrete. But 'living' becomes 'life' when it is abstracted from the other notes of 'organism'. But the abstraction need not stop there. 'Life' has its own comprehensive notes; for example, 'self-moving' would be a comprehensive note of 'life', because something is said to live when it moves by an intrinsic principle. So self-moving is a concrete concept which goes into making up the

concept of life. But we can abstract 'self-moving' from the other notes of life and consider it, not as a part, but as another whole: namely, 'self-motion'. So, concrete concepts can be made abstract by separating them from whatever whole they are in. And for any given intelligible attribute discovered in a thing, there can be an abstract concept, though these are very rarely named: e.g., there is no name for the abstract concept corresponding to dog, so we call it 'dogness'.

So, again, when I think 'rational' I'm thinking of the trait of 'rationality' applying to some subject, as being a modification or a part of some subject. In this way, we can say 'rational' of Peter—'Peter is rational'—because rational is conceived as a part of Peter's nature. On the other hand, 'rationality' is conceived, not as a part of Peter, but as a thing in itself and independent of a subject. Hence, we cannot say, 'Peter is rationality' anymore than we can 'Peter is a stone.' To put this in other terms, the **concrete concept** *signifies THAT WHICH IS*; whereas the **abstract concept** signifies *THAT BY WHICH a thing is.* So, Peter is 'rational' *because of* 'rationality'. Yet, since 'rationality' is conceived as a thing in itself and as excluding a subject in which it inheres, it cannot be 'said of' or 'predicated of' Peter: we cannot say 'Peter is rationality.' Again, we cannot say 'Peter is humanity.' Rather, we say 'Peter is man', and it is BY his humanity that he is a man. In the first case, 'man' is conceived as a formality found in the subject Peter—man is what Peter is; while in the second case, 'humanity' is conceived as a thing in itself and not a determination or formality of some subject—humanity is that *by which* Peter is man. '100' is an abstract concept, whereas '100 men' is a concrete concept. So again, a concrete concept is one which signifies that which a thing is (a subject with a form); an abstract concept is one which signifies that by which a thing is (the form alone). Or, in other terms, the difference between concrete and abstract concepts is the difference between conceiving some substance or comprehensive note precisely *as* a substance or comprehensive note versus conceiving some comprehensive note as a new thing with its *own* comprehension.

Absolute and Connotative Concepts

Incomplex concepts can again be divided into two kinds: *absolute* or *connotative*. Most concepts represent an object which exists by itself and independently of another thing outside of itself. 'Man', for example, is the concept of a substance which exists in itself and is not a determination or alteration of another substance—we call it an *absolute* concept because it doesn't necessarily imply another subject besides itself. That is, there is nothing in the comprehensive notes that isn't found in the singular existing thing encountered in reality—its comprehensive notes contain a relation to nothing outside of this substantial thing. But sometimes concepts imply, above and beyond themselves, a relation to another subject, so that its very signification includes a reference to something else. This we call a connotative or relative concept.

Many connotative concepts are easy to recognize. The concept of father necessarily includes within its comprehensive notes a relation to some child; without this reference, 'father' could not properly be conceived; 'husband' cannot be understood without including a relation to 'wife' in its comprehensive notes; 'higher' cannot be conceived without including in its notes a relation to something which it surpasses in height; 'friend' cannot be conceived without implying the subject of friendship. But some concepts don't immediately strike us as being connotative. 'White', for example, is the concept of something which determines and qualifies some subject—there must necessarily be, then, a subject which is determined and modified by it; i.e., there must be a white *thing*. So this *connotative* concept always implies, or connotes, some subject which is made white.

Because of this, we can divide connotative concepts into two kinds: strictly or *essentially connotative* concepts; and not-strictly or *non-essentially* connotative concepts. The concept 'white' is *not essentially*

connotative, because it can be abstracted from any given subject to give us the concept 'whiteness'. 'Whiteness' does not necessarily imply a relation to anything, whereas 'white' does. 'Father', on the other hand, is *essentially* connotative. Even when it is separated from the comprehensive notes of a thing which is called 'father' and we get the abstract concept 'fatherhood', it still necessarily implies or connotes a relationship to 'offspring'. 'Near' is a concrete concept that yields the abstract concept of 'nearness', but 'near' and 'nearness' both essentially connote a relation of distance between two objects. So the difference between essentially connotative concepts and non-essentially connotative concepts boils down to one thing: relation.

In Material Logic, we will look at the ten ultimate categories into which all real beings (except God) can be placed—these, again, are called the predicaments. And when we deal with the predicaments we will learn about the various kinds of accidents or attributes that a thing can have. 'Color', for example, will be placed in the predicament of quality, while 'circular' will be placed in the predicament of quantity, and 'clothed' will be in the predicament of possession, and 'sitting' will be in the predicament of 'position', etc. Now, there is one very peculiar predicament called 'relation'. And relation always and everywhere will include at least two terms. For example, 'faster' is a relation which will always imply something which is slower; 'up' is a relation which always imply 'down', etc. So whenever we have an attribute or accident which is a relation it *always* refers to at least two things in its comprehension. 'Father' is always related to 'offspring'; 'offspring' is called the *term* of the relation. Now, when father is conceived by the mind but son is not, there is still a necessary implication—'offspring' is still connoted or implied; that is, the *term* of the relation is still implied. So when a concept represents a relation—be it concrete or abstract—and the term of the relation (for example, 'offspring') is not explicitly and clearly included in the concept, that concept will *always* be connotative. So, *essentially* connotative concepts are *always* concepts of relations, but *not every* concept of a relation will be connotative. If I conceive 'the father of John', this concept is not connotative because the term of the relation (i.e., John) is clearly stated and not merely implied. In other words, the term of a relation can be either implicit or explicit. For example, 'faster' is a relationship of speed. If I think simply 'a thing which is faster', then the term of this relationship (namely, that which is *slower*) is not explicitly stated; but if I think 'a thing which is faster than light', then the term of the relation *is* explicitly stated. Now, explicit is imposed to implicit. So, if a connotative term is one which contains an *implicit* relation to another, then concepts of explicit relations are not connotative.

Now, an absolute concept is conceived as though it were a self-contained substance without a reference to anything else; but it need not necessarily *be* a substance. 'Man', for example, is conceived as a substance and really is a substance. 'Whiteness', however, is not really a substance yet it is conceived as though it were a stand-alone substance without a reference to a white subject. 'White', on the other hand, is not thought to be some particular thing, but rather it is conceived as a modification of something else; we have 'a white man', 'a white house', 'a white dog', etc. etc. But we don't have simply 'white'. 'White', then, is said to *imply* or connote the subject in which it is found; and it's impossible to conceive of 'white' without this implication. So, an absolute concept must not include in its comprehension a relation to another subject outside what it explicitly contained in that concept; but all accidents and attributes imply a subject of which they are accidents and attributes. Therefore, an absolute concept must be one which signifies something *after the manner of a substance enclosed in itself* (even if it isn't really a substance) and *not* after the manner of an accident, or attribute, or modification determining another. On the other hand, a connotative concept *does* signify something after the manner of a formality determining, modifying, and implying a subject besides itself, even if it really is a substance. 'Father' is conceived as a substantial thing in reality, nevertheless it isn't an absolute concept since it implies a relation to offspring. So every absolute concept must be conceived

as a substance, but not everything conceived as a substance will be absolute. A 'teacher' is conceived as a substantial thing; we encounter teachers in reality. But it is an essentially connotative concept because it always implies a relationship to a student.

So, understand that a connotative concept always implies (or connotes) and has reference to something else—to something extrinsic or beyond what is immediately contained in the concept itself. In the case of non-essentially connotative concepts, there is always a relation to at least two things: 1) an abstract concept, and 2) a subject: 'white' implies 'whiteness' (which is an *abstract* concept) determining or modifying this or that subject. 'Blind' is a concept which implies 'blindness' affecting this or that seeing subject. So the connotative concept (e.g., blind), first and directly signifies its abstract concept (e.g., blindness) while secondly and indirectly signifying the subject to which it belongs (e.g., an animal which has lost its sight). 'White' signifies 'whiteness' as joined to something, not as standing by itself. So, the non-essentially connotative concept actually signifies two natures, though one is signified directly and clearly, while the other is signified indirectly and obscurely. The *essentially* connotative concept, on the other hand, does not always imply a relation to the abstract concept for the simple reason that an essentially connotative concept *can in fact BE* an abstract concept. 'Father', as a concrete concept, signifies directly 'fatherhood' (an abstract concept) and indirectly the man who is affected by a relation of paternity to some child. But 'fatherhood' itself is abstract, and it still implies a relation to offspring. So, the *essentially* connotative concept which is *also* a *concrete* concept will imply a reference to an abstract concept and to a subject, just as the non-essentially connotative concept—'father' implies 'fatherhood' as modifying or affecting this subject. But when it is conceived *precisely as an abstract* concept (e.g., fatherhood), the implication or connotation doesn't have reference to another abstract concept or to a subject determined by it; instead, it implies and has a relation to its correlative concept: e.g., 'fatherhood' implies 'childness', to give it a name. 'Nearness' implies 'farness'. 'Kingship' implies 'subjectship.' 'Highness' implies 'lowness', etc. 'Soccer-teamness' implies 'team-memberness'. If you didn't *implicitly* conceive of team members you couldn't conceive of a team because a team is a relation among members. 'Creation' necessarily implies a 'creator'—a relation to a creator must always be included in the comprehensive notes of 'creation'. 'Sculpture' necessarily implies a 'sculptor'.

Nothing in reality, it's true, is ever completely by itself. The mere fact of existence puts things in relation to each other, and so everything in that sense is relative. Even just 'being distinct' is a relation that one thing has to all other things. But that isn't to say that these relations are included in the *comprehension* of the thing as it is conceived or known by the intellect. Man might be, as a matter of fact (i.e., *de facto,* to give the technical term), the master of all animals, but the comprehension of man doesn't necessarily include this relation among its notes. Even if no other animals existed, even if we had no understanding of brutes at all, we could still conceive properly of man's nature. But this couldn't be if it had to include a relation to animals. So the fact that things happen to be in relation to other things is not enough to make concepts of them connotative. It might *suggest* a relation. We might arrive at a relation by the *association* of several concepts; but connotative means that there is a conceptual necessity of including this relation among the thing's comprehensive notes, so that the thing cannot properly be understood without this relation.

Finally, keep in mind what I said earlier: the process of defining will be a spelling out or enumeration of the various essential comprehensive notes of a thing. If, then, a thing cannot be defined without mentioning something else besides itself then it must contain a relation to another in its comprehensive notes; therefore, it will be connotative (e.g., higher cannot be defined except by referring in the definition to something else which it surpasses in height).

The Division of Complex Concepts

Just a few words about this. Complex concepts (e.g., learned white man) follow the same division as incomplex concepts. So, the complex concept can also be divided into concrete and abstract. But the abstract of learned white man wouldn't be 'learnedness whiteness humanity', because that would turn the complex concept into three incomplex concepts. Rather the abstract concept of learned white man would be more like 'learned-white-man-ness'; or to state the complex concept incomplexly, it would be 'scholarness'. Even though I've used the concept 'father' in a lot of the examples above, it is properly a complex concept: it is 'man' qualified by a relation of paternity. That is, it represents more than one nature in reality. It's abstract would be 'fatherhood'.

Complex concepts are likewise divided into absolute and connotative depending on whether any of the elements in the concept imply a subject not explicitly included among their comprehensive notes. So 'white man' is absolute because neither term implies another subject. You might ask, 'isn't white a connotative concept?' When white is taken as an incomplex concept, yes, it is connotative because it implies some subject which is white. However, here a subject which is white is not *implied* in the concept 'white man' but it is an essential note of the concept: the subject is man. Nothing else is connoted or implied. 'Annoyingly cheerful', on the other hand, is non-essentially connotative, because it implies some subject which *is* annoyingly cheerful. 'Annoying cheerfulness', then, would be the abstract and it would be an absolute concept. 'Father' would be an essentially connotative complex concept.

And what about something like 'golf ball'? This is a ball with a relation added to it; namely, the relation to the game of golf. Wouldn't it then be connotative, always implying the game of golf? No. Remember that the concept of a relation can include the *term* of the relation either implicitly or explicitly. If implicitly, then it is connotative since a connotative concept is one which implies something besides itself. But if the concept explicitly includes the *term* of the relation, then it doesn't connote or imply that term. 'Golf ball' includes the term of the relation: namely, the game of golf. For the same reason, 'sculptor of this statue' is not connotative, because it doesn't *imply* this statue, but rather it very clearly points out this statue. 'Sculptor', on the other hand, does not clearly give the term within the comprehension of the concept, but only implies it. 'Creator' is the same way—creator of what? There must be something which was created if we are to conceive of something as creator, but it isn't clearly and explicitly contained within the concept.

Three Cautions:

1) Be careful not to confuse absolute and abstract concepts. Not every abstract concept is an absolute concept (because essentially connotative concepts can be abstract), and not every absolute concept is an abstract concept. 'Man', for example is an absolute concept. It signifies a substance, not a modification of a substance. Yet, 'man' is not an abstract concept; it's a concrete concept. It signifies what a thing is (e.g., Peter is a man) and not that by which it is (e.g., humanity). But, 'whiteness', 'blindness', 'learnedness', etc., these are all abstract concepts (i.e., that by which something is white, blind, and learned) and they are also absolute concepts conceived as though they were substances.

2) Furthermore, don't confuse concrete and connotative concepts. Not every connotative concept is a concrete concept (because 'fatherhood' is connotative and abstract), and not every concrete concept is a connotative concept. 'Man' for example, is a concrete concept since it refers to 'what a thing is' and not 'by what' a thing is; but it doesn't imply a subject which it modifies (i.e., it isn't connotative) since it doesn't modify anything but, rather, it is a substance itself. 'White', on the other hand, or 'blind' are concrete concepts since they refer to what a thing is and not

'that by which' a thing is, but they are connotative since they imply a subject which they determine and modify.

3) And do not confuse the connotative concept with adjectives. Every adjective is connotative (e.g., black, bright, fast, large, happy, etc. each imply a subject which is black, bright, fast, large, or happy),but not everything which is connotative is an adjective. 'Father', for example, is grammatically a noun, but as a concept it is connotative; it implies an absolute concept (i.e., fatherhood) applied to some subject (i.e., to some man who has a child).

4) Finally, do not mistake a complex concept for an incomplex connotative concept. 'Scholar' does not imply or connote learning as something extrinsic to itself. Rather, learning is one of the very elements of 'Scholar': scholar is an incomplex term for the complex object 'learned man' or 'man with learning'.

To sum up: a **concrete concept** is one which represents some substance or an attribute known in a substance and considered precisely as a part of that substance's comprehension. An **abstract concept** is one which represents some attribute known in a thing yet considered *not as a part* of that thing's comprehension, but rather as a new thing with its own comprehension.

An **absolute concept** is one whose comprehensive notes do not include a relation to another subject. And because accidents (i.e., attributes or traits) always imply a relation to that of which they are accidents (i.e., a substance which they modify), absolute concepts must be conceived as substances (even if they aren't really substances). A **connotative concept** is one whose comprehensive notes include a relation to another implicit subject extrinsic to itself. Connotative concepts are of two kinds: non-essentially connotative concepts and essentially connotative concepts. **Non-essentially connotative concepts** include among their comprehensive notes a relation to another subject *only* when they are conceived concretely—not when they are conceived abstractly. **Essentially connotative concepts** are concepts of relations whose terms are not explicitly stated. They always include two or more subjects in their comprehension whether they are conceived concretely or abstractly.

EXERCISES: We don't normally pay much attention to these various kinds of concepts, but they are exceptionally important for reasoning. So, practice will be required to adequately identify and catalogue our ideas. Here are some examples:

1. **House – incomplex, concrete and absolute**

    a. House is the concept of a single artificial nature and therefore incomplex; it is a substance (though artificial) and not an attribute conceived as a substance, therefore it is concrete; I can conceive house without necessarily implying something extrinsic to the house, therefore it is absolute.

2. **Short – incomplex, concrete and connotative**

    a. Short is the concept of a single quality, therefore it is incomplex; it is considered as an attribute or note of some substance, not as a substance itself, therefore it is concrete; it implies a relation to 1) the abstract concept 'shortness' 2) a subject which is called short, and 3) something else which is tall, therefore it is connotative.

3. **Shortness – incomplex, abstract and connotative**

a. Shortness represents a single quality, therefore it is incomplex; it is conceived as a thing in itself, though in reality it is not a thing in itself, therefore it is abstract; it no longer implies a relationship to something which is short, but it is still a concept of a relation and therefore implies a subject by which shortness is measured.

4. **Substance – incomplex, concrete and absolute**

    a. Substance only represents a single quiddity, therefore it is incomplex; it represents what in reality is really a thing and not simply conceived as a thing, therefore it is concrete; it represents in its comprehensive notes nothing else besides itself, therefore it is absolute.

5. **Substantiality – incomplex, abstract and absolute**

    a. Substantiality only represents a single quiddity, therefore it is incomplex; it represents the note 'substantial' as though it were a single thing, when in fact it is but a note of a thing (e.g., man is substantial), therefore it is abstract; it represents nothing in its comprehensive notes besides itself, therefore it is absolute.

6. **Classical – incomplex, concrete and connotative**

    a. Classical represents a single quality, therefore it is incomplex; it represents an attribute or note of something precisely as a note, and not as a separate thing, therefore it is concrete; it implies a subject which *is* classical, therefore it is connotative.

7. **Socialist – complex, concrete and absolute**

    a. Socialist represents the nature of man qualified by an adherence to socialism, therefore it is complex; a socialist is a substance with an attribute conceived as its part, not simply an attribute conceived as a substance, therefore it is concrete; it can be conceived without a relation to anything else, therefore it is absolute (it doesn't imply the doctrine of socialism as something extrinsic to itself, but it includes 'socialist doctrine' in its very self as the term of a relation, for a socialist is a man who adheres to socialism; on the other hand, if we were to conceive of 'man who adheres' without mentioning to what he adheres, the concept is connotative).

8. **Ball – incomplex, concrete and absolute**

    a. Ball represents something which is one nature in reality, therefore it is incomplex; it is a substantial thing, not just an attribute conceived as a substantial thing, therefore it is concrete; and it can be understood without implying a relation to anything outside itself, therefore it is absolute.

9. **Tennis Ball – complex, concrete and absolute**

    a. Tennis ball represents several natures, a ball and a relation to the game of tennis, therefore it is a complex concept; it represents a real thing with a real quality, not something merely conceived as a real thing, therefore it is concrete; it does not refer to anything outside of itself (the game of tennis is not implied but included in the attribute of 'tennis', for a tennis ball is a ball used in the game of tennis).

10. **Near – incomplex, concrete and connotative**

    a. Near represents the nature of a single relation, therefore it is incomplex; it is represents an attribute of some object, and is not conceived as a thing in itself; it is connotative because it represents a relation and cannot be conceived without that which is near.

11. **Nearness – incomplex, abstract, connotative**

    a. Nearness represents a single relation, therefore it is incomplex; it conceives of it as some subject, when in reality it is only an attribute of some subject, therefore it is abstract; it is a concept of a relation, therefore it always connotes a relation to farness.

12. **Triangle (as object of mathematical inquiry) – incomplex, abstract, and absolute**

    a. Represents a single quantity, therefore it is incomplex; it represents as a substance what is really only the attribute of a substance, therefore it is abstract; its comprehensive notes include on relation to anything distinct from itself, therefore it is absolute.

13. **Triangular – incomplex, concrete and connotative**

    a. Represents a single quantity, therefore it is incomplex; it represents the attribute of something precisely as an attribute, therefore, it is concrete; it connotes or implies something which is triangular, therefore it is connotative.

14. **Triangularity – incomplex, abstract and absolute**

    a. Represents a single quantity, therefore it is incomplex; it represents the attribute of something as though it were a thing in itself, therefore it is abstract; its comprehensive notes include on relation to anything distinct from itself, therefore it is absolute.

Very tricky stuff! Keep in mind the definitions of these kinds of concepts and see if you can identify the following as complex or incomplex and concrete or abstract and absolute or connotative.

1. **Blue Incomplex, concrete, connotative**
2. **Friend incomplex, concrete, connotative**
3. **Friendly incomplex, concrete, connotative**
4. **Friendship incomplete, abstract, connotative**
5. **Spiritual incomplex, concrete, absolute**
6. **Spirit incomplex, concrete, absolute**
7. **Red-head complex, concrete, absolute**
8. **Red-headedness complex, abstract, absolute**
9. **John incomplex, concrete, absolute**
10. **Good incomplex, concrete, connotative**

11. **Goodness incomplex, abstract, connotative (you'll learn why this is connotative in Metaphysics)**
12. **Creator incomplex, concrete, connotative**
13. **Living material substance complex, concrete, absolute**
14. **Organism incomplex, concrete, absolute**
15. **Happy incomplex, concrete, connotative**
16. **Policeman incomplex, concrete, absolute**
17. **A lump of gold complex, concrete, absolute**
18. **Intellect incomplex, concrete, absolute**
19. **Intellectual incomplex, concrete, connotative**
20. **An Italian man complex, concrete, absolute**
21. **Italian incomplex, concrete, connotative**

Division of the Concept by the Way it Signifies Extension

So, we've now divided the concept by the chief ways that it represents or signifies the comprehension and the comprehensive notes of things in reality. We've seen that when the concept signifies the comprehensive notes *as* comprehensive notes and *as parts* of the thing in reality, we have concrete concepts. When the concept signifies a comprehensive note not as a part of the comprehension but as a thing in itself and separated from the other notes, we have an abstract concept. We've also seen that when the concept signifies a comprehension which doesn't necessarily have a relation to another subject outside of itself, we have an absolute concept. When it signifies a comprehension which includes a note of relativity, or rather which implies a subject besides itself, we have connotative concepts. Now we are going to divide the concept by the way it represents or signifies, not the comprehensive notes and the comprehension, but the extension. We're going to look at the number of ways the concept can refer to extensive subjects—to the inferiors to which the concept can apply.

Singular and Universal Concepts

By reason of extension, a concept can signify one individual by itself, or several individuals. Hence, the concept is first divided into *singular* and *universal.* The singular (or particular or individual) concept represents an object which is in itself one and individual, and which therefore has no extension besides itself; that is, it cannot have any inferiors. 'This man' or 'this book' or 'Peter' or 'Gandalf' are all examples of singular concepts. A singular concept signifies one individual only; even as we conceive the singular thing, it does not signify something which can be communicated to or shared by several. The universal concept, on the other hand, applies to any multitude of inferiors which share in the common comprehensive notes. 'Man', 'book', 'literary figure' etc., are all examples of concepts which represent a nature common to many. Singular concepts are easily recognized by the addition of terms like 'this', or 'that'. Universal concepts are easily recognized by the addition of terms like 'all', 'every', 'each', and negative terms like 'none', 'no' (as in 'no men are stones'), 'not one' ('not one man is a stone'), etc.

Restricted and Non-Restricted Concepts

The singular concept cannot be divided any further by reason of extension. Why? Because it *has* no more extension—there's nothing else to be divided. The universal concept, on the other hand, can continue to be divided because it has an extension which can apply to any number of inferiors, real or imagined.

The universal concept is divided, first, into universal *restricted* concepts and universal *non-restricted* concepts, depending on whether the concept extends to all possible inferiors containing its comprehensive notes, or if it is limited only to a portion of those inferiors. The restricted concept represents only a portion of the possible extension of a concept. When I say 'some man' or 'a certain book', etc., I'm conceiving an object affected by a restriction to its extension; it doesn't apply to all possible men or all possible books. However, the idea of 'man' or 'book', 'every dog', etc., in general is not affected by this restriction and thus extends to all possible inferiors. The word 'some', then, makes restriction easily identifiable. Expressions such as 'some men', 'several men, 'a number of men', etc., all indicate a restricted concept. But note well that 'some' means, 'at least one'. In this way, a restricted concept is distinguished from a singular concept. A singular concept means 'this one and only this one and not possibly more than this one'. A singular concept, in other words, is entirely opposed to being in more than one, whereas a restricted concept is perfectly capable of being in several.

The restricted idea is of two types: *determinate* and *indeterminate.* A determinate concept is one whose signification extends only to an identifiable and definite part of all possible inferiors (because of

other characteristics which are attached to the concept) and *excludes* the other inferiors. So when I say some men are black, I'm conceiving of some definite multitude which absolutely excludes the rest of the extension—some men are black and some men are not. My concept of 'some men' here refers to a determinate portion of the extension and not to any other. On the other hand, an indeterminate concept does *not* extend to any one identifiable and definite portion of an extension to the exclusion of the other members. When I say 'some ship is needed in order to sail', I'm not referring to any definite ship; rather, any ship whatsoever will be needed in order to sail. We cannot say the same thing about the determinate concepts: we cannot say any man whatsoever is black. No, some men are black and the rest are not. 'Some men' in this case signifies certain *definite* members of the extension and it excludes all the others—'some men are black, some men are not black'. However, when I say 'some ship is needed in order to sail', I'm not saying 'some ship is needed and the rest are not'. I'm not excluding any ships.

Confusing determinate and indeterminate concepts will come back to haunt your reasoning processes. When I say, 'all roads lead someplace', I'm using 'someplace' as an indeterminate concept. So I can't rightly conclude from this, 'there is someplace where all roads lead.' In other words, just because all roads lead 'someplace' doesn't mean that all roads will eventually end in the same location. In the proposition 'all roads lead someplace', 'someplace' is indeterminate: any given place. While in the second proposition, 'there is someplace where all roads lead', 'someplace' is indeterminate: some one place. So a determinate concept is one which applies to some definite inferior (e.g., some man is running) while excluding others (some men are not running), while an indeterminate concept is one which may or may not be applied to some definite inferior (e.g., some eye is needed in order to see).

Non-restricted concepts are again of two types: *collective* and *distributive*. Both the collective and distributive signify many inferiors; they signify something which is common to many—since non-restricted concepts are universal—but there is a big difference between the two. When I think 'man' it is a concept that can be applied to each and every single man that I encounter. The notes which make up the comprehension of man really and truly exist within each instance of an individual man. Even if there was only one individual man in existence, the concept 'man' would still truly apply to him. However, if I think 'family' this concept cannot be applied to every individual that makes up a family. A family is made up of individuals. 'Man' is not made up of individuals. When I think 'family' the concept does not apply to each of the individuals taken singly. It does though apply to all of the individuals take as a whole. To use one of our earlier examples, if I think 'forest', my concept does not apply to every individual tree in the forest—it does 'distribute' to each tree taken singly. Rather, each individual tree is united under a common formality or intelligible notion. 'Forest' does not express comprehensive notes which exist in any individuals, but which exist only in a collection of individuals. You can't point to any particular tree and call it a forest. So a distributive concept is one whose signification extends to individuals taken separately and can be predicated (or said of) each of those individuals. Man can be predicated of each and every individual man; e.g., Peter is a man, Paul is a man, Aristotle is a man, etc. A collective concept is one whose signification extends only to a collection or group of individuals, and not the individuals themselves. Army, football team, family, forest, race, nation: all of these are collective concepts. General Patton does not fall within the extension of 'army' or else we would be able to say General Patton is an army. The U.S. Army, though, does fall within the extension of army, and the U.S. Army is made up of many individuals.

Collective concepts can also be themselves collective or distributive: 'battalion' is a collective concept in relation to 'soldier', and 'army' is a collection of battalions *and* of soldiers.

Univocal Concepts

The universal distributive concept is divided into two kinds: *univocal* and *analogous*. As I said, the distributive concept applies to each and every one of its inferiors individually. 'Man' applies to this man, that man, and every other man. Now, in the case of 'man', the concept is common to each individual for exactly the same reason: that is, each individual contains all the comprehensive notes which are found in the universal concept of 'man'. 'Animal' is said of 'man' and 'brute' for entirely the same reasons; namely, because both men and brutes are sentient, living, material substances—we call these concepts *univocal*

Analogous Concepts

Sometimes, however, the concept applies to each of the individuals in its extension not for the same reason but for different reasons. Healthy, for example, can be said of man, of food, and of color. But it isn't said of man, food, and color for exactly the same reasons. A man is said to be healthy because he possesses the quality of good bodily composition and functioning. Food is said to be healthy because it *causes* this good quality in man, not because it possesses health. Likewise, color is called healthy, not because color goes to the gym and eats well, but because a good complexion in man is a *sign* of good health. Health, then, is not applied to food and color for entirely the same reason as it is applied to man. Food and color fall into the extension of 'healthy' by *analogy.* Healthy is common to man, food, and color in diverse ways: for man as an intrinsic bodily quality, for food as a cause, and for color as a sign. 'Man', 'animal', 'book', etc. extend to their inferiors for the exact same reason—namely, because their inferiors properly possess the nature of 'man', 'animal', and 'book'. Concepts like healthy can also extend to inferiors which do not possess the quality of health, but because they are related to health in some way—we call these concepts *analogous*. Analogous concepts, then, represent objects which extend to certain things not because they share the same nature, but because they have a certain likeness or relation to that nature. An analogous concept is one which is said of several things according to a meaning which is partly the same and partly different in each case. When I say 'the eye sees' and 'the intellect sees', the concept 'see' is being applied to the intellect in an analogous sense. Only the eye properly speaking 'sees'; only it has visual knowledge. The concept 'sees' is here being used to indicate the proportion between a knowing power (such as the intellect and the eye) to the object known. So, as the eye has knowledge of its object (i.e., color) to the intellect has knowledge of its object (i.e., the intelligible quiddity of essence). And this relation of knowing power to its formal object is represented by the analogous concept 'see'.

There are broadly speaking two kinds of analogous concepts. There are some concepts which always and everywhere apply to each and every being in reality (but in slightly different ways)—and these concepts are called Transcendentals—and there are some concepts which apply to two or more beings, not because they share the same nature but because they have a certain similarity or likeness. The concepts which apply to every being in reality (i.e., the Transcendentals) are studied in Metaphysics, so we need only mention then here now. There are six of them: being, thing, something, one, true, and good. So, everything in reality can be called 'good', for example, though for different reasons. The will is called good when it is moral, the intellect is called good when it is in conformity with reality, plants are called good when they flourish as plants are supposed to, chemical elements are called good when they exert all the activities that they're supposed to, etc. So everything in reality is called good though for different reasons. Some concepts, however, are analogous, but they don't apply to every being in reality. 'Seeing', to use the above example, is an analogous concept which applies only to knowing things. Only the eye properly *sees* its object, but in an analogous sense the intellect can be said to 'see' its object, because as the eye is to color, so the intellect is to a quiddity or essence—eye:color=intellect:quiddity. And the concept of this proportionate relationship is an analogous concept that we call 'seeing'.

Intrinsically Analogous Concepts

Common analogy is of two types: *intrinsic analogy* and *extrinsic analogy*. A concept is intrinsically or essentially analogous when it always refers to a relation of proportion between two things. So, 'double' is an intrinsically analogous concept because it always refers to a proportionate relation between two quantities. The relation of 2 to 4 equals the relation of 6 to 12. That's not to say that 2 equals 6, and 4 equals twelve. That wouldn't be true. But they are equal according to an analogy of proportionality. The relation between those sets of numbers is the analogous concept of 'doubleness'; and there is an infinite combination of numbers that can fit this analogous concept. Doubleness, then, implicitly and of its very nature extends to every pair of numbers that can be related as 1:2. So, a concept of intrinsic analogy is one which represents an object that extends to many things because of a relation of proportionality that those things have with each other. 'Knowledge' is an intrinsically analogous concept. It refers to the proportion between a knowing power and the object known. The eye has knowledge of color, while the intellect has knowledge of a quiddity, and the tongue has knowledge of flavors, etc. The relation or proportion between these powers and their objects is an analogous concept we call knowledge—sight:color :: hearing:sound :: taste:flavors :: human intellect:quiddity of things in physical reality :: Divine Intellect:God's own essence. The concept of 'knowledge' then is of its very nature analogous and extends to the relation between all the various knowing powers and their objects, even though all these power and objects are of different natures.

Extrinsically Analogous Concepts

A concept is extrinsically analogous, or *not-essentially* analogous, when it primarily signifies a univocal object but can be widened to include other things which are similar to itself. When I say 'the clouds are angry', 'angry' is a concept which essentially pertains to an emotion; angry is a connotative concept implying the animal which is experiencing the passion of anger. But by an analogy, I can say also that the clouds are angry. Not because they are experiencing an emotion, but because their behavior is erratic and frightens me just as an angry animal might. Hence, 'angry' only becomes analogous when it is compared to something outside itself yet similar to itself. And there are two types of this extrinsic analogy: *metaphor* and *attribution.*

Analogy of Metaphor (Metaphorical Concepts)

Metaphor is when we say that the clouds are angry. It is extending a concept to something outside of its proper and normal extension because of some accidental likeness or resemblance. We call the lion the king of the jungle, not because he alone has been vested with sovereign political authority, but because his strength and agility single him out as the strongest animal. The lion is equated with the king only because of some accidental likeness. Idiomatic expressions often contain metaphorical analogies such as when we say, "Perish the thought". Well, thoughts don't die: the expression is metaphorical. Again, if I say 'fatherland', we have a metaphor condensed into a single word.

Analogy of Attribution (Attributive Concepts)

Analogy of attribution, on the other hand, extends a concept to something outside its normal and proper extension because that other thing is somehow causally related to it: that is, because the thing to which it extends is either a cause or an effect of what the concept properly represents. Healthy, for example, primarily and properly extends only to those organic bodies that have harmonious bodily operation—when all its organic parts are doing what they're supposed to do. But because of the relationship that food and color have to being healthy, the concept of healthy can extend to them as well: to food as the cause of health, and to color as the sign of health.

A Note: Why We Haven't Mentioned Equivocal Concepts

In many works on Logic, you will see a division of concepts into univocal, analogous, and equivocal. For example, 'bark' can represent the noise that a dog makes, and the covering of a tree. 'Bark', then, refers to entirely separate things which don't have a metaphorical resemblance and don't have a causal connection—'bark' is neither univocal nor analogous, it is equivocal. So why haven't we included equivocal in our division? Because concepts cannot be equivocal, only words and terms can be equivocal. Words and terms are *signs* of our concepts; they represent our concepts. A word or term can be equivocal when the *same* term is used to represent two entirely different concepts. The concept of the noise a dog makes, and the concept of a tree's covering are different concepts; but we use the same word to signify both. Hence, it is the *word* that is equivocal because it represents two unrelated things; because it signifies two distinct concepts. Aristotle defines it as a common name signifying different natures. But the concept itself cannot be equivocal because each concept by definition signifies only one nature or quiddity (even if it *implies* or connotes another one). Therefore, the idea of an equivocal concept is contradictory. We will return to equivocity soon, when we discuss words and terms.

EXERCISES: Let's get some practice in dividing the concept by reason of extension.

Definitions – Go back through the text and find definitions for the following: singular concept, universal concept, restricted concept, non-restricted concept, determinate concept, indeterminate concept, collective concept, distributive concept, univocal concept, analogous concept, equivocal term, intrinsic analogy, extrinsic analogy, metaphor, analogy of attribution.

Practice concepts – say whether the following concepts are singular, universal, restricted, non-restricted, determinate, indeterminate, collective, distributive, univocal, or analogous.

1. **Philosopher**
2. **The author of the Summa Theologica**
3. **Some teachers (as in 'a new school needs some teachers before it can open')**
4. **Some scientists developed the nuclear bomb**
5. **Gandalf**
6. **Someplace (as in 'this door leads someplace')**
7. **Someplace (as in 'all doors leads someplace')**
8. **This book**
9. **Some one book (as in 'some one book, if it is bad enough, is all that is required to destroy a soul')**
10. **Every book (as in 'every book has pages')**
11. **No book (as in 'no books are living')**
12. **All books (as in 'all books are bound')**

13. **Parliament (or Congress, for the Americans)**
14. **Foot (conceived as an organic body part)**
15. **Foot of the mountain**
16. **A little bit of knowledge (as in 'a little bit of knowledge is a dangerous thing')**
17. **Some knowledge (as in 'some knowledge is sensitive, some is intellectual')**
18. **A pleasant color (as in 'the color of the room is pleasant'; remember 'color' in itself is only pleasing or unpleasing when it is brought into relation with an eye that sees it)**
19. **Football team**
20. **Triple (as in 2:6, and 4:12)**
21. **The man who founded Rome**
22. **Labor Union**
23. **No dogs (as in 'no dogs go to heaven')**
24. **Love (as in our love for others, God's love for us, the eye's love for seeing, the tongue's love for taste; in other words, a proportion between one thing which desires and another thing which is desired)**
25. **Laugh**
26. **A barrel of laughs**
27. **A great book (note that a book in itself is neither great nor poor, but only if it causes a kind of perfection in our minds)**
28. **Animal**
29. **'Bad', as in, 'A bad word' (note that 'words' themselves are indifferent; we call them bad when the cause a dangerous or tasteless concept within our own minds)**
30. **A few animals**
31. **Evil, as in 'An evil choice' (note that 'choice' in itself is not evil or moral; we call it evil when it is caused by a perverted will)**
32. **A number of men (as in 'a number of men are required to build a city')**
33. **City**
34. **Every animal**
35. **Moral, as in 'a moral choice' (same as 'an evil choice')**

Division of the Concept by Reason of Perfection

So far, we've divided the concept according to how it signifies the comprehensive notes of a quiddity, and how it signifies the extension of a quiddity. Now we are going to look at how well or poorly the concept can represent a quiddity. This is to divide to concept by reason of perfection. Remember, the concept is essentially a representation of the things in reality. Some representations are good and some are bad—a mirror image, for example, is a kind of representation of the things reflected, and it can be hazy or clear. So what we're looking at now is how *good* of a representation the concept can be; how *well* it makes known to us the things in reality.

By intellectual knowledge, we hope to attain a clear understanding of *what a thing is,* or rather an understanding of a thing's quiddity (i.e., its essence). We want to have knowledge of one determinate essence, and so the most perfect concept will tell us everything there is to know about what some determinate thing is. The most imperfect concept will be the opposite of this. The most imperfect concept will *not* give us knowledge of one determinate essence. It will not in any way tell us *what a thing is*, but only *what a thing IS NOT*. So by reason of perfection, the concept is first divided into *infinite* and *finite.*

The Infinite Concept

The purpose of the concept is to give us knowledge of a thing, and (as we've seen) we get knowledge of it by adding comprehensive notes and gradually limiting the concept's extension until it applies to this thing and to no other thing. This is to have knowledge of some one particular quiddity, and to separate this quiddity from all others. An infinite concept, however, does not allow us to do this. It doesn't give us notes which gradually limit the extension by telling us what a thing. It only gives us notes which tell us what a thing is not. 'Non-man' is an infinite concept. It applies to everything in reality, except man. If someone were to ask me, 'what is a quark?', and I respond, 'well, it's not a man', their knowledge of quarks hasn't been in any way perfected. There are still an infinite number of things that a quark could be. Even if I were to amend my response and say, 'well, it's not a man, it's not a dog, it's not a stone, etc.', I still haven't added to his concept any notes which explain what a quark is. An infinite concept, then, is one which does not give us any knowledge of one, determinate essence; an infinite concept is merely the negation of an essence.[22] The infinite concept is also sometimes called the indefinite concept: a perfect concept gives us knowledge of some definite thing, so the most imperfect concept gives us knowledge of no definite thing. Infinite concepts are easily recognized by the addition of 'non'; it simply removes or negates an intelligible note.

The Finite Concept

So the finite concept will at least tell us *something* about the essence, about what a thing is, even if it is only very vague. And so this finite concept will have varying degrees of perfection depending on just how much of the thing it reveals to us; depending on how many and what type of comprehensive notes its contains. Because of this, we divide finite concepts into common (or obscure) and proper (or clear).[23]

The Common Concept

[22] In II Periherm., lect. 1

[23] In I Post. Anal., lect. 4, n. 4-5.

Common concepts represent the essence only in their most common features so that one essence isn't clearly distinguished from other things. So, if I know 'dog' as only 'an animal', I do have real and determinate knowledge of the dog—I know it as a living thing with senses. I have a finite concept of its essence or quiddity, but I don't have *clear* knowledge of it. I don't know what things are *proper* to it; or rather, I don't know what notes pertain to the dog alone and don't pertain to anything else. I don't have any knowledge that distinguishes the dog from, say, a cat or even from man. Dogs, cats, and men are all animals. So as long as I know a dog only as a kind of animal, I only have knowledge of its common attributes.

The most common concept, and therefore the most imperfect of finite concepts, is that of *being*. You'll hear a lot about the concept of being in your philosophical studies; it's the most important (and certainly the most debated) topic you'll find in Scholastic circles, and in it we discover the answer to modern idealism. But that's something for another course. Right now, understand that it's the most common concept that we can have. It applies to everything, real and possible. It even applies to God (though for different reasons, as you'll learn in Metaphysics). In the common concept of being, every other essence is contained obscurely and confusedly. Animal is a common concept in relation to brutes and man. Living is a common concept in relation to plants and animals. Being is a common concept in relation to absolutely everything; even things which will never exist in reality. A common concept, then, is one whose comprehension includes only those notes which the quiddity shares in common with other things.

The Proper Concept

So the common (or obscure) concept is one which represents an essence only according to notes which it shares with other things. It doesn't distinguish the quiddity from all other quiddities. The proper concept, on the other hand, does. The proper concept contains, not only common notes, but notes which apply to this quiddity and this quiddity alone; it contains notes which are *proper* to this essence. Rational is a proper concept of man because, as you'll learn in psychology, no other being is rational. A concept of man which includes this note allows you to distinguish man from all other things. And so a proper concept is more perfect than a common concept because it gives you more determined knowledge of what this particular thing is; not only knowledge of what this thing has in common with other things (common concept); and not only knowledge of what this thing is *not* (infinite concept).

But not all proper concepts are of equal value. Sometimes the proper notes contained in the comprehension are *essential* to the thing known, and sometimes the notes are *not essential*; i.e., sometimes they are accidental. For example, conceiving of man as a 'featherless bipedal animal' may in fact be a proper concept if there are no other featherless bipedal animals; if being 'featherless', 'bipedal', and 'animal' is not common to other things besides man. But these attributes are not essential to man; they don't pertain to his quiddity or essence. If an attribute is essential to a thing, then that attribute cannot be removed without destroying the thing itself—in other words, it always and everywhere pertains to the thing, and it is impossible for the thing to be without it. Now, bipedal is not essential to man because you can cut off a man's legs and he will still exist. Featherless is not essential because even if man suddenly sprouted wings he wouldn't cease to be man; genetic engineering will likely prove that point (albeit immorally). 'Rational', on the other hand, is not only proper to man, but it is essential to him as well, as you'll learn in psychology. So some proper concepts give us knowledge of a thing which distinguishes it from all others, but nevertheless it doesn't give us essential (or 'quidditative') knowledge of the thing. And since the goal of intellectual knowledge is to know the essence of something, a concept which contains only non-essential notes is less perfect than a concept

which contains also essential notes. Because of this, proper concepts can be divided into *quidditative or distinct* concepts and *non-quidditative or confused* concepts.

Quidditative or Distinct Proper Concepts

So a quidditative concept is one which clearly identifies the essential notes of a thing. To know man as a 'rational animal' is to know what pertains to him essentially. To know a triangle as a 'three-sided plane figure', is to have essential or quidditative knowledge of it. A quidditative concept is one which contains proper and essential notes within its comprehension and, thus, distinguishes the thing known from all other things by what pertains to its very essence. However, there are always several essential notes in a thing, not just one. And we can have knowledge of all those notes, or only of a few. Therefore, quidditative concepts can be divided into *complete* and *incomplete*.

Complete Quidditative Concepts

When a quidditative concept is complete, it contains within its comprehension every essential note of a thing. Within a complete quidditative concept we can distinguish each and every essential intelligible object and lay them out one by one. When I have a complete quidditative concept of man, for example, my concept will contain all the notes of substance, corporeal, living, sentient, and rational. There may be many other notes besides these—such as 'generally being born with two legs', 'usually having hair', etc.—but as we'll learn later on, no other notes besides the ones given pertain to the very essence of man. Complete quidditative concepts are of two types: simply quidditative or positive-negative.

Simply Quidditative Concepts

Now, it is indeed logically possible that we can have complete quidditative knowledge of some things; we can know all the essential notes of a triangle, for example, and we can positively state all these notes by giving a definition of triangle. When we do in fact conceive of a thing as containing all these essential predicates, or notes, then we have strictly and simply quidditative concept. And we can do this in two ways: 1) by simply apprehending each of the notes or, 2) by not only apprehending those notes but also by understanding those notes perfectly.[24] In the case of '1' we have merely apprehensive knowledge; in the case of '2' we have comprehensive knowledge or *understanding* in the proper sense. So we can say to ourselves that man is substance, material, living, sentient, and rational and in this case we have only apprehensive knowledge; or in addition to stating that man is substance, material, living, sentient, and rational we can comprehend or *understand* what is means to be substance, material, living, sentient, and rational. Only when we understand all the notes—and not merely apprehend them—do we have truly perfect knowledge of a thing. To give another example, I can know (or apprehend) that a triangle is a 'three-sided plane figure', but unless I comprehend what 'plane figure' means then my quidditative concept is still imperfect. It is only when I apprehend all the essential notes AND entirely understand what all those notes mean that my knowledge of a thing is perfect. In other words, the comprehensive, simply and completely quidditative proper concept is the most perfect kind we can have.

Not Simply Quidditative Concepts, or Positivo-Negative Concepts

However, the quiddity of *some* things cannot ever be known perfectly by our limited human intelligence.[25] You see, all our knowledge is derived from material things—our intellectual knowledge

[24] I, q. 12, a. 7, c.

[25] I, q. 85, a. 3, c.

comes first from the senses. To arrive at a knowledge of, say, immaterial things, we have to *negate* certain attributes that we discover in the material world. So, for example, in addition to all the positive attributes that we can say about God (e.g., He is Good, True, One, Living, etc.) we have to add negations that will remove the imperfections that we discover in reality: God is Living, but it is an inorganic kind of life; God is One, but not in the sense of an extended, physical unit; God is good but not in the sense that a cinnamon bun is good, etc.[26] Though the concepts of immaterial things might be quidditative (because they give essential notes), they also include negations among the comprehension notes. So we call these positivo-negative concepts: some of the notes represent the thing *positively* according to what it is in itself, while some of the notes are negations (i.e., infinite concepts—see above), which tell us only what the thing is not. Hence, these concepts are not strictly quidditative since a part of the comprehension doesn't tell us what a thing is, but only what the thing isn't. For that reason, our knowledge of immaterial realities can never be perfect: some of the notes in their comprehensions will always be—for us—negations.[27]

Incomplete Quidditative Concepts

So we've seen that *complete* quidditative (or distinct) concepts can be simply quidditative or positivo-negative, and apprehensive only or apprehensive *and* comprehensive. Now, the *incomplete* quidditative concept is very similar, except that it doesn't contain *every* essential or quidditative note. The incomplete quidditative concept is one which contains at least one essential note of a thing, but not every essential note. So it is a concept which is distinct as regards one part of the comprehension, but confused as regards another part. If I know man as a 'rational animal', but I don't know how an animal is different from a plant, then my knowledge is distinct in one way and confused in another. It's distinct as regards the note which separates man from the other animals (i.e., rational), but its confused because it doesn't know what essentially separates animals from plants. This concept is obviously less perfect than a complete quidditative concept which knows *each and every* essential part. Incomplete quidditative concepts can be divided exactly as complete quidditative concepts; i.e., into simply quidditative and positivo-negative, into apprehensive only and apprehensive/comprehensive.

Non-Quidditative or Confused Proper Concepts

Okay, so I mentioned that some proper concepts contain notes which essentially (i.e., always and everywhere) pertain to the thing under consideration—and I called these quidditative—while some proper concepts contain notes which are not essential to the thing. These are called non-quidditative or confused concepts (they are called 'confused' because they do not allow us to tell apart the essential from non-essential notes of the thing—the essential and non-essential notes are confounded or confused with one another). It is still a proper concept, as I said. It still distinguishes this thing from all other things, but it does this according to notes which are accidental or non-essential. Again, to conceive of 'rational animal' is distinguish man from other beings according to his essential notes, while to conceive of 'featherless bipedal animal' is to distinguish man according to non-essential notes. And this non-quidditative understanding can happen in two ways: 1) by understanding the non-essential attributes, traits or accidents of a thing; 2) by understanding the extrinsic causes of the thing.

Confused Concepts through Accidents

[26] I, q. 13, a. 1, ad 2 et 3

[27] I, q. 12, a. 7, ad 2

Being 'featherless' and being 'bipedal' are not essential to man, as I've pointed out above. But they are intrinsic attributes or accidents of a human. Generally speaking, a man has two legs; generally speaking, a man does not have feathers. When we know 'man' in this way, we do not have knowledge of his essence properly speaking; we don't know what makes him a man. Knowing man through sensible characteristics alone is very imperfect knowledge. Nevertheless, these characteristics can very often allow us to identify a man and distinguish him from all other creatures. Taken separately, 'being featherless', 'being bipedal', and 'being an animal', might apply to any number of things: rocks are 'featherless', birds are 'bipedal'. But when we join these attributes together and get something like 'featherless, bipedal animal between certain heights and possessing certain bone structures with a certain kinds of skin tones and textures, etc. etc.' we can easily point out a man; we can sensibly identify a man when he is compared with, say, a fire hydrant. Having all these attributes at the same time may, as a matter of fact, pertain only to man. Nevertheless, it only serves to point out a man—not to tell us what a man is essentially. When someone asks me, 'what's a widge-a-ma-hicky?' I might point to something in the corner of the room and say, 'that's a widge-a-ma-hicky.' The person would then form a concept of 'widge-a-ma-hicky' with all the sensible characteristics the he has observed in the thing in the corner. Perhaps he can easily identify a widge-a-ma-hicky from now on because he knows what it looks like. Yet, he still hasn't the foggiest idea what a widge-a-ma-hicky really is; he doesn't know its quiddity because he can't separate the essential or quidditative notes from the non-quidditative. His concept is very confused. Maybe he'll investigate that thing in the corner a little more, and maybe he'll discover that it is of a definite length with definite color and definite chemical construction. But that still won't tell him anything about the essence of a widge-a-ma-hicky unless he can say 'this thing *must* be of such-and-such a length with such-and-such color and such-and-such chemical construction or else it would cease to be a widge-a-ma-hicky.' Until he understands what essentially pertains to the nature of a widge-a-ma-hicky he has only confused knowledge. Perhaps what he sees in the corner is made of plastic, and perhaps his concept of widge-a-ma-hicky might contain the note of 'plastic'. But who's to say that a widge-a-ma-hicky can't be made out of metal? Until he knows that a widge-a-ma-hicky must be plastic in order for it to be a widge-a-ma-hicky, he doesn't have quidditative or essential knowledge; he cannot yet say that 'being made of plastic' is essential to 'being a widge-a-ma-hicky'.

As an aside, ask yourself about the question of evolution. Now, whether or not evolution actually occurred has nothing to do with the point I'm about to make. Ask yourself about the arguments put forward on behalf of evolution. Evolutionists generally argue that early hominid skeletons prove that man evolved because of the structural similarity to human skeletons; i.e., their bones and bone-properties look alike. Now, ask yourself, is their concept of 'man' distinct or confused? We will return to this point later on (in Material Logic) when we discuss how to *prove* that something is essential or non-essential. But for now just consider whether bone stature is an essential note that will allow us to identify or equate two different species. Obviously, if two things possess the same *essential* notes then they will be of the same essence. Thinking ahead to what we'll learn later, do you think that bone structure is one of those essential notes? Or are many evolutionists mistaking a non-quidditative concept of man for a quidditative concept.

Confused Concepts through Extrinsic Causes

In addition to the non-essential (i.e., accidental) traits and attributes of a thing, we can also have a non-quidditative knowledge through extrinsic causes. Think back to the beginning of the course when we briefly discussed the four causes: material, formal, efficient, and final. The extrinsic causes are efficient and final, as I said, because they are separate from the thing caused. The sculptor (the efficient cause) is distinct from the statue; the money for which the sculptor sculpted (the final cause) is also distinct from the stature—the efficient and final causes are extrinsic to the statue. But we can have a concept of the

statue which includes the efficient and final causes. If I conceive of statue as 'that which was created by Michelangelo', I have a non-quidditative concept through the efficient cause. I don't know much about the nature of the statue; I don't even know what it is made of. In fact, I don't even know that it is a statue—it could be a painting. I can also conceive of statue as 'that which is created for money'. This is through the final cause. And again it doesn't tell us very much about what a statue is because lots of things are made for money. Again, I can even combine the two extrinsic causes and get 'that which was created by Michelangelo for money'. A little better now because our concept excludes things which are done for other motives and by other people. But still we have no essential, intrinsic knowledge of what a statue is.

Furthermore, I can combine notes of extrinsic causes with notes of accidents. For example, when I conceive of statue of 'that which is made from marble by Michelangelo for the purpose of making money'. This is better still; nevertheless, it is still not quidditative. Can't we have statues made out of clay? Can't we make statues for other motives than money? Can't other people make statues? This knowledge is all non-essential, non-quidditative. It's very imperfect. To make it perfect we need to discover which of those notes always and everywhere pertain to a statue such that a statue would be destroyed if ever those notes were removed.

Division of the Concept by Reason of Origin

We've looked at the various ways that the concept represents the comprehensive notes of a thing (division by reason of comprehension), we've looked at the various ways that the concept represents the extensive inferiors (division by reason of extension), and we've looked at the various levels of perfection that a concept can have (division by reason of perfection). Now, we're going to study the order in which ideas are caused in our intellects. You see, not all concepts occur to us in the same way. Some concepts we abstract immediately from the world of sense, for example, while other concepts are caused in our mind by means of previous concepts. So my concept of 'dog' is originally abstracted from the several dogs I've encountered with my senses, while my concept of God is never abstracted from sensible particulars. Again, my ideas of certain kinds of rocks are developed from the various sense properties that I encounter in the geological world; I know 'gold' first because of the yellow color, the durability, etc. But my concept of 'subatomic particle' is a concept arrived at by means of reasoning from sensible effects, back to their causes: I never immediately sense subatomic particles, rather I reason to them from the things that I do sense. These are just a few examples of how concepts are caused in our minds. Let's now lay out the full division.

By Mediation

A concept can be caused in us either by sense knowledge alone or else by means of a previous concept. Hence, we divide concepts into immediate concepts and mediate concepts.

Immediate Concepts

In the natural process of development, our intellects first started out completely blank. We had no concepts because we originally had no sense experience from which to derive our concepts. A new born likely has almost no intellectual activity (though this is far from saying he has no intellect!). He knows only a changing sensible reality; a world in constant motion. By gradually repeating his experiences of this world and developing his memory, he begins to recognize a certain stability in the midst of all this change: some things stay the same. A 'being' (the most common concept, as we said in the last chapter), some certain bundle of sensible qualities, for example, always greets him in the morning. This bundle has a certain color, and size, and odor, and sound. And whenever this bundle of qualities is around the same sound is repeated; namely, a vocalization that we call 'dog'. This being is now recognized as some definite nature that the child will associate with and refer to as 'dog'. He has abstracted the concept of 'dog' from this abiding, stable bundle of sensible qualities. He is, of course, a long way from perfectly understanding what a dog is. Nevertheless, he has a common, finite concept of dog. This was not formed by means of previous concepts; in fact, it's possible that the child had no previous concepts to draw from. It was abstracted immediately from his sensible experience. Hence, we call it an immediate concept.

Mediate Concepts

Now, once we have a storehouse of concepts that were immediately derived from sense experience we can move to an understanding of other things which we have *not* immediately sensed. For example, none of us have ever met a dodo because they don't exist anymore. How then can we form an idea of it? Try explaining to someone what a dodo is. You might start by asking that someone if they know what it means to be extinct. They answer yes. Then ask them to conceive of a bird. No problem. Now, join the two concepts together and you get 'an extinct bird'. They now conceive of a dodo as an extinct bird. Granted, this is a very imperfect concept—it's certainly not quidditative because 'being extinct' is not of the essence of dodo birds—but they have a concept nonetheless, and it has been caused in them

by joining previous concepts. In other words, it is a single new concept caused by the mediation of other concepts.

There are different kinds of mediate concepts; not all are exactly like the example of the dodo. When, for example, I intellectually conceive of a statue of Aristotle, my concept is what we call *actually or objectively mediate*. The statue is the object of my thought; my concept is of 'statue of Aristotle'. But in this concept, the nature of Aristotle *himself* (not the nature of the statue) is represented. By means of my concept of the statue, I am conceiving of the nature of Aristotle himself. Likewise, when someone points to a picture of Aquinas and says 'that man', our concept immediately refers to the picture and by means of the picture to Aquinas himself. Again, in thinking about the reflection of a man in a mirror I am conceiving the nature of man but as contained in the mirror; the mirror is properly the object of my thought and the nature of mean is known through the mirror. We call this objectively mediate because the object of my thought is one thing (e.g., the statue or the mirror image), but contained in that one object we find a concept of the thing represented (e.g., Aristotle or man). We are not forming a new concept in order to conceive of Aristotle or a man; rather, by means of one concept two things are known. That is, two objects are known in a single act of simple apprehension.

Now, some concepts are mediate in another way. When we form a *new* concept in a *new* act of simple apprehension but by the help and mediation of previously known concepts, we have what is called a *virtually or formally mediate* concept. We can know 'extinction' by one act of simple apprehension, and we can know 'bird' by another. Bird and extinction are known separately, but they have the power (power=*virtus* in Latin, from which we get 'virtually') to be joined together so that a new concept is formed, i.e., extinct bird. 'Extinct bird', then, is known by a new act of simple apprehension, but it is composed entirely of previously known concepts. So, the difference between a virtually/formally mediate concept and an actually/objectively mediate concept has to do with how many acts of simple apprehension are required to conceive the mediate thing. If there is only one act of simple apprehension such that what is conceived mediately is known *in* the primary concept, then we have an actually/objectively mediate concept. So when I conceive of a man's reflection in a mirror I'm primarily conceiving a physical phenomenon of light rebounding off a surface, but by means of this (and in one and the same act of apprehension) I'm also conceiving of the nature of man. However, if the mediate concept is derived from a second act of simple apprehension, then it is virtually/formally mediate. So, when I think 'plain figure', and then I join it to the concept 'three-sided', the concept of triangle is formed in my mind by an act of apprehension different from those by which I conceived of 'plain figure' and 'three sided'.[28]

Immediate concepts are primarily the concern of Psychology; studying how we first abstract these notions and how they develop by interaction with the senses. Logic is concerned mainly with mediate concepts. This is because Logic is primarily concerned with *reasoning* and the syllogism. Well, the syllogism works by joining concepts together to make a conclusion. Hence, the conclusion will always be mediate.

By Presence

[28] Connotative concepts give us a great source of *objectively* mediate concepts. Remember, a connotative concept is one which implies a relation to something besides itself. The concept of strong implies a relation to a subject which *is* strong; which is *possesses* strength. By reflecting on the concept 'strong' we see that there must be some subject which is implied in this single concept of 'strong'. Granted, whatever the subject is might be indeterminate, but nevertheless that indeterminate 'something' is always *actually* contained in the concept.

A concept can either depend upon the physical presence of its object in order to be conceived or not depend on the physical presence of its object. For example, we can conceive of a chiliagon (i.e., a thousand-sided plane figure) without having a chiliagon sitting in front of us. We can conceive of 'nearness' without ever sensing it, because 'nearness' is not something that you can sense. On the other hand, we cannot conceive of 'this book' or 'that man' without the book or man being present to the senses. Because of this, concepts can be divided into intuitive and non-intuitive (sometimes called abstractive).

Intuitive Concepts

Intuitive concepts are ones which require the real physical sensation of the thing known. To understand this, think back to our discussion of sense knowledge versus intellectual knowledge. We said that the senses know singular things while the intellect knows universals. So, if we are to understand singular things—i.e., if we are to have intellectual knowledge of singular things—we will have to coordinate both our senses and our intellect. In order to conceive of 'this book', I must conceive the nature of book and sense a particular object in which the nature of book has existence. That is, in order to conceive of 'this book' there must be a real book which corresponds to the concept 'book'; some book must be present to my senses because the concept 'this book' is a singular concept, while the intellect only directly knows universal things. 'This book', 'this man', 'this glass of wine', 'Peter', 'Mary', and any other singular concept will need to involve the senses. However, as you'll learn in Psychology there are two kinds of senses, external and internal. You can undoubtedly name the external senses just as Aristotle did: sight, hearing, taste, smell, touch. But did you know that there are also four internal senses? These are the imagination, the common sense, the cogitative sense, and the memory. So, there are external AND internal senses. And, therefore, an object can be sensibly present in two ways: either present to the external senses, or present to the internal senses. The image of a dodo bird that I have in my head is sensibly present to the imagination: I can image the dodo to be a certain size and of a certain color and having a certain plumage. I can even give my imaginary dodo bird a name. We'll call him Barsanuphius. Now, just as my singular concept of 'this book', so my singular concept of 'Barsanuphius' will require the sensible presence of the dodo; however, dodos are extinct and hence cannot be present to the external senses. But they can be imagined. I have in my imagination a singular thing that I call Barsanuphius, and that is sufficient to conceive of him in the intellect. Likewise, I can have the singular concept of 'Peter' when Peter is standing in front of me, but I can also retain the sensation of Peter in my imagination when Peter is nowhere to be found. That is, I have a sensible thing in my imagination that will allow me to intellectually conceive of Peter even when Peter is absent. An intuitive concept, then, is one which requires the presence of a sensible singular; present either to the external senses, or to the internal senses. An intuitive concept is always caused by the sensible presence of its object.

Non-Intuitive Concepts

Non-Intuitive concepts are ones which do not require the sensible presence of the object known; neither in the external senses nor in the internal senses. They do not need to be caused by the sensible presence of that object. Universal concepts are of this sort. When I conceive the nature of 'man' I don't need to be sensing any particular individual man. I'm simply apprehending man in the universal independently of any of my senses. Likewise, 'dodo' is a non-intuitive concept. It isn't caused by the sensation of a dodo bird. Quite the opposite. In the case of the dodo bird, it's caused by joining two concepts together (i.e., the concepts of extinct and bird) and then the image in my imagination follows as a consequence; the phantasm of *Barsanuphius* follows my concept of 'dodo'.

All experimentation deals with intuitive concepts, because experimentation is the cataloguing of singular events. But I don't just mean laboratory experimentation: when a toddler experiments with his toys, he is dealing with concepts of singular events. Experimental knowledge is intellectual knowledge of sense objects which are in motion, or rather sense objects which are changing. We'll learn later on that properly scientific knowledge must be *non-intuitive*, and that intuitive knowledge is only a preparation for scientific knowledge. So we will return to this division—especially when we reach and *induction* and the dialectical syllogism.

By Directness

Our intellect primarily and directly knows the things in the material world. But we can also turn our intellect back on itself and indirectly understand our own understanding. Because of this concepts are divided into direct and reflex.

Direct Concepts

The direct object of the eye is color. The direct object of the ear is sound. And as you'll learn in Psychology, the direct object of our intellects in this life is the quiddity of material things. A direct concept then will be a concept of some material thing—the concepts of 'book', 'man', 'dog', 'color', 'quantity', etc. are all direct concepts—or of something which is known by analogy with material things—i.e., concepts of the immaterial. They bear directly on the proper object of the human intellect.

Reflex (indirect) Concepts

But the intellect can do something that the eye and the ear cannot. It can turn its knowledge back on itself. The eye cannot see 'sight'. The ear cannot hear 'hearing'. This is because the eye and the ear are extended material things and cannot 'bend back' on themselves. But the intellect is not extended— it's immaterial. Hence, it can bend back upon itself and make its own operation an object of intellectual knowledge. That is, the human intellect can understand 'understanding'. The reflex concept, then, is one by which we know our own intellection, our concepts, and even our soul itself. It is a concept by which we know that we know; it is a concept of a concept and it connotes (think back to the division by reason of comprehension) or implies the principles of that concept: namely, the intellect itself and even the soul. So, reflex concepts are also actually/objectively mediate concepts. They are discovered by reflecting on our direct concepts. Exactly how this takes place will depend upon Psychology to prove. For the logician, we need only recognize that there is a distinction between knowing an object outside our concept without reflecting on our knowledge, and knowing our knowledge itself.

The Divisions of the Concept Considered Relatively

So far, we've been dividing the concept in itself and absolutely. That is, we've only been concerned with single concepts by themselves. We've examined a large number of logical properties (i.e., second intentions) that accrue to things as they exist in the mind. We've seen that 'man' in reality only exists in singulars, but in the intellect he is simple and concrete and universal and distributive and univocal, etc. and that he can be finite and quidditative and complete, etc. 'To be concrete', 'to be universal', 'to be quidditative' etc., these are all logical properties that attach to the single concept of 'man'. But there are also logical properties which attach to concepts when they are put *in relation* to one another. In the physical world (independently of the mind), two men placed in relation to each other might take on the roles of, say, employer and employee, or customer and salesman. In the *logical* world, two concepts might take on the roles of identity or diversity, for example. So what we are going to do now is look at these various logical properties which exist between concepts. That is, we are going to divide the concept relatively; we'll see the different relations that one concept can have to another. And we can compare concepts in two ways: 1) by reason of sameness and difference, when by comparing the two concepts we discover one to be the same as the other or not; 2) by reason of inclusion and exclusion, when by comparing two concepts we discover that one always includes the other or excludes the other or is indifferent to the other.

Division of Several Concepts by Reason of Sameness and Difference

Some concepts, when compared to each other, are found to be *identical* and others are found to be *diverse.*

Identical Concepts

Identical concepts are those which signify or represent the same thing. But remember that concepts represent a thing both comprehensively *and* extensively. So two concepts can be identical or diverse in relation to both comprehension and extension or in relation to extension only. When I conceive of 'man' and 'rational animal' I have two concepts which share the same comprehension, and consequently the same extension. But when I conceive of 'rational animal' and 'featherless bipedal animal' there is only an identity of extension. That is, each concept has diverse comprehensive notes, but nevertheless they extend to the same number of inferiors. Again, when I conceive of 2^4 and 4^2, I have concepts which are comprehensively diverse, but extensively identical; i.e., they are concepts containing different comprehensive elements but they have the same number of extensive inferiors.

Concepts which are identical in both comprehension and extension are called *strictly* identical. While concepts which are identical only in extension and not in comprehension are called *equipollently* identical. It's not possible to have concepts which are identical in comprehension but not identical in extension, because comprehension is logically prior to extension, as was explained some time ago—extension depends upon and is determined by comprehension.

Diverse concepts

So, diverse concepts are simply concepts which have different comprehensive notes and different extensive subjects. In other words, they are concepts which represent or signify different things. The concepts of fire hydrant and computer are diverse in both comprehension and extension.

Division of Several Concepts by Reason of Inclusion and Exclusion

Some concepts include one another or exclude one another, while some concepts are wholly indifferent to one another; i.e., they neither include nor exclude the other. The former are called pertinent concepts while the latter are called impertinent concepts.

Impertinent Concepts

When I think 'black' and 'dog', I have two concepts which neither include nor exclude the other. That is, I can think of 'dog' without thinking of 'black' and vice versa. But sometimes one concept *does* include another: the concept of 'man' includes the concept of 'animal'. That is, I can't think of a man without implicitly thinking of an animal, though I can certainly think of a man without thinking of a black man or a white man. Concepts which are connected, concepts which have a relation of inclusion or exclusion to one another are called pertinent concepts (from the Latin, 'pertinare' meaning 'to pertain to'); while concepts which neither include nor exclude one another are called impertinent concepts. 'Dog' and 'black' are impertinent concepts. Dogs neither include nor exclude blackness; rather, they are indifferent to being black or white or any other color. White and sweet neither include nor exclude each other: some sweet things may be white but, then again, maybe not. Learned and prudent are the same: some men may be learned and prudent, some may be one or the other, some may be neither.

Pertinent Concepts

Pertinent concepts, however, are not indifferent to one another; they either include each other or they exclude each other. And because of this they are divided into two kinds: pertinent of *sequel* (those which *include* one another), and pertinent of repugnance (those which *exclude* one another).

Pertinent of Sequel

Concepts are pertinent of sequel when they include each other or follow upon each other; that is, concepts are pertinent of sequel when one concept *infers* the other. When I conceive of man, I'm conceiving of an animal. Hence, animal follows upon the concept of man, at least implicitly. Animal falls within the comprehension of man.

'Three sided plane figure' and 'having three interior angles equal to 180 degrees' are also concepts which always entail one another; they are pertinent of sequel because everything which is a three sided plane figure has three interior angles equal to 180 degrees as a necessary property. However, there is a big difference between conceiving these two things and conceiving 'man' and 'animal'. 'Three sided plane figure' and 'having three interior angles equal to 180 degrees' mutually infer one another; where there is a three sided plane figure, there are three interior angles equal to 180 degrees, and vice versa. We call these concepts *mutual or convertible* because each one infers the other and they are interchangeable (i.e., convertible) in regards to extension. 'Man' and 'animal', on the other hand, do not mutually infer. That is, while the concept of man always implicitly includes the concept of animal (because every man is an animal), the concept of animal does not always include the concept of man (because not all animals are men). Hence, we call 'man' and 'animal' *inconvertibly* pertinent of sequel. Man infers animal, but animal does not infer man.

As an interesting etymological aside, do you recall when we discussed comprehension and extension we said that the extensive subjects were called 'inferiors'? That is because they *infer* the comprehensive notes; i.e., they are inconvertible pertinent of sequels. So, brutes and men are the inferiors of animal—they *infer* the concept of animal. You might speak of them, not as inferiors, but as *infer-ers,* while the concepts which are inferred are called superiors.

Pertinent of Repugnance

Concepts which pertain to each other because of repugnance are concepts which exclude one another. That is, they cannot exist together in the same object. Smart and stupid, black and white, blindness and sight, tall and short. These are all concepts which cannot apply to the same thing in the same way at the same time; they are concepts which signify or represent opposing natures or quiddities. For that reason, they are also called *opposites*. There are two kinds of opposition: proper opposition and improper opposition. Proper opposition refers to opposing attributes which can exist in a subject but not at the same time in the same way: smartness and stupidness, virtue and vice, etc. Improper opposition refers not to opposing attributes of one subject, but rather to distinct subjects. 'Man' and 'stone' are improperly opposed because no man can be a stone. Yet, we don't say that stone is the opposite of man. Improperly opposed concepts are also called *disparate* concepts.

Proper opposition can be between one form or determination and the absence of that form, or proper opposition can be between two forms or determinations which cannot exist in the same subject at the same time. Hence, proper opposition is divide into negative opposition and positive opposition.

Negative opposition

Concepts are negatively opposed when one concept removes the form that the other one gives. So, blindness is the absence of sight. Blindness is not a thing in itself, but merely the non-existence of sight. This removal of a form can occur in two ways: by contradiction and by privation.

Contradiction

Concepts are contradictory when one concept is the negation of the other: man and non-man, being and non-being, white and non-white, smart and non-smart. Contradictory opposition is the kind of opposition between a thing and its negation. There is no middle ground between contradictory concepts: a thing is either a man or it is not.

Privation

Privative opposition is between a thing and some form or determination which that thing is capable of receiving. Blindness, as I pointed out, is not a thing in itself, but rather the lack of sight in a being which is apt to see. Darkness is the absence or privation of light in a subject capable of being illuminated. Ignorance is the lack of knowledge in a subject which should have it. Insincerity is the lack of sincerity in a subject capable of being sincere. The key to privation is that it is the lack of a form or determination in a subject apt (i.e., capable) to receive it. A stone is not 'blind'; rather, it is non-seeing. A stone is not ignorant, it is non-knowing. Hence, whereas contradiction has no middle ground—e.g., something is either a man or not a man—privation does have a middle ground—e.g., between seeing and blind, we have non-seeing; between knowledge and ignorance we have non-knowing (which is also called nescience). Privation occurs in a subject lacking a perfection which it is capable of receiving; but a stone is not capable of seeing, hence it isn't susceptible to blindness.

Positive Opposition

Concepts are positively opposed not when one concept simply removes the form given by the other concept, but when both concepts gives forms or perfections that cannot exist at the same time. That happens in two ways: by contrariety and by relativity.

Contrariety

Contrary opposition occurs when two concepts represent positive perfections which mutually expel each other from the same subject: red and blue, virtue and vice, bitter and sweet. Sometimes these opposing concepts have a middle ground (and then we call them mediate contraries), but sometimes they do not have a middle ground (and then we call them immediate contraries). Between black and white there are many shades of grey; so, black and white are *mediate* contraries because they have middle ground. Between moral and immoral in a human act there is no middle ground; hence, they are *immediate* contraries. Between odd and even there is no middle ground; hence, they are immediate contraries.

Relativity

Finally, concepts can be opposed because they are correlative notions which imply each other but in *different* subjects. Higher implies lower, teacher implies student, father implies child, front implies back, offense implies defense, etc. Neither of the correlative terms negates or deprives the subject of something; to be a father is not to lack something, nor is to be offspring to lack some perfection. Rather, each term gives a perfection which cannot exist at the same time, in the same way, and in the same subject as the perfection given by the other concept.

So according to this fourfold opposition, opposed concepts are distinguished into contradictory opposites, privative opposites, contrary opposites, and relative opposites.

EXERCISES:

1. **What is the difference between a mediate and an immediate concept?**
2. **Was your first concept mediate or immediate?**
3. **Is my concept of God mediate or immediate?**
4. **Why are concepts divided into intuitive and non-intuitive?**
5. **Is my concept of 'Rome' intuitive or non-intuitive?**
6. **How about my concept of 'city'?**
7. **And my concept of 'man'?**
8. **What in my concept of 'this book' pertains to the intellect and what pertains to the senses?**
9. **Is Gandalf non-intuitive because he doesn't exist?**
10. **What is the difference between a reflex concept and a direct concept?**
11. **Is my concept of Gandalf direct or reflex?**
12. **How about my concept of God?**
13. **And my concept of this man?**
14. **What about my concept of 'idea'?**

15. **What about my concept of ‘sensation’?**
16. **And is my knowledge of ‘my intellect’ direct or reflex?**
17. **When are two concepts entirely diverse?**
18. **How can two concepts be partly identical and partly diverse?**
19. **My concepts of ‘7 + 3’ and ‘20 – 10’; are they entirely diverse?**
20. **How about ‘the shortest distance between two points’ and ‘length without breadth’?**
21. **What about ‘line’ and ‘circle’?**
22. **When are two concepts strictly identical?**
23. **‘Man’ and ‘human nature’; are they equipollent?**
24. **How about ‘triangle’ and ‘three-sided plane figure’?**
25. **Are the following pertinent or impertinent?**
    a. **Man and substance**
    b. **Triangle and orange**
    c. **Triangle and line**
    d. **Triangle and plane figure**
    e. **Dog and cat**
    f. **Dog and fluffy**
    g. **Man and scholar**
    h. **Man and organism**
    i. **Man and Barsanuphius the Dodo**
    j. **Dodo and corporeal**
26. **Are the following pertinent of sequel or pertinent of repugnance?**
    a. **Baby and adult**
    b. **Man and adult**
    c. **Man and baby**
    d. **Triangle and man**
    e. **Barsanuphius and dodo**
    f. **Higher and lower**

g. **Higher and non-higher**

h. **Shaped and shapeless**

27. **How are the following concepts opposed to each other?**

a. **Cubed and flat**

b. **Darkness and light**

c. **Healthy and sick**

d. **Healthy and non-healthy**

e. **Gaseous and liquefied**

f. **Prudent and imprudent**

g. **Teacher and student**

h. **Full and empty**

i. **Yellow and white**

j. **Hearing and deaf**

k. **Solid and hole**

Signs of the Concept: Words or Terms

Up until now, we've been examining the product of simple apprehension: the concept. We've been looking at the concept because our task in Logic is to perfect reasoning, and reasoning happens by putting concepts together and taking them apart. In order to have the best processes of reasoning, we must have the right kinds of concepts.

Now, man is a not a solitary creature. He is born into a society (i.e., the family) and he naturally tends to create civil societies (i.e., the state). But society would be impossible without some sort of communication between its members. Men do not instinctively perform designated roles in society, but they have to discuss and determine who should do what. And unless they interact, society would never tend toward a common goal; everyone would go his own way. So there had to be some way to communicate our thoughts to others. To do this, mankind invented various signs that represent our intellectual operations of simple apprehension, judgment, and reasoning. That is, to make known to others what is taking place on the intellectual level, we invented language; we associated different thoughts with different sounds, and then we associated different sounds with different graphical symbols so that whenever these symbols were repeated, a particular thought or concept would be recalled in the mind. Language, then, is the sign of intellectual knowledge.[29]

"Now, if man were by nature a solitary animal the passions of the soul [intellectual concepts] by which he was conformed to things so as to have knowledge of them would be sufficient for him; but since he is by nature a political and social animal it was necessary that his conceptions be made known to others. This he does through vocal sound. Therefore there had to be significant vocal sounds in order that men might live together. Whence those who speak different languages find it difficult to live together in social unity.

"Again, if man had only sensitive cognition, which is of the here and now, such significant vocal sounds as the other animals use to manifest their conceptions to each other would be sufficient for him to live with others. But man also has the advantage of intellectual cognition, which abstracts from the here and now, and as a consequence, is concerned with things distant fin place and future in time as well as things present according to time and place. Hence, the use of writing was necessary so that he might manifest his conceptions to those who are distant according to place and to those who will come in future time."[30]

Man speaks by means of significant sound. In turn, he knows reality by means of significant concepts; i.e., the concepts in our minds signify or represent reality. So all the instruments we use in knowing and speaking are *signs*. Hence, in order to have thorough and accurate knowledge of all our logical instruments (i.e., thought and language) we should first discuss the nature of a sign. Then we can discuss those particular signs that only animals make and, specifically, those signs that represent the concept: words and terms.

Signs in General

As we did with the concept, we'll begin by giving the definition of signs (thereby explaining their nature, because recall that a definition works by spreading out a things comprehensive notes), then we'll divide it into the various kinds of signs.

The Definition of the Sign

[29] Cfr. II-II, q. 91, a. 1., c.; II-II, q. 109, a. 3, ad 1; II-II, q. 110, a. 1, c.

[30] In I Periherm., lect. 1

We all have a general understanding of what a sign is. A street sign gives us knowledge of our location, a 'danger' sign alerts us to a threatening situation, a 'no trespassing' sign points out the existence of someone else's property, smoke is a sign of fire, red bumps are a sign of measles, etc. In general, we all recognize that a sign is something which gives us knowledge of something else. But signs are much more important (and much more present) than we often recognize. Street signs are surely signs, but so are concepts. Concepts signify other things to us. And language signifies concepts.

A sign, then, is *that which represents something other than itself to a knowing faculty*.[31] Smoke represents fire to the person who sees it; red bumps represent measles to the doctor; STOP represents a law of action to the driver. So, there are three things to consider in any given sign: 1) the thing which signifies something else (e.g., the smoke which is signifying); 2) the distinct object which is known by means of that thing (e.g., the fire which is signified); 3) the relation or nexus between the thing signifying and the thing signified (e.g., the relation of causality between smoke and fire). The sign, properly speaking, consists in that nexus or relation. That relation between the signifying thing and the object signified is called the signification. In other words, the sign formally consists not in the thing signified and not in the thing signifying but in the relation between the two; that relation is like a vehicle moving our knowing powers from a knowledge of one thing to a knowledge of another. However, when I speak of a 'sign' from now on, I'll be referring to the thing which is signified; so, 'smoke' is the sign of fire.

Furthermore, a sign represents something *to a knowing faculty*. Stones are oblivious to signs. Trees take no interest in signification. Only knowing creatures can recognize signs. A sheep sees a wolf and recognizes danger. The eye presents a retinal image and by means of it the power of sight knows the color of the object in the real world. The imagination doesn't really reproduce the things in reality—else our heads would be enormous!—but it has signs (i.e., the phantasms) in which it knows the things we have at some point sensed.

The Division of Signs

So our definition of sign involves a twofold relation: 1) from the thing signifying (which we will call, simply, 'the sign') to the thing signified (e.g., from smoke to fire, from 'no trespassing' to another's property rights, from the concept to the thing in reality); 2) from the sign to the knowing power (e.g., from smoke to the eye, from the concept to the intellect)—so, again, a sign is that which represents something other than itself to a knowing faculty. And we can divide the sign into various kinds of signs as it regards each of these relations: 1) to the thing signified, 2) to the knowing power. In other words, there are different kinds of signs depending on 1) what kind of relation the sign has to the thing signified, and 2) how the knowing power uses the sign to come to know the thing signified.

Related to the Thing Signified

The relation between the sign and the thing signified can be established in two ways: naturally or arbitrarily. Smoke of its very nature signifies some sort of ignition; it naturally signifies an ignited something. A red light does not of its very nature mean that you must stop driving: that a red light

[31] Cfr., III, q. 60, a. 4; De Veritate, q. 9, a. 4, ad 1: "A thing cannot be called a sign in the proper sense unless one can come to know something else as if by reasoning from it…The signs we use are sensible, because our knowledge, which is discursive, has its origin in sense-objects. But we commonly call anything a sign which, being known, leads to the knowledge of something else; and for this reason an intelligible form can be called a sign of the thing which is known by its means."

signifies 'stop' is purely arbitrary and could change. In fact, the Department of Motor Vehicles could sit down tomorrow and decide that, from now, green will mean stop and red will mean go. Now, arbitrary signs are of two types depending on whether some authoritative decision was made to impose the signification or if it just happened by custom. Hence, signs are divided into three types in relation to the thing signified: natural, conventional, and consuetudinary.

Natural Signs

"The *natural* sign is one that represents from the nature of the thing, independently of any decision or custom."[32] It is an object which of its very nature represents something else without being arbitrarily imposed by some authoritative decision or customary usage. And because its signifying power—its signification— is independent of any decision or choice, it represents the same thing always and everywhere. Because of what smoke is, it will always signify some combustion. A groan is a natural sign of displeasure, while a smile one a person's face is a natural sign of contentment. Electrical activity in a rock is the sign of certain chemical properties. Red bumps are a natural sign of measles. Art is a sign of rationality. Natural signs of their very essence point to something else. Because of this, we do not need to directly observe the thing signified in order to know that it exists—or at least in order to *hypothesize* that something exists. When scientists theorize about physical causes, they are exploring natural signs. Because such-and-such an activity is observed under the microscope scientists reason their way back to the causes which are signified by this activity. Effects, in other words, always signify causes.

Conventional Signs

"The *conventional* sign is one that represents something owing to a voluntary decision of public authority, such as the sound *man*."[33] The vocalization that comes from my mouth when I say 'man' does not naturally signify human nature. If it did, the word for human nature would be the same in every language. But it isn't. The fact that this vocalization should call to mind the concept of human nature is purely arbitrary; it was decided that in English 'man' should represent human nature and there is certainly no reason why this can't change—in fact, in most circles it has indeed already changed. Some people think that 'man' refers only to males, not realizing that our language was derived from Germanic roots: in German, 'man' means people while 'mann' means adult male. So it's silly to think that 'man' is meant to be offensive to women. If anything, English speaking adult males should be offended that they don't get their own word—we're stuck with a generic word for human nature!

Other examples of conventional signs are red lights to indicate a stop, letter grades to indicate academic achievement, a picture of a male and female to indicate restrooms, a bell signifies the end of school, etc. The connection between the thing signifying and the thing signified is in no way natural. The sign signifies merely because it has been consciously chosen to signify. And it could be changed.

Consuetudinary Signs

"The *consuetudinary* sign is one that represents owing to practice alone, independently of any public decision; for example, a napkin on the table signifies lunch." These signs do not naturally represent (because they could be changed) and they were never consciously chosen to signify anything. Instead they signify from mere usage or custom. Let's say a man gets into the habit of taking his pills every

[32] John of St. Thomas

[33] ibidem

evening just before bed. His taking the pills has become a customary sign that his bedtime is approaching. He never intended to signify that bedtime was near by taking his pills, but neither is it natural, because he could have taken his pills in the morning—the significant relationship just happened. In other words, customary signs were never intended to signify anything; they were not voluntarily made to be signs.

Related to the Knowing Faculty

Some signs give knowledge of something else only after the sign itself is first known. So before we can conceive of the necessity to stop our car, we must first see and acknowledge a red light. Before we can conclude that a certain man's bedtime is near, we must see him take his pills and recognize that there is a relation between his taking pills and his going to bed.[34]

These signs which must first be known before the thing signified is known we call *instrumental signs.* However, some signs do *not* require us to observe the sign itself before we know what is signified. We call these *formal signs* and I'll explain what they are below. So as regards its relation to the knowing power, the sign is divided into instrumental signs and formal signs.

Instrumental Signs

An instrumental sign is *one which from previous knowledge of itself represents something other than itself*. Smoke doesn't represent fire to the mind unless the smoke first be seen and the mind judges that there is a causal connection between smoke and fire. Instrumental signs signify something else only after they are known in themselves. All the examples we have given above are instrumental signs; they are the most readily observed by us. An instrumental sign is one which is first and foremost some determinate thing, and only secondarily and accidentally a sign. A stop light is first a light, then later it becomes a sign because of the signification we attach to it. Smoke is primarily a thing in itself and only becomes significant when we recognize the nexus between the smoke and the fire. Instrumental signs, then, are essentially things and accidentally signs, and so what's known first is the thing itself and afterwards the signification.[35]

Formal Signs

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[34] Cfr. III, q. 60, a. 4, ad 1: "The name and definition of a thing is taken principally from that which belongs to a thing primarily and essentially: and not from that which belongs to it through something else. Now a sensible effect being the primary and direct object of man's knowledge (since all our knowledge springs from the senses) by its very nature leads to the knowledge of something else: whereas intelligible effects are not such as to be able to lead us to the knowledge of something else, except in so far as they are manifested by some other thing, i.e. by certain sensibles. It is for this reason that the name sign is given primarily and principally to things which are offered to the senses; hence Augustine says (De Doctr. Christ. ii) that a sign "is that which conveys something else to the mind, besides the species which it impresses on the senses." But intelligible effects do not partake of the nature of a sign except in so far as they are pointed out by certain signs. And in this way, too, certain things which are not sensible are termed sacraments as it were, in so far as they are signified by certain sensible things, of which we shall treat further on."

[35] De Veritate, q. 9, a. 4: "Although it is true that in natural things, whose effects are more known to us than their causes are, a sign is that which is posterior in nature, the notion of a sign [instrumental], even properly speaking, is not such that a sign need be prior or posterior in nature, but only that is must be known previously by us. For this reason, at times we take effects as signs of causes, as when we judge health from the pulse, and at other times we take causes as signs of effects, as we take the dispositions of heavenly bodies as signs of stormy weather and rain."

But sometimes we know a thing signified without first knowing that which signifies—we know something signified before we know the sign in itself. And we know the sign itself only indirectly. This is a formal sign: *one which, without previous knowledge of itself, represents something other than itself*. It's difficult to explain exactly what a formal sign is, because explanation should begin with examples which are better known to the students. Unfortunately, there are only two formal signs in existence: the phantasm and the concept. When I understand something intellectually, I'm making use of concepts because the things I'm understanding don't migrate into my intellect. But, as a child, I understand things for many years before I ever reflect on my concepts and ask *how* I understand them. In fact, we could theoretically go our entire lives without ever thinking about concepts. So what I know first and foremost isn't the intellectual representation of something—what I know primarily isn't the concept itself—but the things in reality. The concept does indeed lead me to a knowledge of other things (hence, it's a sign) but I don't have to know the concept first. In fact, it would be perfectly impossible for me to know the concept first and then know the quiddity of something else second, precisely because the concept is essentially a representation of some quiddity: a concept that represents nothing is not a concept. If I'm understanding, I'm understanding *something*. Intellectual apprehension is a connotative term. I can't understand nothing. Hence, the concept is not known as a sign in the exact moment that it's functioning as a sign, but only upon reflection. The closest analogy that can be given to help the beginning student understand a formal sign is that of mirror. Imagine walking down the street and catching a glimpse of someone next to you. It appears to be a stranger but there is something familiar about this person. An instant later, you realize that it isn't a stranger at all—it's your own reflection. Properly speaking this is not a formal sign, you have simply misjudged what you were seeing and you mistook reflected light and color for a new person (the mirror itself is a thing first and a representation second). But this is still a useful analogy. In the intellectual concept (and the phantasm, as well) you do not observe the concept first and then see what is known in the concept. That would be like seeing a blank mirror first (i.e., a mirror which has no reflection) and then seeing the mirror image. But this is impossible because a mirror which has no reflection is not a mirror just as a concept which represents nothing is not a concept. It is only upon reflection that you realize it is a mirror and it is only on reflection that you realize you are understanding things through concepts.

So what really is a formal sign? This is really a question for metaphysics but I'll give you a heads up at least: remember I said that an instrumental sign is first a thing and secondly a sign? That is, representing something other than itself is accidental to it, and even if that other signified object didn't exist, the thing which acts as an instrumental sign would still continue to exist. Well, a formal sign is not a thing first and a sign second; a formal sign is *entirely a sign*. That is, its entire nature is to be a sign. Whereas it is of the nature of smoke to be smoke (even if there is no fire) and it becomes a sign only in relation to fire, it is of the nature of formal signs to be only signs and they have no other existence aside from being signs. Recall I said that the nature of signs consists in the relation of signification between what is signifying and what is signified. Well, in formal signs there is *only that relation of signification and the thing signified!* There is no third thing. In other words, formal signs are not things with a relation of signification attached to them. Rather, they are entirely relations. The nature of a concept is to be a relation to some understood object. The nature of a phantasm is to be a relation of similarity to some previously sensed object. To use the mirror analogy again, formal concepts are reflections without the mirror. And whereas we reason *from* or *by* the instrumental signs back to the things they signify (we reason from the presence of smoke to the presence of fire) there is no such rational movement with the formal signs: we don't go from one thing to another; rather, that 'other' is known in the formal sign. Hence, (just to give you some Scholastic terminology) the instrumental sign is called the sign BY WHICH we know something (*quo* or *ex quo*), while the formal sign is called the sign IN WHICH we know something (*in quo*).

"Properly speaking, to discourse [to reason] is to come to the knowledge of one thing through another. There is a difference, however, between knowing something *in* another and knowing it *from* another. For when one thing is known *in* another, the know is, by one motion, directed to both. This is clearly the case when a thing is known in another as in an intelligible form [concept]. This kind of knowledge is not discursive. Moreover, in this regard, it makes no difference whether the thing be seen in its own species or in a different one; for sight is not said to know discursively when it sees a stone either by means of a species [determining, knowable characteristics] received from the stone itself or by seeing the stone's species [determining, knowable characteristics] reflected in a mirror.

"A thing is said to be known *from* another, however, when the motion to both is not the same, but the intellect is first moved to one and from this is moved to the other. Consequently, discourse takes place here, as it evidently takes place in demonstrations. For the intellect is first directed only to principles [premises of the syllogism], then it is directed through the principles to the conclusions."[36]

Again, "Discursion [reasoning] expresses movement of a kind. Now all movement is from something before to something after. Hence discursive knowledge comes about according as from something previously known one attains to the knowledge of what is afterwards known, and which was previously unknown. But if in the thing perceived something else be seen at the same time, as an object and its image are seen simultaneously in a mirror, it is not discursive knowledge."[37]

This is as far as I want to take the discussion at this point. The nature of relation and sign is a topic for metaphysics. In fact, the logician is only very indirectly concerned with formal signs. We don't order our thoughts by directly manipulating the concepts themselves, but indirectly by arranging the signs of our concepts: by arranging our mental words and terms.

EXERCISES: Are the following natural, conventional, or customary signs?

1. **Smoke as a sign of fire Natural**
2. **Skull and cross-bones on a bottle as a sign of poison Conventional**
3. **A ring on the fourth finger as a sign of marriage originally customary, conventional today**
4. **Drinking coffee as a sign that I need to wake up customary**
5. **A red light as a sign to stop Conventional**
6. **Tears on a child's face a sign of discontentment Natural**
7. **Locking the store door as a sign that business hours have passed Customary**
8. **Putting up the word 'closed' in the window as a sign that business hours have passed Conventional**
9. **Tipping the hat when passing the church as a sign of respect Customary**
10. **A cat meowing as a sign of pleasure Natural**
11. **A cat placed in the car as a sign that it is going to the groomer Customary**

[36] De Veritate, q. 8, a. 15.; cfr. De Ver., q. 2, a. 3, ad 4.

[37] I, q. 58, a. 3, ad 1.

12. **Making the cross as a sign of faith may be conventional or customary**
13. **Firing a gun as a sign that the race commences conventional**
14. **Increased pulse as a sign of lying natural**
15. **A period signifying the end of as sentence conventional**
16. **The word 'man' conventional**
17. **The concept 'man' natural**

Signs used by Animals Specifically

Hopefully, you now have a better understanding of what signs are. Logic isn't concerned with all signs, though, but only signs that man uses to order thought. We've already discussed the concept in itself (which you now know is a formal sign) so it is left to discuss the external expression of the concept: the word or term. This word or term is expressed to others in three ways: vocally (by using the voice), graphically (by writing or drawing), and gesticulatively (by visual motions).[38] We start with vocalization since it is more common and first in the natural order of development.[39]

Vocalized Signs

Many animals use instrumental vocalized signs to communicate something which is known. Birds have certain calls which excite (by natural instinct) the desire to flee. But when a bird vocalizes some sign, that sign is natural and done by pure instinct. When a man vocalizes, it can also be a conventional sign. Now, in the natural order of development, spoken terms precede written terms, so we begin by looking at vocalization in general (which is common to man and many other animals); then we will look at the various kinds of vocalization including that kind which only man has (articulate vocalization).

Definition of Vocalized Signs

"Voice is the sound of an animal made through the percussion of breathed air on the vocal cord by the soul"[40] and "with the presence of a certain sensible image".[41] Vocalization is the percussion of corporeal organs in an animal under the influence of living forces and the imagination. A 'sensible image' is key here. All voice is significant, though perhaps only *naturally*. A yell is given off under the sensation of pain and it is the sign of pain. "Sometimes the tongue makes sounds which are not voice. Coughing is not voice. For voice to be produced it is required that what strikes the air should be something alive, or with a soul, and also, accompanying this, that an image be present which is meant to signify something. For voice must be significant sound—significant either by nature or conventionally. Hence, the statement that vocal impact proceeds from the soul; for operations proceeding from imagination can be said to be from the soul. It is clear, then, that voice is not the mere impact of breath such as occurs in coughing; and that the principal cause of the production of voice is the soul, using this air, i.e., air inhaled, to force against the windpipe the air within it."[42]

Division of Vocalized Signs

Vocalizations can either be the natural percussion of air along the vocal cords without voluntarily controlled sounds or patterns, or it can be sound produced in the vocal cords with voluntary control and patterning. Hence, the first division of vocalization is into inarticulate and articulate.

Inarticulate Vocalizations

[38] In I Periherm., lect., 2, n. 4.

[39] In I Periherm., lect 2, n. 3.

[40] De II De Anima, Lect. 18.

[41] In I Periherm., lect. 4, n. 3.

[42] In II De Anima, lect. 18.

These are common to all animals with voices. Yells, instinctive calls, groans, moans, etc. These sounds involve no voluntary coordinating or controlling of our vocal instruments, nevertheless they signify certain emotions and sensible knowledge that are communicated to other animals. When a brute senses danger he emits a natural but non-voluntarily crafted vocalization by which his apprehension is communicated to other animals.

Articulate Vocalizations

These inarticulate sounds, though, are not sufficient to communicate the potentially infinite intellectual conceptions of man. So we've been given many other instruments besides simple inhalation and vocal cords to signify our thoughts: we have lips, and teeth, and tongues, and diaphragms, etc. etc. With these instruments, and under the influence of our free wills, we can coordinate our vocalizations and give to them our own conventional significations—i.e., we can make them to be signs of whatever we wish. To do this we invent systems of consonants and vowels. This controlled and near rhythmic development of vocalization is what we call articulation. But not all voluntarily controlled vocalization is significant.

Insignificant Articulation

The classic example is the word 'blitiri'. The word is voluntarily formed by manipulating our tongue, lips, teeth, etc. yet it lacks any conventional signification. It's gibberish. Blitiri doesn't mean anything. Note, however, that 'insignificant' here means lacking any *conventional* signification. Nevertheless, it does *naturally* signify something: namely, desire of the person to speak, even if that desire only produces nonsense.

Significant Articulation

Voluntarily constructed vocalizations are those which conventionally signify something. 'Man', 'dog', 'knowledge', 'Canada', 'to kick'. All of these are vocalizations that signify something which have been intellectually conceived by a person.

Now, there are three things which can be produced by the intellect as we said at the beginning of the course: concepts, propositions, and syllogisms. And we can have significant articulations for each of these. For the concept, we have what is called the spoken *term*[43] (sometimes called the word, however the sign for what is simply apprehended might be several words put together; so we'll use 'term' from now on). For propositions, we have what is called the spoken *enunciation* (also called the *interpretation*—but we'll just stick with 'proposition' so we don't confuse anyone). For the syllogism, we have the spoken *argumentation* (we'll still call it the syllogism). We're only interested in terms right now—we'll deal with enunciations and argumentation later on.

[43] De Veritate, q., 4, a. 1, ad 7. "The nature of a sign belongs more properly to an effect than to a cause when the cause brings about the existence of the effect but not its meaning…But when the effect has derived from its cause, not only its existence, but also its meaning, then this cause is prior to the effect both in existence and in meaning. Hence, signification and manifestation belong more properly to the interior word than to the exterior word, for whatever meaning the exterior word has been adopted to convey is due to the interior word."

The Term

A conventionally significant vocalization which represents the concept is what we call the *term.* The term is sometimes called the word, but this is a little improper because a term can actually be several words put together. Remember our distinction between concepts which are complexly stated and concepts which are incomplexly stated? 'Man' was incomplexly stated while 'rational animal' was complex, but they both represent our concept of human nature. Saying 'man' and saying 'rational animal' each signify a *single concept* (namely, our concept of human nature), hence they are terms, but 'rational animal' contains *two words*. So it's more accurate to refer to the signs of our concepts as *terms* or *expressions* rather than words because a single term (i.e., a significant vocalization) can contain several words. Besides, 'term' has an etymological appropriateness. It comes from 'terminus' (meaning 'endpoint'). And the term is the ultimate element into which the syllogism can be resolved. That is, when we split up the syllogism into its parts (the syllogism being the principle concern of Logic) we find judgments. And when we split up judgments into their parts we get terms. So, the judgment 'man is a material substance' is split up into the terms 'man' and 'material substance': 'man' and 'material substance' are terms that represent the concepts we have simply apprehended. There is no further division beyond terms because there is no other operation of the intellect before simple apprehension. Sure we can divide the terms into syllables and *phones*—'man' might become the sounds 'm-a-n'—but these are outside of the logical order; they don't correspond to any operation taking place on the intellectual level: they are not significant (i.e., they are not conventional signs).

So, the term is a vocalization affected by a relation of *signification*—a relation which isn't given to the vocal sound by nature, but by human convention and agreement. And the term is a logical *instrument* because we don't directly manipulate our concepts, but we order them by means of speech. So we might offer another definition of the term: a word, or combination of words, serving as a sign to call forth an idea of some object of thought in our mind and in the minds of others. This calling forth of an idea, or better yet, 'causing' an idea in the mind is the purpose of the term. By using terms we hope to cause ideas in our own mind and in the minds of others.

Now, Logic isn't primarily interested in the term by itself—simply causing an idea in our mind or in the minds of others isn't the goal of Logic. Rather, Logic is interested in moving from one known thing to another; Logic is interested in determining the rules for how we move, or reason, from one concept to another, from something that is known to something that is unknown. So Logic is interested in the term insofar as it is ordered to judgment and to the syllogism; insofar as it is used to make up the judgment which, in turn, is used to make up the syllogism. Therefore, we will only look briefly at the term considered absolutely or by itself and as a sign of the concept. Then we will look at the term relatively; i.e., considered as a part of the judgment and considered as a part of the syllogism.[44]

The Term Considered Absolutely

The term is divided almost exactly the same as the concept is divided because the term signifies the concept; it's a 'stand-in' for the concept. Remember, we said that the concept could be divided materially and it could be divided formally.

On the Part of the Thing Signified (Divided Materially)

[44] In I Peri. Herm, l. 4, "His [Aristotle] principal intention is to establish what an enunciation is, but since in any science the principles of the subject must be known first, he begins with the principles of the enunciation [terms] and then establishes what an enunciation is."

Dividing it materially would be to divide it according to the object in reality that it makes known or represents; so we could have concepts that represent 'dog', or 'men', or 'boats', etc. And so a division of concepts in this way would yield as many concepts as there are things in reality that can be known. Terms as well can be divided materially. For example, each language has a term that signifies the nature of a dog, and a term that signifies the nature of man, etc. In Latin we have 'canis' and 'homo'. In Italian we have 'cane' and 'uomo'. In English we have the words 'dog' and 'man'. Now, in Material Logic we will divide the concept (and thereby the term) into every knowable thing, at least according to the broadest categories of things—we'll divide concepts and terms according to the various beings that they represent. We'll see that we have 1) concepts and terms of *real beings* (i.e., mind-independent beings) and we also have 2) concepts and terms of *beings of reason* (i.e., mind-dependent beings). And we'll see that real beings can be represented by transcendental concepts/terms or predicamental concepts/terms. The predicamental terms will be divided into ten categories called simply the 'predicaments'. But this is getting too far ahead.

On the Part of the Sign Itself (Divided Formally)

We said that the material division of concepts (and therefore the material division of signs) does not concern us in Formal Logic. Right now, we're interested in what pertains to the concept and term as such; i.e., regardless of any particular thing that they may known to us. We're interested in dividing the concept and term formally, or rather, according to what it is they do. Now, the concept and the term are essentially representations. So, to divide the concept and the term formally is to divide it according to how they represent things. Now, the concept represents things in reality. And so we've divided it according to how it represents those things: we've divided it according to how it represents their comprehension, how it represents their extension, how it represents something well or poorly (i.e., its perfection), and how it depends on other things—namely, sensations and other concepts—in order to represent (i.e., division by origin).

Now we're speaking about the term. And just as the concept represents things in reality, the term represents the concepts themselves. And just as the concept is divided formally according to how it represents those the things in reality, the term will be divided formally according to how it represents those concepts. So let's see how the term represents concepts.

A term (i.e., a vocal sign) can be used to represent either *one concept* or *more than one concept*. Hence, we divide the term into univocal—which represents one concept—and equivocal—which represents more than one concept. If the term is used to signify more than one concept, those concepts are either one in name only (they do not represent natures which are in any way identical except by the fact that they just so happen to share the same name) or in a certain way share the same nature (i.e., the two concepts that it signifies are analogous). If the concepts represented by the same term have nothing in common, they are called strictly equivocal (or most often simply referred to as 'equivocal'). But if the concepts represented by the same term are analogous, the term is called equivocal in a certain sense (in Latin this is called equivocal 'secundum quid', or 'in a certain way'). This second kind of equivocal term is usually just called 'analogous' while the first kind of equivocal (i.e., the strict equivocal) is usually just called 'equivocal'. So the term is divided into three kinds: univocal, equivocal, and analogous.[45]

Univocal Term

[45] III, q. 60 , a. 3, ad 1; I, q. 13, a. 5.

The univocal term is a single vocalization which conventionally signifies simply one concept and, through that concept, one objective nature or attribute. The word 'man' refers to strictly the same human nature found in Peter, Mary, Bob, and Gandalf.

Equivocal Term

The equivocal term (i.e., the strict equivocal), on the other hand, is a single vocalization which conventionally signifies two or more concepts which represent entirely different things—it can signify several concepts which share nothing in common except the name. So, 'bark' is a single vocalization, a single word. But because that same vocalization has been made by the English language to signify at least two different things (namely, the sound a dog makes and the outer covering of a tree), we say that it is an equivocal term. 'Table' is something we eat off of and also something that we create in Microsoft Excel; the word is the same but it signifies two entirely different concepts. And any term could be made equivocal.[46] All that it would take is for people to agree that a term will be used to represent or signify something different than it already does. 'Planet' is generally used as a univocal term. It is a term signifying our concept of a certain celestial body. But if someone were to decide that 'planet' was also going to signify our concept of 'headache', then the term 'planet' would become equivocal. It would then be a single vocalization that signifies two distinct concepts. And this lends itself to many abuses when it comes to reasoning. If I say 'all planets (meaning 'headaches') are painful; but Earth is a planet; therefore, Earth is painful' I've used an equivocal term as though it were univocal. This invalidates a reasoning process, as we will see.

Analogous Term

The analogous term is a single vocalization which conventionally signifies two concepts that refer to *different natures* but for a reason that is proportionally the same. The word 'healthy' is an analogous term when it is used to represent the concept of healthiness in a person and the concept of healthiness in food. Here we should note a difference between the analogous term and the analogous concept. *Analogous concepts* are single concepts that represent different natures in reality which are partly the same and partly different. *Analogous terms* are single terms that represent *two concepts* which are partly the same and partly different. The word 'legs' refers to two different concepts in the proposition 'men have legs' and 'tables have legs'. They are concepts of different things which bear a metaphorical similarity, but the point is that they are two distinct concepts. Why is this important? Because, just like the strict equivocal term, any attempt to use an analogous term as though it signifies one concept would make an invalid syllogism. To say, 'everything with legs is naturally destined to move from place to place; but tables have legs; therefore, tables are naturally destined to move from place to place (i.e., they are capable of locomotion)'. This is obviously an invalid syllogism. But it's invalid because an analogous term was used as though it were equivocal. As we will learn, a syllogism must represent three concepts and three concepts only—two concepts must be united to each other by means of a third in order to reason. Any less than three concepts and the syllogism will lack the necessary parts, and any more than three concepts will make the inference impossible. But when we use an equivocal term (either strictly equivocal or analogously equivocal) to construct a syllogism, we are representing at least four concepts. Hence, the reasoning is invalid. Using an equivocal term (strictly equivocal or analogously equivocal) as though it were univocal (i.e., as though it represented only one concept) is what we call equivocation.

[46] I, q. 67, a. 1.

To 'equivocate', then, is to use an equivocal term as though it were univocal. So, if I reason, 'every course is two semesters, but the land outside where we golf is a course, therefore the land outside where we golf is two semesters', then I have equivocated. That is certainly a fairly obvious case of equivocation; usually it is much more subtle, and equivocation is responsible for the vast majority of errors in reasoning. Often people can be convinced of a conclusion because the syllogism seems right to them when in fact an extra concept has been slipped in there without being noticed.

To combat equivocation is the reason that definition will become so important to us. Definition will teach us how to set limits to what concepts a term represents. By definition we will make explicit that one concept to which a term refers while excluding all those concepts to which it does not refer and hence we will avoid all equivocation.

The Term Considered Relatively (i.e., in relation to the proposition and the syllogism)

We've looked briefly at terms by themselves; terms considered absolutely. Now we are going to look at the term considered as a part of the judgment and as a part of reasoning. Remember that the vocalized sign of the judgment was called the proposition or the enunciation, and the vocalized sign of reasoning is called an argument or a syllogism. Hence, when the term is considered precisely as a part of the judgment it is called the enunciative term. When it is considered as a part or element of the syllogism, it is called a syllogistic term. We'll look at both since Logic is ordered to perfecting judgment for the sake of the syllogism.

The Enunciative Term

At this point we want to look at what kinds of terms are used to construct a proposition or *enunciation*, to use the technical term—we want to know what kind of terms will be *necessary* for making a proposition, and what kind of terms will be *sufficient* for making a proposition. The simplest propositions must contain a SUBJECT, a PREDICATE, and a COPULA. In the sentence 'man is an animal', for example, 'man' is the subject, 'animal' is the predicate and 'is' is the copula, or nexus uniting the subject and predicate (the copula signifies the identification of S and P). Again, in the proposition 'man is not a stone', 'man' is the subject, 'stone' is the predicate and 'is not' is the copula. Properly speaking, the act of judging, the operation of judgment in the mind, is a simple act. It doesn't have parts. Rather, it consists in perceiving the identity or diversity between two concepts. So when I conceive of 'man' and I conceive of 'animal', I judge that the two are in some way identified. This perception happens in an instant and so it doesn't have parts. The proposition is a sign that this judgment is happening. When I say 'man is an animal', the copula, 'is', signifies the mind perceiving that man and animal are in some way identified. Again, when I say 'man is not a stone' we are signifying that the intellect perceives the concepts of 'man' and 'stone' to be diverse. The actual perception of diversity happens in an instant. As soon as we compare the two concepts the mind recognizes that they are the same or diverse and this recognition is really what judgment is. When I say 'man is not a stone', 'is not' is a sign that the intellect has perceived this diversity. So in reality judgment is a simple act without any parts, but to express or signify this judgment we create propositions which *do* have parts: they are composed of a subject and a predicate (both of which represent concepts) and the copula (which represents the mind perceiving identity or diversity in those concepts—or perceiving pertinence or repugnance between those concepts). So, we can symbolize the general form of a proposition by saying 'S is P'. Logically, this is what will be necessary to signify an act of judgment. A judgment will be a uniting or dividing of two concepts, so we must signify those two concepts (i.e., the subject and the predicate) and we must signify that unification (i.e., the copula which unites or separates). That's what is logically necessary because that is what is logically taking place in the intellect—that is, in order to signify judgment, every

proposition must contain a sign for each of the concepts and a sign which represents the unification or division of these concepts. However, *linguistically*, the subject, predicate, and copula might not be clearly stated. Sometimes the predicate and the copula are combined in a single term.[47] In the proposition 'man runs', for example, the predicate and the copula are combined into the single term 'runs'. Logically speaking, this proposition should be stated 'man is something which runs', though language commonly shortens this so as not to labor our communication. Furthermore, some languages will combine not only the predicate and the copula, but the subject as well. In Latin, the word 'amo' is logically speaking a proposition. 'Amo' means 'I love'. And 'I love' is a proposition in which the predicate and the copula are combined. Logically, the statement 'I love' means 'I (subject) am (copula) something which loves (predicate).' So even if a given language doesn't require that the subject, predicate and copula be *clearly or explicitly* stated, nevertheless, logically speaking they must be present, the copula "implies composition and composition cannot be understood apart from the things composed."[48]

Now, not every kind of term can be plugged in for S, P, and the copula. We cannot say, for example, 'the is some'. This doesn't make any sense. By considering the enunciative term, then, we are asking 'what kinds of terms must we use in order to have a subject, predicate, and copula. By considering the enunciative term, we are talking about the kinds of terms from which a proposition can be made. And so the ability to construct a proposition will, in fact, be the very definition of an enunciative term:

The enunciative term is a *conventionally significant vocalization from which a simple proposition or sentence is constructed*. It is the sign from which a simple proposition is made. It's a *sign* because it points to our concepts; and it's *conventional* because different peoples have derived different terms to represent different concepts. It's said to make up *simple* propositions to distinguish it from what we will later call *composite* propositions. 'Man is just'. That's a simple proposition and its parts are terms. 'A just man is virtuous and he will repay his debts'. That's a composite proposition and it's made up of other propositions, not just terms: 'A just man is virtuous' is one part of that composite proposition while 'he will repay his debts' is the other part. So we say that enunciative terms are those parts from which a *simple* proposition is made in order to exclude those complete propositions which can go to making up composite (also called 'compound') propositions.

The enunciative term is either incomplex or complex. To use an example that was given many pages ago, 'scholar' and 'learned man' are both terms that refer to the same concept. The only difference is that one is incomplexly stated and the other is complexly stated. 'Man' and 'rational animal' can be explained in the same way. So there is a difference between complex/incomplex CONCEPTS and complex/incomplex TERMS. A CONCEPT is incomplex or complex depending on whether it refers to what in reality is a single nature or several natures put together. But a TERM is incomplex or complex depending on whether it is made up of one word or several words. For the remainder of this division we'll be speaking of *incomplex* terms. The incomplex term may more appropriately be called a *word,* in English at least.

[47] In II Peri Herm., l 2, n. 2., "the verb 'is' itself is sometimes predicated in an enunciation, as in 'Socrates is'. By this we intend to signify that Socrates really is. Sometimes, however, 'is' is not predicated as the principal predicate, but is joined to the principal predicate to connect it to the subject, as in 'Socrates is white'. Here the intention is not to assert that Socrates really is, but to attribute whiteness to him by means of the verb 'is'."

[48] In I Peri Herm., l. 8, n. 9

Now, notice that some terms, like 'man', 'animal', 'rock', 'kick', 'fall', are sufficient to bring forward or cause a determinate concept in the mind of the hearer; whereas, other terms, like 'the', 'and', 'every', 'some', 'all' are not sufficient by themselves to cause within your mind some definite concept. If I say to you 'the' you do not have a definite concept in mind. 'The' what? Words like 'the' or 'every' don't signify concepts, but they signify modifications of concepts. 'The man' does not signify two concepts, but it signifies one concept (i.e., a concept of human nature) conceived in the singular. 'The' makes a concept to be singular instead of universal. Hence, it is requires the presence of another concept before it will signify anything. The former kinds of terms, namely, those which are sufficient to cause a determinate concept in one's mind, are called *categorematic*.[49] Whereas the latter terms, namely, those that simply represent modifications of the concept, are called *syncategorematic*. Because of this distinction, words are divided, not into nine parts of speech as the grammarian uses, but into two great classes: categorematical and syncategorematical. That is, the enunciation can be made up of two kinds of terms: categorematic terms and syncategorematic terms. Categorematic terms are necessary to every proposition (i.e., a proposition cannot be made without them), because only these represent complete concepts, while syncategorematic are not necessary to every proposition (i.e., propositions can be made without them and when they are found in proposition they must be found together with categorematic terms) because they only represent modifications of complete concepts.

So, to use the example given above, when I say 'the is some' I've tried to construct a proposition out of syncategorematical terms, and the result is nonsense. But if I say, 'the man is some animal', I've joined those syncategorematic terms to categorematic terms and the proposition makes sense. Alternatively, I could have left the syncategorematic terms out entirely and just said, 'man is animal', and this would still make perfect sense. So, propositions are made up of two kinds of terms: categorematic terms (which are essentially to every proposition) and syncategorematic terms (which are not essential to every proposition).

Categorematical Terms

Categorematical terms are *terms which signify a concept itself and not merely the modification of a concept.* So the words man, Peter, to run, to listen, animal, etc. all signify concepts. Whereas words like the, some, every, and, or, all, etc. signify modifications of definite concepts. 'The' would make a concept singular, 'every' would make the concept universal, 'some' would make it particular, etc.

Now, categorematic terms are necessary for the construction of a proposition. But not every two or more categorematic terms joined together will be sufficient for the construction of a proposition. 'Man animal' is not a proposition. At best, it is a complex term. 'John running fast' is not a proposition. Since the proposition signifies the intellect uniting or separating two concepts, in order to have a proposition we need two kinds of categorematic terms: the name (which signifies the concepts) and the verb (which signifies the act of uniting or separating).[50] These two kinds of terms are absolutely essential for the

[49] In I Peri Herm., l. 6, n. 3.

[50] In I Peri Herm., l. 5, n. 17 "The one who utters a name or verb by itself, determines the intellect with respect to the first operation, which is the simple conception of something. It is in relation to this that the one hearing, whose mind was undetermined before the name or the verb was being uttered and its utterance terminated, is set to rest. Neither the name nor the verb said by itself, however, determines the intellect in respect to the second operation, which is the operation of the intellect composing and dividing; nor do the verb or the name said alone set the hearer's mind at rest in respect to this operation.

construction of a simple proposition, and only these two kinds are essential.[51] 'Man is an animal' has two names (i.e., 'man' and 'animal') and one verb (i.e., 'is'). We can simplify the proposition linguistically by using just one name and one verb (for example, 'John runs'— 'John' is the name and 'runs' combines the other name and the verb) but in strictly logical form it still contains two names and a verb: 'John is something which runs', where 'John' would be the first name, 'is' would be the verb, and 'something which runs' would be the other name. Hence, nothing more than names and a verb is required to make a proposition. And nothing less than names and a verb will do because one without the other is just a concept: 'run' by itself is just a concept, not a proposition. Hence, in dividing the enunciative term formally (i.e., according as it is a part of or composes the proposition) it is first divided into categorematic and syncategorematic—according as the given term is sufficient to be a part of the proposition, or as it needs to be joined to another term in order to be a part of the proposition—and the categorematic is divided into the name and the verb—according as the term signifies the concepts themselves or the act of uniting or separating these concepts.

The Name or Noun[52]

By 'noun' we do not mean a grammatical noun. What we mean is perhaps better called a '**name'** so that it not be confused with an English grammatical noun. In English, an adjective is not a noun; but logically speaking, an adjective will function just as a noun does in the construction of a proposition. So if I say 'man is an animal', I have a sentence which is, grammatically speaking, composed of two nouns: namely, 'man' and 'animal'. But if I say 'man is rational', I have, grammatically speaking, a noun and an adjective. However, in Logic 'man' and 'rational' function exactly the same in the proposition as 'man' and 'animal': each one signifies some definite concept. Hence, to avoid confusion I'll refer to our logical object from now on as a name and not as a noun.

Unfortunately, many Scholastic works which have been translated into English refer to this as a noun and take no pains to bring out the difference between it and a grammatical noun. The confusion comes from the Latin word 'nomine'. 'Nomine' is often translated as noun because it is more convenient. However, 'nomine' only refer to words in the nominative case—words that name some determinate thing or 'nominate' it. And in Latin even adjectives can be placed in the nominative case. Hence, it's just a bad translation to take 'nomine' as noun.

A name (in the Logical sense) is *a term which conventionally signifies concepts as intemporal, finite and direct, and of which no separate part has a signification*. What on earth does this mean? Well, let's pick it apart.

First, it conventionally[53] signifies.[54] This is what is has in common with all terms. It's a sign that was instituted by common consent in order to communicate to others what is taking place on the intellectual level.

Second, it's intemporal.[55] This is how it differs from the verb. A verb, as we will see below, signifies something in the way of motion or movement or change; it signifies action or passion, a giving or

[51] In I Peri Herm., l. 1, n. 6.

[52] In I Peri. Herm., l. 4.

[53] In I Peri Herm., l. 4, n. 6.

[54] In I Peri Herm., l. 4, n. 3.

receiving, an acting on or a being acted upon. To say 'John is reading', the verb 'is' signifies something existing in the present and moving into the past. The verb, then, involves some sort of motion and, as you'll learn in physics, motion is measured by time. On the other hand, words like 'man', 'animal', 'whiteness', 'strength', etc. are entirely abstracted from any sort of change and therefore free from the constraints of time. Man is man no matter where or when human nature is conceived, but John being something, (e.g., John being something which reads) implies a definite beginning, a changing middle, and a certain end. Hence, a name signifies concepts which are wholly free from change and time. Nevertheless, time itself might be a name.[56] 'Day', 'week', 'millennium', 'time', etc. are all names. They do not signify a changing thing as measured by time like the verb does.

Third, the name signifies *finite* concepts.[57] Think back to our division of the concept by reason of perfection. An infinite concept does not give us knowledge of any one determinate thing, but instead it destroys all determinate signification. Non-man is an infinite term. It is not a name because, as it stands, it isn't anything—it doesn't name anything. If anything that was non-man was a name then 'is' would be a name. But 'is' is a verb. An infinite concept does not lend itself to being called a name because a name names something—some determinate thing—while an infinite concept refrains from naming anything: nothingness is also non-man. Note, however, that terms like 'none', 'nothing', 'no' and the like are not infinite. Rather they signify the concept of negation.

Fourth, the name is direct.[58] This does not mean it signifies a direct concept as opposed to a reflex concept. No, by including direct in the definition we want to exclude certain grammatical notions. In many languages there are different cases that grammatical nouns can have. So in Latin we have the nominative case, genitive case, dative case, etc. 'Peter' would be nominative while 'of Peter' would be genitive. All these other cases besides nominative are *syncategorematic* terms. Hence, they fall short of being names in the logical sense. In fact, etymologically, they are called 'cases' because they fall short (cadere, casus) of being sufficient for forming propositions. All these cases are called *indirect*. So by saying that a name is direct, we mean that it refers only to words in the nominative case (in languages like English this is not very important—in English, to signify the genitive case we would use two words 'of' and 'Peter', for example, and the 'of' is obviously syncategorematical).

Finally, no part of the name has signification on its own.[59] If you take apart 'man' you get 'm-a-n'. But by themselves 'm-a-n' signify nothing. So by adding this last part we exclude 1) complex terms such as 'learned man'; 2) propositions themselves. A complex term isn't a name, rather, it's made up of several names: 'learned man' is made up of two names, 'learned' and 'man'. And propositions are likewise composed of other parts. Sometimes these parts are two names and a verb, such as 'man is learned' or else they are one name and one verb, such as 'man is'. Either way, they are composed of several parts, while a 'name' refers to something simple: namely, one of those parts that goes to make up the proposition.

Verbs

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[55] In I Peri Herm., l. 4, n. 7.

[56] Ibidem.

[57] In I Peri Herm., l. 4, n. 13

[58] In I Peri Herm., l. 4, n. 14

[59] In I Peri Herm., l. 4, n. 8.

Besides the names, a proposition must signify the uniting or separating of those names: i.e., the proposition must have a verb. A verb is *a term which conventionally signifies in a temporal, finite and direct manner of which no separate part has a signification, and which always signifies the attribution of a predicate to a subject.* Let's go over this.

First, it conventionally signifies.[60] It has this in common with all other terms.

Second, it signifies in a temporal manner. And this is how it differs from the name.[61] The verb signifies a relation to the present and the future and the past, at least according to our way of conceiving things.

When I say 'John is president', the verb 'is', for example, signifies something in relation to the present: the fact of being president pertains to John right now. When I say 'man is animal', the fact of being animal pertains to man right now. It's certainly true that man will always be animal and has always been animal, but stating the man is *necessarily* animal is beyond what this proposition does. Just as it is true that there was a time when John was not president and there will be a time when John is no longer president. But saying that 'being president is not essential to John' is beyond what this proposition does. Hence, the verb 'is' always has a relation to the present time. Any judgment about future and past times will be beyond the scope of the basic proposition. In fact, even a proposition about past or future events must logically contain a reference to the present. Saying 'John was president' logically stated means 'John is (right now, at this very moment) something which was formerly president.' 'John' is the subject, 'is' is the copula signifying judgment, 'formerly being president' is the concept which is predicated or attributed to John in judgment.[62]

Third, the verb is finite. 'Non-is' or 'is-not' would be infinite verbs, but these would actually make the proposition negative: 'man is an animal' would become 'man IS NOT an animal'. Likewise when, linguistically, the predicate and the copula are joined (e.g., John runs), the infinite term would make it negative (e.g., saying 'John is non-running' means 'John is not running').[63]

Fourth, the verb is direct. This follows from what I said about the verb being related to the present. "When he [Aristotle] says 'likewise, 'has matured' and 'will mature' are not verbs, but modes of verbs' he excludes verbs of past and future time from the definition. For just as infinite verbs are not verbs absolutely, so 'will mature', which is of future time, and 'has matured' or past time, are not verbs. They are cases of the verb and differ from the verb—which signifies with the present time—by signifying time before and after the present…"[64] So 'John has matured' logically stated would be 'John is something (right now) which did mature (in the past).' Remember the verb is the sign of the intellect uniting two concepts. In this last example, the two concepts are 'John' and 'having already matured'. 'John' and 'having already matured' are, logically speaking, names.

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[60] In I Peri Herm., l. 5, n. 3

[61] In I Peri Herm., l. 5, n. 2.

[62] In I Peri Herm., l. 5, n. 9. "The verb is always a sign that something is being predicated because all predication is made through the verb by reason of the composition introduced, whether what is being predicated is predicated essentially or accidentally."

[63] In I Peri Herm., l. 5, n. 10.

[64] In I Peri Herm., l. 5, n. 12.

Fifth, no separate part has a signification. This is the same as the name and it excludes things like 'man REALLY IS an animal'. The verb is still only 'is'.

Sixth, the verb always signifies saying something of a name; i.e., it always signifies affirming or denying something of the name. Remember, judgment is simply the act of the intellect perceiving that two concepts are identified or are diverse. The verb is the *sign* of that uniting or dividing of concepts. So the verb is nothing more than a conventional sign for the perception agreement or disagreement of two concepts.[65]

The Syllogistic Term

We've just been looking at the term when it is considered as a part of the proposition. And we've seen that it can be syncategorematic, categorematic, a name, and a verb. These are the terms used to create a proposition. And what about the terms used to create a syllogism?

The proposition signifies the uniting or dividing or two concepts by means of the copula. Reasoning unites or divides two concepts, not by means of a copula, but by means of a third concept. Consider the following:

A is B
B is C
A is C

In this syllogism, the conclusion has A united to C. How did the mind unite A and C? It didn't simply perceive that they were the same, as it does in judgment. It needed the help of a third term: namely, B. Because the mind perceives that A is united to B, and because the mind perceives that B is united to C, the mind perceives and concludes that A is united to C. So, whereas the proposition signifies the mind uniting two concepts by means of a copula, the syllogism signifies the mind uniting two concepts by means of a third concept. Hence, those three concepts must be expressed in the syllogism. And we call these three concepts the major term, the minor term, and the middle term. For example:

Animals are sensible.
Men are animals.
Therefore, men are sensible.

'Animals' is called the *middle* term because it is the term which joins 'men' and 'sensible'. 'Men' and 'sensible' are the minor term and major term. Why do we call them minor and major? In general, it's because one has greater extension than the other. So, 'sensible' is called the major term because it has a greater extension than 'man', as we've learned. 'Men', then, is the minor term. So, Aristotle defines the syllogistic term as *one which conventionally signifies and into which a proposition is resolved as into a subject and predicate*. In other words, the syllogistic term is the subject s and predicates found in the syllogism; and there are only three subjects and predicates found in the syllogism, though one of them is used twice. In the first example (i.e., A is B, etc.), the subjects and predicates are A, B, and C, but B is used twice (once as a predicate, once as a subject) because it is the middle term that unites A with C.

[65] In I Peri Herm., l. 5, n. 8. "The verb, therefore, is always said to be a sign of something said of another, and this not only because the verb always signifies that which is predicated but also because there must be a verb in every predication, for the verb introduces the composition by which the predicate is united with the subject."

We'll return to these three terms when we look at the third operation of the intellect. For now, just note that the syllogism must contain these three terms: the major, minor, and middle terms.

Graphical Signs

We've been talking so far about spoken signs: vocal expressions that represents what is taking place on the intellectual level. Vocalization is usually the first way a person learns to communicate his concepts to others: e.g., baby's first word. But after we learn to speak (and, indeed, in the unnatural cases where a person is incapable of developing vocal speech) we embody our vocal sounds in other signs; i.e., in graphical symbols. This kind of sign was necessary to man because man needed to transmit his conceptions to people far off in time and place. Hence, we **define graphological symbols** by their final cause: *conventionally significant pictures by which man expresses his intellectual products to those locally distant and those in a future time*.

There are principally **two kinds**: ideographic and phonographic. **Ideographic** signs are *conventionally significant sensible images which represent a thing because of a certain sensible likeness to the thing* (e.g., Egyptian hieroglyphs). **Phonographic** signs are *conventionally significant sensible images which immediately represent vocal sounds.* So, the letter 'a' is a symbol for a certain sound that the mouth and other vocal instruments produce, 't' is a symbol for a sound that the mouth, tongue, teeth, etc. produce. These symbols don't bear any kind of likeness or physical resemblance to the sounds (e.g., the letter 'j' doesn't *look* like the sound that my mouth produces) hence these are different from ideographic signs.

Gesticulative Signs

Gesticulative signs are simply *conventionally significant motions of our external members representing intellectual concepts.* These signs are not just what we call today 'sign language' but they include all those motions that people make while explaining something verbally. These motions can simply add emphasis to what is spoken (e.g., pounding one's fist against the table) or they can signify things which have not been spoken (e.g., putting one's finger to one's eye to indicate that you are watching). Vocal signs are audible, whereas gesticulative signs are visual. And even though graphical signs are visual as well, nevertheless, they differ from gesticulative signs. A gesticulative signs consists in the very motion of the members itself so that if the arms or hands or whatever else weren't moved or changed there would be no sign. In graphical signs, even after the physical motion of writing is completed, the written word will still remain. But in both graphical signs and gesticulative signs, the purpose is to signify what is known.

Judgment

In the first operation of the intellect the mind grasps nature or quiddities. And in simply apprehending the essence of something, it creates the concept which is a representation of that quiddity. That's it. We don't affirm or deny anything about these quiddities; we form the concept of 'man' but we don't say 'man is not a dog'. Thus, simple apprehension gives us a much abbreviated view of the real world. These concepts don't serve us in any way to investigate reality or know truth so long as they are isolated and single: knowing 'man', 'animal', 'triangle', 'square', 'fire hydrant', give us no real insight into the reality around us. Knowing 'wolf' won't help me to save myself while I'm walking through the woods unless I can combine my concept of wolf with the concept of dangerous. In fact, simple apprehension has, in a way, destroyed the unity of reality. Since the mind cannot know everything there is to know about something in a single glance, we're forced to abstract one intelligible note at a time: from my sensible experience of a dog I abstract the notions of 'animal', 'furry', 'four-legged', etc. Now what? I have various quiddities abstracted and separated from the real dog. But to know these as separated would be to misrepresent the nature of the dog. If we want to know the real dog, we must somehow put all of these intelligible notes back together into our single concept of 'dog'. Furthermore, simple apprehension abstracts even from existence, as we said a while back. The concept of 'dog' does not contain 'existence' among its comprehensive notes; rather, a dog might exist or might not exist, but we could still conceive of it. It's because of this abstraction from existence that the 'name' is said to be intemporal; but we want to study existing reality. Hence, we must reunite the abstracted nature with existing things, and this is done by means of the verb which always signifies in relation to the present, as we've said. So, we must combine these abstracted concepts with one another in order to investigate reality. This reuniting of the various abstracted concepts is what we call judgment.[66]

Now, just as in simple apprehension, we make a distinction between the operation itself and the sign by which this operation is expressed to other people, we make the same distinction regarding judgment. In simple apprehension, grasping a quiddity was the operation (resulting in the concept), while the external sign of this operation was the term. In judgment, as we will see, the operation is perceiving and accepting the conformity or discrepancy between two concepts, while the expression of this operation is called the proposition or enunciation. So we begin by looking at what judgment is in itself, then we look at the sign of the proposition.

Etymologically, judgment (or 'iudicium' in Latin) comes from the Latin 'ius' 'dicere'—'ius' meaning 'law' or 'right', and 'dicere' meaning 'to say'. So, in origin, judgment means 'to say rightly'. Logically, we define judgment is as *the act of the intellect by which it composes and divides by affirming or denying*. Let's take that definition apart and see what it means.

First, it is an act of the intellect. No surprise here. We've already discussed the three operations of the intellect. Being an act of the intellect is what judgment has in common with simple apprehension and reasoning. But compared to the other two operations of the intellect, judgment is of prime importance. We simply apprehend in order to judge, and we reason in order to judge. Reasoning takes place by combining two previously made judgments and concluding to a third judgment that was not previously known. So, if I judge that all animals are sensible, and I judge that this thing is an animal, I can conclude by judging that this thing is sensible. Reasoning is compared to judgment as motion is to rest—by reasoning we move from previous knowledge to new knowledge, resting in the conclusion.

[66] I, q. 85, a. 1.

Second, judgment is an act of composing and dividing—putting concepts together or taking them apart. Now, you might think this is what differentiates the judgment from other acts of the intellect, but that's not so. Even simple apprehension can compose things. When I conceive 'bird' and I conceive 'extinction', to use an example from earlier, I can then proceed to join these two concepts together and apprehend 'extinct bird'. There has been no judgment here, only the apprehending of a complex concept. Furthermore, reasoning itself is a certain composition or division. It composes or divides propositions amongst themselves. So what distinguishes the judgment from the other operations isn't the fact that it is composite, but the fact that it composes or divided *by affirming or denying*.[67]

So, third, the judgment *affirms or denies*.[68] This is the essence of judgment. When my mind not only combines two concepts but also *perceives* or *sees* or *recognizes* that those two concepts are somehow in agreement or disagreement, *then* I have made a judgment. We can state propositions all day long, but unless we see the connection between the concepts of those proposition, we've not judged at all. So, I can say 'the dodo is an extinct bird' but unless I understand each of those concepts *and* perceive that 'dodo' and 'extinct bird' are in agreement with each other, then I haven't made a judgment. The intellect must assent to the agreement or disagreement of the subject and predicate before we can call it a judgment; in fact, the judgment consists precisely in that assent. Again, I can very easily *say* 'a triangle is a plane figure' but until I know, in general, what a triangle is and what a plane figure is, I can't *intellectually*[69] assent to that proposition—i.e., I can't judge.

Scientific experimentation is an excellent example of this. A scientist might state the proposition 'water is something which freezes at 0 degrees Celsius' but until he has tested it, he hasn't made a judgment; he's only formulated a theory. He has not yet assented to the agreement of the subject (i.e., water) with the predicate (i.e., something which freezes at 0 degrees Celsius). But when he tests water by subjecting it to different temperatures he will then perceive the agreement or disagreement of the subject and so he will assent to the truth or falsity of the proposition. By affirming the predicate of the subject, he assents to the real identity of the predicate and subject in the same real thing; whereas, by denying, he assents to the real division of the predicate and the subject in reality. That is, if the scientist were to *judge* (not just *say*) that the water IS NOT something which freezes at 0 degrees Celsius, his intellect would be perceiving that the thing represented by the subject and the thing represented by the predicate are, in reality, entirely different things. To give a more obvious example, if you judge 'a man is not a stone', you do this because the intellect perceives that 'man' and 'stone' are, in reality, entirely different things—the thing which you conceive as man is really and truly distinct from the thing you

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[67] I, q. 85, a. 5, ad 1.

[68] In VI Meta., lect. 4, n. 1223, "He says, then, that "in one sense **being** means what is **true**," i.e., it signifies nothing else than truth; for when we ask if man is an animal, the answer is that he is, by which it is meant that this proposition is true. And in the same way **non-being** signifies in a sense what is **false**; for when one answers that he is not, it is meant that the statement made is false. Now this 'being which means what is true, and non-being which means what is false, depend on combination and separation; for simple terms signify neither truth nor falsity, whereas complex terms have truth and falsity through affirmation or negation. And here affirmation is called combination because it signifies that a predicate belongs to a subject, whereas negation is called separation because it signifies that a predicate does not belong to a subject."

[69] There is still the possibility of *choosing* to assent even when the mind does not perceive the connection between the subject and the predicate; but this will pertain to *belief* and *faith*. More on this later…; cfr. De Veritate, q. 14, a. 1, c.

conceive as stone. But if you were to judge (not just say) 'man is rational', you do this by perceiving that the thing you conceive as man is really and truly identified with the thing you conceive as rational.

So there really is a big distinction between the act of judging and the proposition which is the logical *sign* of judgment. The sign of judgment, the proposition, is a construction; it's something composed. It's constructed from the subject, predicate, and copula. Physically, however, the act of judging is a simple act, not a composite act. In this one simple, physical act of judging, the mind perceives (i.e., understands or 'sees') an agreement or disagreement between two concepts and pronounces this agreement or disagreement.

So, three things are really necessary for the psychological act of judgment: 1) two concepts—we have to simply apprehend the subject and predicate; 2) a comparison of these two concepts—the mind must compose or divide them; 3) the apprehension that these two concepts are agreeable or disagreeable—this is called the *apprehension of predictability*, a realization that one concept can be predicated or said of another concept. The judgment immediately follows upon this recognition that the two concepts are harmonious or repugnant to each other; once I perceive that rational can be said of man because they are in agreement with one another I judge to myself 'man is rational'. In other words, the perception of conformity or disconformity between the two concepts in the same thing becomes the act of judgment; judgment is essentially the *assent* (i.e., the acknowledgment or approval or admission or acceptance or recognition) to the conformity or disconformity of two concepts amongst themselves.

From what we've said, we must carefully distinguish two kinds of propositions: the merely *proclaimed or stated* or *enunciative* proposition and the *judicative* proposition which is the sign of the assent. If someone comes up to you and says 'man is immortal, agree or disagree', he has merely *stated* a proposition: namely, the proposition 'man is immortal'. Until you think about the stated or enunciated proposition, you haven't made a judgment. You might even say the proposition back to yourself a few times before making a judgment—'man is immortal, man is immortal…hmm. Let me think about that.' When you assent to the truth or falsity of this merely stated proposition, then you have passed judgment; i.e., then you have judged. When you say, 'DISAGREE! Man is NOT immortal,' *then* you have formed a judicative proposition. The formation of the merely stated or enunciated proposition precedes the formation of the judicative proposition. Remember in the last paragraph I said that three things were necessary for judgment? Well, the enunciative proposition is the sign of step number 2; the enunciative proposition is the sign of the comparison because it is this proposition with which the act of judgment deals. Materially, the enunciative and the judicative proposition look exactly the same: 'man is immortal' as an enunciative proposition looks just like 'man is immortal' as a judicative proposition—and, in fact, they are most often formed in the nearly the exact same moment (i.e., the comparison of the two concepts and the assent to that comparison often take place almost simultaneously, depending on how well those concepts are understood. So when a mathematician hears the proposition 'a triangle has three angles equal to 180 degrees' he assents almost immediately because he has in depth knowledge of triangle and angles; whereas, if someone with poor math skills heard that proposition, he might have to think about the concepts for sometime before their conformity becomes evident to him). The difference lies not in the sign, but in the psychological act itself. But in Logic we're interested in the signs directly, and only indirectly are we interested in the acts themselves. Hence, we won't continue to point out the distinction between the enunciative and judicative propositions but you should realize that, psychologically, there is a big difference.

I should also point out that the act of judging reveals a *limitation* of the human intellect. Our minds don't immediately grasp everything there is to know about something. We don't penetrate the quiddity of a thing in its entirety and perceive each one of its comprehensive notes. Rather, we must build up

the comprehension of a thing by continually adding new notes to it. Adding these new notes takes place by judgment. We start out with the simplest, most common note of a thing: being—this thing is indeed *something*. Then by judgment we add new notes. We start out by knowing the man as just *something*; and we improve our concept by judging things like 'man is living' (so by assenting to the truth of this proposition we've now added the note of 'living' to our comprehension—we've combined or composed our concepts by affirming); and we can continue by judging 'man is a material substance' or by judging 'man is bipedal' or by judging 'man is rational', etc. Each time, the intellect is assenting to the presence of a new note in our comprehension of man. The scientist doesn't start out by knowing water as something that freezes at 0 degrees Celsius; freezing at 0 degrees Celsius is not yet one of the comprehensive notes in his concept of water. He must first formulate the proclaimed or enunciated proposition that 'water is something which freezes at 0 degrees Celsius' and then he must pass judgment on that proposition. Once he has passed judgment, the note of freezing at 0 degree Celsius is added to his concept of water. So, we are forced to judge because our intellects cannot grasp a quiddity all at once. The Divine Intellect, however, has no need of composing and dividing concepts because the Divine Intellect grasps everything in its entirety all at once. The Divine Intellect is purely simple apprehension, but a simple apprehension which grasps the whole essence of a thing together with all its attributes.

The Property of judgment – Recall when we were dealing with concepts we said that concepts have two properties (i.e., attributes or characteristics) that always and everywhere accompany them. These properties were comprehension and extension. Every single concept that we have will have comprehensive notes and extensive subject (even if there only be *one* note or *one* extensive subject). Well, the judgment also has a property or attribute which follows it everywhere: the property of being TRUE OR FALSE. That is, every judgment will be true or false. When the intellect perceives that two concepts go together, either these concepts *really and truly DO* go together, or else the intellect is mistaken and these concepts are *really and truly separated*. If the intellect perceives them to go together, when in fact they do not, the intellect is in error: the judgment is false.[70] However, when the intellect perceives them to go together and they do in fact go together (independently of the mind) then the intellect is not in error: the judgment is true. If I perceive a conformity between 'man' and 'stone' (i.e., if I assent to the proposition 'man is stone'), I have judged falsely, because in reality man and stone are different things. But if I perceive a conformity between 'man' and 'rational', then I have judged rightly—I have a true judgment because, independently of the mind, rational really does go with man. Likewise, if I deny that 'man' and 'rational' go together, I have a false judgment because, independently of the mind, they really do go together. So *logical truth* is when the judgment of the intellect is in conformity with the way things really are; *logical falsity* is when the judgment is not in conformity with the way things really are.[71] And I should emphasize that being true or false is *proper* to the act of

[70] In VI Meta., lect. 4, n. 1236, "And although the intellect has within itself a likeness of the things known according as it forms concepts of **incomplex** things, it does not for that reason make a *judgment* about this likeness. This occurs only when it **combines** or separates. For when the intellect forms a concept of mortal rational animal, it has within itself a likeness of man; but it does not for that reason know that it has this likeness, since it does not judge that "Man is a mortal rational animal." There is truth and falsity, then, only in this second operation of the intellect, according to which it not only possesses a likeness of the thing known but also reflects on this likeness by knowing it and by making a judgment about it. Hence it is evident from this that truth is not found in things but only in the mind, and that it depends upon combination and separation."

[71] There is a distinction between *logical* truth/falsity and *ontological* truth/falsity. We'll get to this later. Cfr. De Veritate q. 1, a. 1, 'What is Truth?'

judging—that is, *only* the judgment is called true or false. Logical truth is a conformity between *what really is* and *what is known*, while falsity is the *privation* of this conformity. But in simple apprehension is not stating that this is the way things are (in fact, it doesn't even proclaim *that* things are; it doesn't even say that things exist—it has abstracted from existence, remember?) and, therefore, no truth or falsity is found in simple apprehension. If someone came up to you and said 'man, true or false?' you wouldn't have the slightest idea what they were talking about. 'Man' is neither true nor false because in conceiving man you haven't yet made any sort of commitment to anything about man. You haven't even said that he exists or doesn't exist. You might even conceive of things which never will exist, but that doesn't make them false: a centaur is not false even though it can never exist.[72] So, truth and falsity do not pertain to simple apprehension. What's more, neither do they pertain to reason. A syllogism is either valid or invalid, not true or false. It is the *propositions* or judgments which make up the process of reasoning that are called true or false. When we say that we want to perfect our process of reasoning, we mean that we want it to lead us to a *conclusion* which is certainly *true*. And that conclusion is itself a proposition.

I said that, in simple apprehension, the Logician isn't directly concerned with the concepts because he doesn't directly manipulate the concepts; rather, he indirectly manipulates the concepts by the use of the terms. That is, he uses terms to cause ideas in his own mind and in the mind of others. Likewise, when dealing with judgment we don't directly touch the judgment itself, but we learn how to *cause* judgments in our mind (and in the minds of others) by coming up with the right enunciative proposition. So we will be concerned, not primarily with the act of judgment, but with the sign of judgment.

The Sign of Judgment

Up to now, I've been referring to the sign of judgment as the proposition. However, this isn't entirely accurate. The proposition is the most *direct* and *immediate* sign of a judgment, but there are also *indirect* or *mediate* signs of judgments. You see, acts of the will—choosing and desiring, etc.—always follow acts of the judgment, as we'll learn in Psychology. Hence, signs of our will's activity also signify some act of the judgment, but indirectly. Imperatives, for example, primarily signify the a desire of the *will* but they are also indirect signs of the judgment leading up to the will's desire. So when I tell someone 'Be quiet!', my vocalization immediately signifies my *desire* for someone to stop talking and mediately my judgment that 'this person should stop talking', or the judgment 'I want this person to stop talking' or even simply the judgment 'I will tell this person to stop talking. Again, if I ask someone a question (e.g., 'Why did you steal?') that vocalization primarily signifies my desire to get information, and indirectly the judgment which precedes my desire (e.g., 'it is good to discover why this person stole'). So there is a difference between vocalizations which immediately signify judgments and vocalizations which secondarily and indirectly signify judgments—vocalizations which primarily signify what the will desires. Logic is not interested in the acts of the will, but in the acts of the intellect. Hence, our focus will be on the vocalization which primarily and directly signifies the judgment itself: the proposition.

[72] A centaur can never exist because it is a contradiction: in mythology, a centaur is an animal which is both brute and man. But this is impossible because brutes lack reason while man possesses reason. Hence, we can think about a centaur but it will never exist independently of the mind or, rather, is will never exist except as an object of our intellectual gaze—it is what we call a being of the reason. Perhaps a better example would be 'zombie'. A zombie is a living corpse. But a corpse is by definition deprived of life.

Now, all the signs of the judgment—propositions and otherwise—go by the name *sentences* or *speech* or *oration* (to translate it strictly from the Latin 'oratio'). For the sake of thoroughness, we'll look at all the different kinds of sentences or speech that we can have. That way, we'll have a clearer idea of what the proposition is and how it differs from other kinds of sentences or speech.

The Definition of Oration

Oration, in general, is *a conventionally significant vocalization some of whose parts signify separately as complex or incomplex terms, but not necessarily as an affirmation or negation.*[73] Let's take this apart.

First, it is a *conventionally signification vocalization*. The same as everything else we've been discussing, but in this case it signifies the judgment in some way or another.[74]

Second, *some of whose parts signify separately*. But not all the parts. Orations like 'go to the store' or 'the store is closed' contain syncategorematic terms as well as categorematic; but 'the' taken separately is a syncategorematic without its corresponding categorematic. It doesn't signify a concept, but a modification of a concept, as we discussed above.[75]

Third, *some of whose parts signify as complex or incomplex terms*.[76] This distinguishes the oration or sentence from the term. A term can be complex or incomplex as we've seen. Now, a complex term has parts which can signify concepts by themselves: rational animal, for example. Take it apart and you've got the terms 'rational' and 'animal', each of which signifies a distinct concept. 'Featherless robot fueled by vodka' is a complex term. But when you split it up into its parts you get incomplex terms: e.g., robot, vodka, featherless, etc. The parts of a complex term will always be incomplex terms. The parts of an oration, on the other hand, might *themselves* be complex terms: take the enunciation 'man is not a featherless robot fueled by vodka'. The parts of this enunciation are the subject, the copula, and the predicate. But the predicate is itself a complex term: featherless robot fueled by vodka. That is, a *part* of this enunciation is a complex term. So the difference between an oration and a complex term is that an oration might be composed of complex terms, while a complex term is only ever composed of incomplex terms. You might ask, "well, isn't 'featherless robot' a complex term? And isn't it a part of the full complex term 'featherless robot fueled by vodka'?" Yes, but you haven't completed the division of the original complex term. You have only an incomplete division. That would be like saying color is divided into red, blue, and the rest, and then claiming that there are only three colors. The division wasn't finished. Again, the word 'predicate' isn't divided into 'p', 'r', 'e', and 'dicate'. Rather, to be complete we divide it into all nine letters. In oration—for example, the proposition—the essential parts are the subject, the copula, and the predicate. As long as you have these three things, you will have a proposition; and it doesn't matter to the nature of a proposition that the subject or predicate be complex or incomplex terms. We'll learn about the rules for division later, for now just recognize that oration or a sentence is not the same as complex term—saying 'rational animal' is not a sentence.

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[73] In I Periherm., lect. 6. N. 2 et 3.

[74] In I Periherm., lect. 6, n. 2.

[75] In I Periherm., lect. 6, n. 3 et 5-7

[76] Ibidem

Finally, the parts of the sentence or oration are *not necessarily affirmations or negations*.[77] 'Man is just'. This is a sentence, an oration. Its parts are incomplex terms. 'Man is just and will repay his debts.' This is also a sentence or oration, but its parts are affirmations: 'man IS just', 'man IS something which will repay his debts.' Furthermore, 'go away!' is an oration, but in itself, it has neither an affirmation nor negation. So an oration is indifferent to being composed of affirmation or negation, whereas, as we have seen judgment and the proposition consist precisely in this affirmation or negation. Hence, 'oration' has a much greater extension than does 'proposition'.

The Division of Oration

Sentences or orations can be *perfect* or *imperfect*. Imperfect oration doesn't express the entire meaning which is assented to by judgment, but leaves part of it out. Consequently, it leaves the mind of the hearer in suspense. So, when I say 'Peter while arguing' and leave it at that, my judgment hasn't been fully communicated. You know when you hear it that such a vocalization is just a part of something larger and it shouldn't be taken as a completed whole in itself. Imperfect orations, then, do not signify the judgment completely. This is especially obvious when syncategorematic terms are left without their corresponding categorematic terms as in 'go to the'. The hearer understands that something else is meant to be communicated, but the vocalizations used are not sufficient to signify the entire judgment. "it does not signify the true or false, since it does not make complete sense to the mind of the hearer and therefore does not completely express a judgment of reason in which the true or false consists."[78] Perfect oration, on the other hand, is sufficient to communicate the entire judgment of the intellect. 'Peter while arguing lost his temper', 'go to the store', etc. Let's look at imperfect oration a bit closer, then we'll move on to perfect oration.

Imperfect Oration

Imperfect oration is *conventionally significant vocalization whose parts signify separately as complex or incomplex terms but which fails to adequately signify the judgment or will* and as a consequence leaves the mind of the hearer in suspense. In other words, if I intend to signify a judgment, but I don't include everything necessary for doing so, I have an imperfect oration. The person who hears it recognizes that there is more to what was said, but the rest was never communicated. So when I say, 'Peter is the', there is something missing and the mind knows it.

Often times, the imperfect oration doesn't differ in appearance from the complex term. 'Peter while arguing' is an imperfect oration if taken as a whole by itself. But it is a complex term if taken as a part out of which the proposition is made. In the sentence 'Peter while arguing lost his temper', 'Peter while arguing' is a complex term. But not every imperfect oration will be a complex term. 'Go to the' is not a complex term because it isn't a term at all—it's an imperfect expression of the will's desire. In other words, every complex term can be an imperfect oration if it is considered as a part of a sentence. If someone asks me 'where are you going? And I respond, 'down the street', what I really mean is the proposition 'I am going down the street', but I have expressed this imperfectly; I intend to signify a judgment, but I've left our 'I am going', and so this sentence is incomplete and imperfect. But if by saying 'down the street' I mean merely to call up the concept of a certain location, then I have a complex term signifying what is known on the level of simple apprehension. So materially, they look the same, but the difference lies in what I intend to signify: if I only want to signify simple apprehension and

[77] Ibidem

[78] In I Periherm., lect. VII, n. 4.

a concept, I have a term. If I intend to signify judgment but I'm missing some of the elements necessary for that, I have imperfect oration.

Now, among imperfect orations, pride of place is given to two sentences: definition and division. These differ from all other imperfect orations because these actually manifest or lead to new knowledge. When I say something like 'stop talking', I'm not manifesting new knowledge; I'm not clarifying anything or making old knowledge clearer. But if someone asks me what man is, and I say 'rational animal', I've attempted to clarify his knowledge by manifesting the nature of man through other terms. Again, if someone asks me what a dodo is, I might respond 'an extinct bird'. I've attempted to clarify his knowledge of the dodo by separating out the terms which will limit his knowledge of the dodo to some particular thing. What I mean by saying 'an extinct bird' is the proposition 'a dodo is an extinct bird', but I state it imperfectly. This imperfect sentence, 'an extinct bird', is an example of definition.[79] Again, if someone asks me 'what is a man?', and I respond, 'a head, a neck, a chest, two arms, two legs, etc.' I've given an imperfect sentence—I haven't said a man *is* a head, a neck, a chest, etc. And this imperfect sentence is an example of division.

Now, traditionally, a course in Logic would treat of the definition and division at this point precisely because we're talking about imperfect orations. However, it is very difficult for beginners to understand the rules for good definition and division until they learn what are called the predicables—the predicable will teach three things which are especially necessary for making definitions and divisions: genus, species, and difference. But the predicables aren't studied until material Logic. So with all due respect for the tradition, we will only treat of definition and division very briefly here and we will return to them after discussing the predicables. And since definition and division are what we call 'ways of knowing' or 'means of making something better understood' or 'modes of knowledge', it will help us to understand them better if we discuss what 'modes of knowledge' are in general.

Modes of Knowledge—A mode of knowledge, or 'way of coming to know something', is defined: *Oration which manifests what is obscure*. In other words, a mode of knowledge is a logical tool that we use to clarify what we know obscurely.[80] So, if I have only imperfect knowledge of what 'man' is, I will use the modes of knowledge to come to a better understanding of his nature. I will, for example, learn the definition of man: rational animal. So the modes of knowledge are the means of clarifying and perfecting what we know only vaguely and obscurely.[81]

Now, there are two things which can be known vaguely and which we will want to clarify: a simple thing (such as 'man', 'animal', 'dodo', etc.) or a complex truth (a proposition such as 'man is animal').

If a simple thing is unclear to us, we can make it clearer in two ways: by clearing up its nature or quiddity, and by clearing up confusion about its parts or kinds. So, if I have an unclear idea of what a triangle is, I might manifest its quiddity by saying 'three-sided plane figure'. Or I might clarify its kinds by

[79] One might wonder if it is a definition to say 'man is a rational animal'. Properly, no. This is a proposition in which the predicate is the definition (i.e., rational animal) and the subject is the thing defined (i.e., man). So, strictly speaking, only 'rational animal' is the definition; hence, a definition is only an imperfect sentence (because it's only a part of the proposition) and a complex term.

[80] In Boet. De Trin., q. 5, a. 1., ad 2

[81] Cfr. In II De Anima, lect. 19, n. 481.

saying 'acute, right, obtuse, isosceles, equilateral, and scalene.' We clarify the quiddity of a thing by *definition*, and we clarify the parts of a thing by *division*.

If a proposition is unclear to us, we make it clear by means of *proof* or argumentation (i.e., the syllogism). For example, if you don't understand or if you doubt the proposition 'man is an animal', I would make it clearer to you perhaps by saying, 'everything that has senses is an animal; but man has senses; therefore, *man is an animal*.' Hence, if I want to make a proposition clear to you—if I want you to assent to the enunciated proposition—I must prove it by means of argumentation. Now, argumentation does not pertain to imperfect oration, because argumentation can be made up of perfect orations only—an imperfect argumentation would be merely a proposition.

So, we have three modes of knowledge, or three ways of making confused and vague knowledge to be clearer and better understood: definition[82], division[83], and argumentation[84]. In Latin these are called the 'tres modi sciendi'. Argumentation, as I said, doesn't pertain to imperfect oration, so we leave all discussion of it for our discussion of the third operation of the intellect. Definition and division are imperfect orations (e.g., 'three-sided plane figure' is an imperfect proposition, as is 'acute, right, obtuse, isosceles, equilateral, and scalene) and as such pertain to the second operation of the intellect (i.e., judgment). However, what they make known is not a judgment but a nature in reality (e.g., 'rational animal' makes known the quiddity of 'man') and so definition and division are often treated in the study of simple apprehension (e.g., 'man' is known by the first operation of the intellect, not the second). I will introduce them here and then leave them until Material Logic when we discuss the predicables and the *matter* of the first operation (i.e., essences or quiddities).

Definition

To define (from, 'de-finire'), means to set limits or boundaries. In this case, it is our concepts which are being limited. By a definition, our concept or term is limited to this one particular nature and separated from all other natures or quiddities. Logically, then, definition is *an imperfect sentence disclosing either the nature of a thing or the signification of a term*.

First, it is *imperfect oration* because a definition *must* be a complex term. Since the purpose of definition is to make one thing more clearly stand out from all other things, it states what the thing defined has in *common* with other things, and what *differentiates* the thing defined from all other things. Hence, as we'll learn a definition must include one term telling what this thing has in *common* with other things (we will later call this the genus). And it must include another term telling what makes this thing *differ* from all other things (we will later call this the difference). The definition of man is 'rational animal'. 'Animal' is what man has in common with other things—i.e., with brutes—but 'rational' is what separates man from brutes. Just saying animal wouldn't be sufficient to distinguish man from, say, a donkey. And just saying 'rational' would leave out any relation to man's organic body. So, a definition must include at least two terms and, therefore, it is an imperfect sentence.

Second, it *sometimes discloses the nature of the thing.* This is the underlying purpose of a definition: to explain what a thing is. It does this by spreading out the comprehensive notes which should exist within

[82] I, q. 85, a. 3, ad 3; II-II, q. 4, a. 1

[83] Cfr. In II Meta. Lect. 1

[84] I, q. 14, a. 7; III, q. 55, a. 5

the comprehension of the concept. So, the definition of man takes two of his most important notes from the comprehension and lays them out into 'rational animal'. However, sometimes the definition doesn't give us the real nature or quiddity of the thing, but it merely tells us what the word or term refers to. So…

Third, it *sometimes discloses only the signification of a term*. It tells us what the word refers to, not what thing in reality is. So, if I define 'widget' as that thing sitting in the corner, I've not in any way told you what a widget is in itself—I've not disclosed the nature of the widget—I've merely pointed out to you what it is I'm talking about. So, definitions are broadly speaking of two kinds: *real definitions*, which disclose the nature or quiddity of a thing, and *nominal definitions* which explain the meaning or signification of a word or term. Both of these are sub-divided, but we must wait until after we discuss the predicables to understand these subdivisions.

Division

Division is *an imperfect sentence distributing a thing into its members or a term into its meanings*.

First, it's called an imperfect sentence or imperfect oration for the same reason that definition is imperfect oration: it must be a complex term. To be a part, there must necessarily be several. If there is only one part, then it isn't a part but a whole—if a pie is divided into only one part, then it hasn't really been divided, but rather it remains a whole. So, division must always contain several words; therefore, it must be a complex term.

Second, division distributes a thing into its parts or members. This is how it differs from definition. Definition combines terms in order to manifest what a thing is, whereas division separates terms and enumerates them. So both definition and division aim to bring about a clear concept, but in different ways. Definition destroys the confusion of a thing by showing how it is constituted, whereas division destroys the confusion by distributing it into its parts. So definition will say that man is 'rational animal', whereas division will say, one kind of animal is rational and another kind is non-rational: i.e., that animal is divided into 'rational' and 'non-rational'. There are many, many different kinds of division and we will treat of them all after we discuss the predicables in Material Logic.

Third, division distributes a term into its meanings. This just means that the various significations of a term are subject to division as well as things in reality. 'Bark', for example, would be divided into, 'the sound a dog makes', and 'the outer covering of a tree'.

In many ways, division is a preparation for definition. Division will give us the parts of a thing, and definition will use those parts to construct the most perfect explanation of that thing's quiddity. So, for example, division will tell us that man is composed of a sensitive body and a rational soul. Definition will then take these parts and define man as an animal with rationality, or a 'rational animal.' We will discuss all of this in greater depth later on.

Perfect Oration

We've discussed those kinds of sentences which fall short of really signifying the judgment or the will. And we've seen that chief among these for the concerns of Logic were two modes of knowledge: definition and division. Now, it remains to discuss those sentences of orations which are complete enough to signify the judgment and the will. We will, in other words, *divide* perfect oration.

Perfect oration signifies either the *judgment directly* or *the will directly and the judgment indirectly* (there's no third possibility because, as you'll learn in psychology, an act of the will must *always* be preceded by a judgment). Hence, we say that oration is either *enunciative* or *ordinative*; enunciative refers to speech expressing the activity of the intellect alone, whereas ordinative refers to the activity of the intellect together with the will: the intellect together with the will *order* that things be done or made. Enunciative speech directly conveys what is known on the intellect level, while ordinative speech directs and orders other people in accordance with the will.

Enunciative sentences directly signify the operation of judgment alone: the enunciative sentence is also called the proposition. We'll deal with the proposition below, but for now let's discuss ordinative speech and see why it doesn't pertain to our present study.

Ordinative Speech (speech directing others)

Ordinative oration or speech directs other people. We need such speech because man is not a solitary creature, but must live in society. And society cannot exist unless men be directed to perform certain things and make certain objects. For example, unless parents—living in a domestic society—could tell their children what to do, children would do whatever they wanted and the family would collapse. So we have a kind of speech by which we direct other people.

This ordinative speech either directs others to be *passive* and to receive the directions of the speaker or orator, or else it directs others to be *active* and to perform some operation. Speech which directs others to be passive is called *vocative* speech. Speech which directs others to be active and perform some operation is of two types: either it directs them to give some intellectual work and communicate knowledge—this is called *interrogative* speech and it signifies a desire for information—or it directs them to give some physical work. Speech directing others to give some physical work changes depending upon who we are talking to. If we are speaking to an inferior, we use *imperative speech*. If we are speaking to a superior, we use *deprecative or optative speech*. Hence, we divide ordinative speech into four kinds: vocative, interrogative, imperative, and deprecative.[85]

Speech Directing Others to be Passive

Vocative speech directs others to be receptive of the directions of the speaker. Things like 'O God!', or 'O good Peter', 'O Captain, my Captain!' This kind of speech directly signifies the desire of the will to impart information on the mind of the hearer.

Speech Directing Others to Give Intellectually

Interrogative speech directs others to communicate what is known intellectually. Sentences like 'Why did you kill him?', 'What is your name?', 'Who sent you?', 'Why is the sky blue?' These orations all directly signify the desire of the will to acquire intellectual knowledge.

Speech Directing Inferiors to Give Physically

Imperative speech directs inferiors to perform some external action. 'Go to the store', 'do this', 'be quiet', etc. All these signify the desire of the will for the presence of a certain external action or state.

Speech Directing Superiors to Give Physically

[85] In I Periherm., lect. 7, n. 4 et 5.

Deprecative or optative speech directs superiors to perform some external action. Expressions like 'Would to God that I be spared!', or 'if only you would do this', or even 'would you please pass the butter?' Each of these signifies the desire of the will for a certain external action but they differ from imperative in this: they also signify a certain recognition of the other person's free choice. Hence, this kind of speech is more polite because it signifies that we understand the other person's moral liberty and our lack of ultimate authority over them.

Now, these ordinative sentences are the concern of the Logician only when dealing with Rhetoric and Poetics. The reason is that none of these directly signify truth and falsity: 'go to the store' is neither true nor false. However, the judgment underlying that decision to send someone to the store may be true or false. If before I sent someone to the store, I judged 'it is good for this person to go to the store' when in fact it was *not* good, then that judgment was false. But training our minds to acquire truth is the goal of Demonstrative and Dialectical Logic. Hence, we will not be discussing these other types of oration outside of Poetics and Rhetoric. We are interested only in the judgments underlying these acts of the will.

Thomas summarizes all of this very well:

"Next he [Aristotle] shows that this definition differentiates the enunciation from other speech, when he says, *Truth or falsity is not present in all speech however*, etc. In the case of imperfect or incomplete speech it is clear that it does not signify the true or false, since it does not make complete sense to the mind of the hearer and therefore does not completely express a judgment of reason in which the true or false consists. Having made this point, however, it must be noted that there are five species of perfect speech that are complete in meaning: enunciative, deprecative, imperative, interrogative, and vocative. (Apropos of the latter it should be noted that a name alone in the vocative case is not vocative speech, for some of the parts must signify something separately, as was said above. So, although the mind of the hearer is provoked or aroused to attention by a name in the vocative case, there is not vocative speech, unless many words are joined together, as in "O good Peter!") Of these species of speech the enunciative is the only one in which there is truth or falsity, for it alone signifies the conception of the intellect absolutely and it is in this that there is truth or falsity.

But the intellect, or reason, does not just conceive the truth of a thing. It also belongs to its office to direct and order others in accordance with what it conceives. Therefore, besides enunciative speech, which signifies the conception of the mind, there had to be other kinds of speech to signify the order of reason by which others are directed. Now, one man is directed by the reason of another in regard to three things: first, to attend with his mind, and vocative speech relates to this; second, to respond with his voice, and interrogative speech relates to this; third, to execute a work, and in relation to this, imperative speech is used with regard to inferiors, deprecative with regard to superiors. Optative speech is reduced to the latter, for a man does not have the power to move a superior except by the expression of his desire.

These four species of speech do not signify the conception of the intellect in which there is truth or falsity, but a certain order following upon this. Consequently truth or falsity is not found in any of them, but only in enunciative speech, which signifies what the mind conceives from things. It follows that all the modes of speech in which the true or false is found are contained under the enunciation, which some call *indicative* or *suppositive*. The dubitative, it should be noted, is reduced to the interrogative, as the optative is to the deprecative.

Then Aristotle says, *Let us therefore consider enunciative speech*, etc. Here he points out that only enunciative speech is to be treated; the other four species must be omitted as far as the present intention is concerned, because their investigation belongs rather to the sciences of rhetoric or poetics. Enunciative speech belongs to the present consideration and for the following reason: this book is ordered directly to demonstrative science, in which the mind of man is led by an act of reasoning to assent to truth from those things that are proper to the thing; to this end the demonstrator uses only enunciative speech, which signifies things according as truth about them is in the mind. The rhetorician and the poet, on the other hand, induce assent to what they intend not only

through what is proper to the thing but also through the dispositions of the hearer. Hence, rhetoricians and poets for the most part strive to move their auditors by arousing certain passions in them, as the Philosopher says in his *Rhetorica* [I, 2: 1356a 2, 1356a 14; III, 1: 1403b 12]. This kind of speech, therefore, which is concerned with the ordination of the hearer toward something, belongs to the consideration of rhetoric or poetics by reason of its intent, but to the consideration of the grammarian as regards a suitable construction of the vocal sounds."[86]

[86] In I Periherm., lect. 7, nn. 4-6

Enunciative Oration

Definition of the Proposition

We've seen that a sentence or oration can signify the judgment directly, or it can signify the ordering of the will directly and the judgment itself only indirectly. The direct sign of the judgment is what we call the enunciation, interpretation, or proposition (historically, the name 'enunciation' was used in general to mean the sign of judgment while 'proposition' was reserved for the enunciation which was used in a syllogism.[87] It was also called 'interpretation' because "one who interprets seems to explain something as either true or false."[88] For the purposes of this course we use 'proposition' indeterminately to refer to the sign of judgment no matter if it is found within the syllogism or outside the syllogism).

As we've seen, propositions are signs of the intellect assenting to or acknowledging the conformity or disconformity between two concepts, and this assent can be either true of false. So we define the proposition as a *sentence or oration signifying the true and the false by declaring it to be so*.

First, it's a sentence. That is, it's a perfect oration, as we discussed in the last section. This distinguishes the proposition from a mere complex term, or imperfect oration.

Second, the proposition conventionally signifies truth and falsity. This distinguishes it from all the ordinate sentences which don't directly signify truth or falsity (i.e., vocative, interrogative, imperative, deprecative). I should point out, though, that we don't say in this definition that the proposition *is* true or false, but that it *signifies* truth or falsity: "true or false is said to be in the enunciation as in a sign of true or false thought; but true or false is in the mind as in a subject."[89] Remember truth or falsity is properly speaking in the act of judgment; truth when the intellect declares things to be as they really are, falsity when it declares things to be otherwise than they really are. So truth and falsity is in the enunciation only after the judgment assents to or negates the composition of subject and predicate. In fact, without this reference to the intellect judging, propositions are neither true nor false. I can simply *say* 'John is president' but simply stating this proposition doesn't make it true or false. But if I really do *mean* 'John is president' (because my mind has assented to the composition of subject and predicate), then this proposition is false—John, lamentably, is not president. Again, a proposition like 'Bill will go to the store tomorrow' will be neither true nor false—it involves a future event that may happen, but, then again, may not happen. If it is true to say, 'Bill will go to the store tomorrow', then it is false to say 'Bill will NOT go to the store tomorrow'. That is, it would be impossible for Bill *not* to go to the store tomorrow--Bill would *necessarily* go to the store tomorrow. And if it is false to say 'Bill will go to the store tomorrow', it would be impossible for Bill to go to the store tomorrow.[90] We'll come back to this point about future events later on (when we discuss what is called the 'modality' of a proposition), but for now just recognize that propositions themselves are neither true nor false—truth and falsity is in the judgment of the intellect.

However, even though truth and falsity are not, properly speaking, in the proposition, we will nevertheless, be referring to some propositions as true and other propositions as false in the coming

[87] Cfr., In I Post. Anal., lect. 5, n. 3.

[88] In I Periherm., Proem.

[89] In I Perihem., lect. VII, n. 3.

[90] In I Periherm,, lect. XIII, XIV, XV.

pages. But this needs to be understood in the right way. As I said, only the judgment is true or false in the proper sense, but we call the proposition true or false if the mind would be right or wrong in assenting to it. For example, we say that the proposition 'man is an animal' is a *true* proposition because *if* the mind assents to it, the mind would correspond to reality. Again, we will call 'man is a stone' a false proposition because if the mind assents to it, the mind will be joining together two things which in reality are separate. So we will indeed be calling proposition true or false, but this is in an analogous sense—it is analogy of attribution: truth and falsity in the proposition is caused by truth and falsity in the intellect.

Third, the proposition declares the true and the false to be so. This really pertains to what we called the judicative proposition. When I form a judicative proposition which really and truly expresses the judgment of my intellect (as opposed to a merely enunciative proposition which doesn't necessarily express my real thoughts on the matter), I am declaring that, in fact, reality is as I judge it. When I really affirm that man is an animal (because my intellect clearly sees the conformity between human nature and animal nature), I'm declaring—that independently of my mind—man is truly identified with animal nature. Hence, every judicative proposition—nay, every judgment—pertains to the real world; to the way things really are. This point needn't detain us here, but when you reach Metaphysics, and especially that part of Metaphysics which is often called Epistemology (i.e., the defense of truth in knowledge), this realist character of judgment will become important; because, since every judgment necessarily declares something about reality, it will be utterly impossible to be an *idealist*—i.e., one who claims that we know nothing about reality and we know nothing but our own thoughts. If the idealist is judging, he's necessarily stating that 'this is the way things are' and, hence, is implying that he knows something about reality. Remember this point because it will serve you well later on.

Now, the proposition must contain three elements, as we talked about earlier. It must contain terms which signify the two concepts that are composed or divided, and it must contain a term signifying that act of composition or division. In other words, every proposition—in order to be a perfect enunciation—must contain a subject, a predicate, and a copula. And for reasoning, it's imperative that we are able to clearly identify what two concepts involved in a proposition, and whether they are being joined or separated. In order to make a syllogism we have to be able to point out the major, minor, and middle terms (which are the terms of the syllogism as we saw in a previous section). But these terms are the subjects and predicates of the propositions which make up a syllogism. Therefore, we must be able to clearly identify what is the subject and what is the predicate in a proposition.

However, the way that people talk and write does not often state the subject, predicate, and copula very clearly. 'In the library, Bill couldn't stop talking.' How on earth can you use this proposition in a syllogism? What two concepts are being identified by the mind here? For the sake of Logic, it will help us to rephrase propositions such as this. It will help us immensely to restate propositions in a clear subject-copula-predicate manner. So, a proposition like 'In the library, Bill couldn't stop talking', could be restated as follows: 'Bill is someone who couldn't stop talking in the library'. Putting it this way, 'Bill' becomes the subject, 'is' is the copula, and 'someone who couldn't stop talking in the library' is the predicate. The concepts of 'Bill' and 'someone who couldn't stop talking in the library' are being composed by the mind. And now the proposition can easily be used in a syllogism:

Everyone who couldn't stop talking in the library was subject to a fine.
But Bill is someone who couldn't stop talking in the library
Therefore Bill was subject to a fine.

To give another example, a proposition like 'pleasant remain the memories of a happy youth' is poetically very beautiful, but logically it's a nightmare. To use it in a syllogism it will help to restate it as 'the memories of a happy youth (the subject) are (copula) things which remain pleasant (predicate).' Restating the proposition in this way is what we call putting it in 'strictly logical form'. It will behoove you as Logicians to practice restating all the arguments you hear in strictly logical form so that you may easily see what is being proposed. Take the following example from Shakespeare:

'Oft expectation fails'.

In strictly logical form this would be 'expectation is something which oft fails'. And now we can easily use it in an argument:

Something which oft fails is unreliable.
But expectation is something which oft fails.
Therefore, expectation is something unreliable.

Again from Shakespeare:

When beggars die there are no comets seen.

This becomes:

Comets (subject) are not (copula) things which are seen when beggars die (predicate). The idea of 'comets' is being divided from the idea of 'things which are seen when beggars die'.

Now, when stating things in strictly logical form, it is important that you don't include more in the restated proposition than was in the original. Otherwise you would have an entirely new proposition. So we couldn't go from

'sensations, dogs have'

to

'dogs are animals which have sensations'

The latter proposition is indeed true, but it states much more than was contained in the former. The former proposition makes no mention that dogs are animals. Perhaps the person uttering these words—'sensations, dogs have'—is yet unaware that dogs are animals. So by adding 'animals' in the restated proposition, we have said too much. We've gone beyond what was asserted in the original proposition. We should say, instead, 'dogs are things—or beings—which have sensations'.

You might ask, 'but doesn't *things* or *beings* add more than was stated in the original proposition?' No. 'Things' or 'beings' is a note contained in *every concept that we can possibly have*. Recall our division of concepts by reason of perfection. We said that the most imperfect kind of *finite* concept (not infinite, because an infinite concept doesn't pertain to any one thing) is a *common* concept; i.e., a concept whose notes are not exclusive to that thing, but are shared with many things. And we said that the most common concept was that of *being*. That is, every concept shares the note of *being*. And it is impossible for us to conceive of anything (as you'll learn in Psychology) without conceiving of some *being*—some *thing*—a determinate *something*. Hence, by adding thing or being to the restated proposition we haven't added anything which wasn't already implicitly contained in the first proposition.

And remember when restating propositions that we are not dealing with grammar. Grammatically and literarily speaking, these restated propositions might be very ugly. But they are logically clear. And because they are so clear we are not going to easily misunderstand them when using them in a syllogism.

We will return to strictly logical form after we look at the different *kinds* of proposition—i.e., after we *divide* the proposition. Once we learn the types of propositions we will then practice identifying them in sentences which are not stated in logical form. We will also then learn several guidelines which might help us to identify the subject, copula, and predicate in a sentence which is not stated in strictly logical form.

Division of the Proposition

Think back to our brief discussion of the four causes at the beginning of this course. In particular, think back to the material and formal causes. The material cause, we saw, is something indeterminate, while the formal cause is what determines that material cause. Clay is indeterminate to being any particular statue. It could be a statue of Socrates or Aristotle or Aquinas or anyone. In order for that clay to be determined to be this or that statue, it needs what we call the *form*. So, when the sculptor introduces the form of Socrates into the clay, it becomes a statue of Socrates; when he mashes up the statue of Socrates and then *reforms* it with the form of Aristotle, the clay becomes a statue of Aristotle. Well, in propositions, we have something very similar to this. The subject and the predicate are related to the copula as matter to form. In other words, the two concepts represented by the subject and predicate are indeterminate to being joined or separated in the mind. The copula is what joins or separates them. When the copula goes from 'is' to 'is not', for example, the form of the proposition has changed, just like when the clay goes from being a statue of Socrates to being a statue of Aristotle. And when there is NO copula, it's a bit like having a lump of clay which is in no way determined by the sculptor to be any statue at all. So we say that the subject and the predicate are the *matter* of the proposition, while the copula is the *form* of the proposition. A change in matter won't change the kind of proposition: going from 'man is an animal' to 'john is president' still gives us the same kind of affirmative proposition, just like a statue of Aristotle could be made out of wood or clay or marble or anything else and it would still be a statue of Aristotle. But changing the copula will change the kind of proposition in its entirety: 'man is an animal' goes from being an *affirmative* proposition to being a *negative* proposition 'man IS NOT an animal' by changing the form, just as a statue of Aristotle (no matter what it is made of) becomes a different statue altogether by changing the form of Aristotle into, say, the form of Socrates. So, by analogy, we say that the proposition is made out of matter and form: the matter is the things which are joined or separated, and the form is way they are joined or separated. And just as there are as many different statues as there are forms which can be introduced into the clay (or into the wood or marble or any other matter) so there are as many different kinds of propositions as there are ways of joining or dividing concepts.

So we can divide the proposition in at least two ways: according to the *form* and according to the *matter*. Dividing by reason of form divides it according to the different copulas which can join or separate the terms. Dividing it by reason of matter divides it according to the different relations that those terms have to each other, independently of the copula. This latter division according to matter is really the concern of Material Logic; hence, we will only briefly discuss it. The division according to form is our primary concern in Formal Logic.

Furthermore, the proposition doesn't always compose or divide the entire extension of the terms involved, while sometimes it does; e.g., 'Man is not a stone' denies man of the entire extension of stone,

whereas 'man is an animal' affirms man of at least *part* of the extension of animal, as we will see. Because of this variation in extension, we can also divide the propositions by reason of *quantity*.

Again, the proposition may have many accidental qualities attached to it. Chief among these accidental qualities have to do with the proposition's conformity with reality, and the accidental quality of the copula uniting the subject and predicate (e.g., necessarily uniting, possibly uniting, etc.). Hence, we will also divide the proposition according to its chief accidental *qualities*.

Finally, propositions are caused in our minds in a variety of ways. Some, for example, are self-evident, while others require a long, laborious process of intellectual inquiry before they are evident to us. Hence, we can divide the concept by reason of *origin*.

So, we now proceed to divide the proposition in these five ways: by reason of form, matter, quantity, quality, and origin.

Division of the Proposition by Reason of Form

The copula is the form of the proposition, as we said, while the subject and predicate are the matter united or divided. We get different kinds of propositions, then, depending upon the different kinds of copulas, just as we get different statues depending on which shape is introduced into the clay. Now, sometimes the copula is a straight forward *verb*: 'is', 'are', 'am' (this is the *logical* verb, remember, not the grammatical verb). And this verbal copula immediately unites two names as subject and predicate; e.g., 'man is rational'. This kind of proposition is called categorical or simple. However, sometimes two names aren't united, but rather two or more whole *propositions* are united; e.g., 'man is rational and man has senses.' In this case the copula uniting the entire sentence isn't the verbal copula 'is', but it's the non-verbal copula 'and'. This is called a compound proposition.

Whereas, a categorical proposition unites two *terms* by means of the copula, the compound proposition unites two or more *propositions* by means of a copula. And 'and' isn't the only copula used in these compound propositions: 'if…then', 'either…or', etc. are all copulas used to make a compound proposition. So, just as the categorical is constructed from joining subject and predicate, compound propositions are made by joining together propositions themselves. That is, a compound proposition is a collection of propositions united in a single sentence.[91] 'IF man *is* an animal, THEN he *is* sentient,' 'John *is not* president AND the country *is* in greater danger than it might have been', 'EITHER socialism *is* to be thwarted, OR the country *is* doomed', all of these are compound propositions whose parts are not terms but other propositions. The *categorical* proposition is one whose component parts are subject, predicate, and verbal copula. The *compound* proposition is one whose component parts are several propositions and a non-verbal copula.

We begin by looking at the categorical proposition, and then we will move on to the compound proposition.

The Categorical Proposition

The categorical proposition is an enunciation which unites one predicate to one subject by means of a verbal copula. This proposition immediately signifies *a single act of judgment*; that is, it immediately

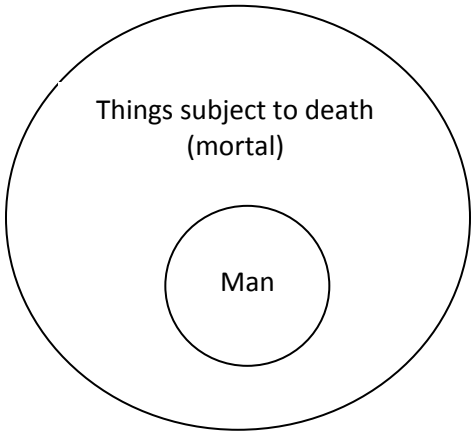
[91] The compound proposition was also at one time called the *hypothetical* proposition because its truth depends upon the truth of the categorical propositions which make it up. We will use *hypothetical* to refer to one particular kind of compound proposition.

signifies the composing or dividing of *two concepts* by affirmation or negation. And because the categorical proposition signifies affirmation *or* negation, we have in general two kinds of categorical propositions: affirmative and negative.

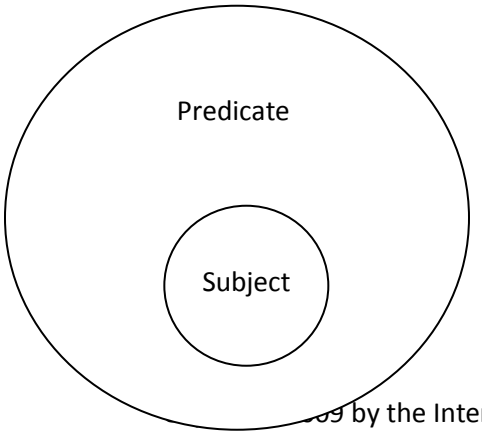
Affirmative propositions indicate that the mind has judged two things to be in *conformity*, while negative propositions indicate that the mind has judged two things to be in *disconformity*. So, 'man is an animal' is an affirmative proposition because it signifies that the mind is identifying the concept of 'man' with the concept of 'animal'. 'Man is not a stone' is a negative proposition because it signifies the mind separating the concepts of 'man' and' stone'. Since there is nothing between affirmation and negation (these are immediate contraries), every categorical proposition will be either affirmative or negative.

Furthermore, the copula is the *form* of the propositions. So it is the copula which will determine if the proposition is affirmative or negative. A proposition will move from affirmation to negation by changing the copula: 'man is an animal' becomes negative (i.e., 'man is not an animal') by changing the copula from 'is' to 'is not'. Changing the copula changes the signification; with 'is not' the proposition now signifies separation.

Recall our discussion of extension and comprehension. Well, in an *affirmative* proposition, the *subject* is placed under the *extension* of the predicate, because it is the predicate which, in a way, is qualifying the subject. So, if I'm talking about man (i.e., man is the *subject* of my discussion), and I say 'man is mortal' (i.e., subject to death), this subject, 'man', is being placed within the *extension* of 'things subject to death'. Many things are subject to death, you see, and among these things we find man. We can illustrate this graphically as follows:

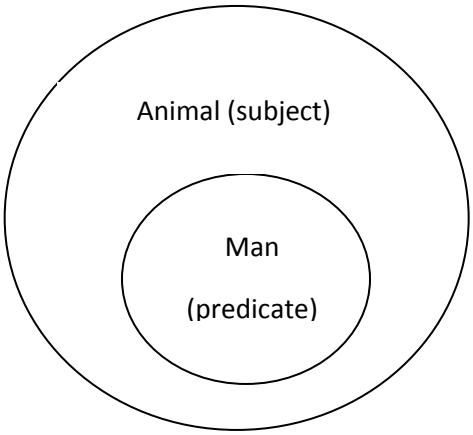


Or in general:



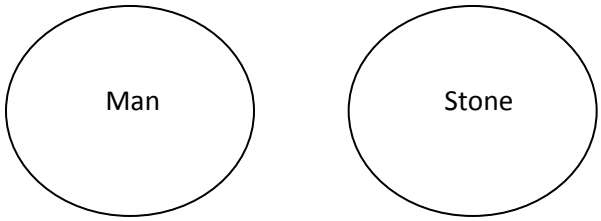
This means that the extension of the predicate is greater than the extension of the subject, and the subject is being identified only with a part of the predicate's extension. So, the subject must has greater comprehension than the predicate because it is adding something which is not necessarily contained in the notes of the predicate. In the proposition 'man is an animal', for example, 'animal' abstracts from 'man' or 'brute'. The notes of 'animal' are 'substance', 'material', 'living', and 'sentient'—'rational' or 'nonrational' are not among these notes. By saying 'man is an animal', I'm adding the note 'rational' (which is in the comprehension of man) to a certain portion of the *extension* of 'animal'.

So, the predicate normally has a greater extension than the subject, and this is the way mind naturally tends to enunciate propositions. Hence, a proposition in which the predicate has greater extension than the subject we call a well-ordered, direct, or *natural*. 'Man is an animal' is well-ordered and natural. However, we might invert this order and use 'animal' as the subject and 'man' as the predicate. 'Some animal is man'. In this case, what has less extension is being used as the predicate.



But this is a bit awkward to be used in a syllogism, as we'll see. We call this is called disordered or indirect or *unnatural*. The proposition 'some animal is man', then, is an indirect proposition. In this case the predicate is contained under the extension of the subject. 'Some animal is man' means 'some part of the subject is contained under the predicate'. We'll return to this distinction when we talk about the conversion of propositions.

So, in an *affirmative* proposition, one term is placed under the extension of another term; e.g., in 'man is animal' 'man' is being identified only with a portion of 'animal's' extension. On the other hand, in a *negative* categorical proposition, the subject is entirely removed from the extension of the predicate. 'Man is not a stone'. The subject is in no way contained under the extension of the predicate and likewise the predicate is contained under no part of the subject's extension. So we wouldn't illustrate it as one circle within another (since one term is not being identified with another's extension), but we illustrate it as two separate circles—as two concepts which are really divided from each other by the mind.



What about instances where the subject and the predicate have the exact same extension? 'Man is rational animal', for instance, and, in general, any time a definition is predicated of the thing defined. And what about equipollently identical terms used in the proposition: e.g., 'featherless bipedal animal is a rational animal'? Well, the extensive equality of the two terms (i.e., the fact that they have the same extension) is beyond what this proposition states. That is, the proposition which says 'man is a rational animal' never states that 'ONLY man is a rational animal'. This exclusive word (i.e., 'only') is over and above what is given in the categorical proposition 'man is rational animal'. In fact, as we'll learn below, an exclusive proposition like this is really a compound proposition, but it's called *occultly* compound or a *hidden* compound because it doesn't explicitly enunciate each of its component propositions. If we were to spell out each of the parts in this occultly compound proposition, we would get, 'man is a rational animal and no other thing besides man is a rational animal'. Hence, it's compound and way beyond what the categorical proposition states: 'man is a rational animal'. This says nothing about whether or not anything besides man is a rational animal. Hence, 'rational animal' is here being used *logically* as a term with greater extension, even though, as a matter of fact, the extension is the same.

There are a few potential difficulties when identifying a categorical proposition, though. Let's take a look at two of the more common. First, in regard to categorical propositions which seem to have more than one copula, and, second, categorical propositions which seem to contain a separate proposition within themselves.

First, propositions which appear to have more than one copula. The copula of the categorical proposition can appear to be twofold: simple and complex. 'Peter IS a teacher' has a simple copula. 'Peter IS OR WAS a teacher' has a complex copula—it has a copula with two parts. Again, 'Peter IS NOT a governor' has a simple copula. 'Peter neither IS nor WAS a governor' has a complex copula—it has two parts.

How is it possible that a single categorical proposition have two copulas? It isn't possible. These propositions are not really categorical. They are compound. Copulas are the form that determines a proposition to be a certain kind of proposition, just as the shape in the clay makes it to be a certain statue; and a variety of shapes makes a variety of statues, just as a variety of copulas makes a number of propositions. Take a closer look at what is being stated: Peter is or was a teacher. This really contains two propositions united by the copula terms 'either…or'. What we have here is what we will call below an *alternative* proposition; it's just not stated in strictly logical form. When I say 'Peter is or was a teacher' I'm really saying 'EITHER Peter is a teacher OR Peter was a teacher'. Hence, it's not a categorical proposition at all.

Now, in the proposition 'Peter neither is nor was a governor' we have, not an alternative proposition, but what we will call a *conjunctive* proposition (though, again, not stated in strictly logical form). A conjunctive proposition does nothing more than unite several categorical propositions by the copula *and*. So 'Michigan is a state and Pennsylvania is a state': this is a conjunctive proposition. It contains two categorical propositions (i.e., the proposition 'Michigan is a state' and the proposition 'Pennsylvania is a state) united by the conjunctive copula *and.* In the case of 'Peter neither is nor was a governor' we have a conjunctive proposition made up of two *negative* categorical propositions: 'Peter is not a governor (first proposition) and (copula) Peter was not a governor (second proposition).' So this proposition as well, though it appears to be categorical, contains two copulas and is therefore really compound.

Another tricky question arises when a proposition seems to have two copulas but in fact has only one. It would seem that there are two copulas here: 'that man who is white is a teacher'. There are two verbs

(i.e., 'is') and if there are two copulas, there are two propositions. While it's true that two copulas make two propositions, the verb 'is' doesn't always function as a logical copula. 'That man who is white' doesn't signify the mind assenting to the fact that some man is indeed white, but it merely represents the simple apprehension of a white man. In other words, 'that man who is white' is not a proposition, but a complex term—I'm not judging or affirming that the man is really white, I'm simply pointing out 'that white man'. Hence, there is no compound proposition here; merely a categorical proposition whose subject is a complex term: 'that man who is white (subject) is (copula) a teacher (predicate)'. 'That man who is white' is being placed in the extension of 'teacher'—the concept of 'teacher' includes or extends to that man who is white.

Often times, language will make it difficult to determine if a word is being used as a logical copula or not. For example, 'John and Beth are happy'. Unfortunately, the English language doesn't clarify how that first 'and' is to be taken. Does it mean 'John is happy and Beth is happy' (a compound proposition), or does it mean 'John and Beth TOGETHER are happy' (a categorical proposition with a *collective* term for a subject). English gives no clues for differentiating between the two senses, unfortunately. Only further investigation will make the meaning clear.

The Compound Proposition

A compound proposition is a sentence or oration whose parts signify as complete propositions and not as terms. So whereas a categorical proposition contains two terms united by a verbal copula (i.e., is, am, are, in English) a compound proposition contains two complete proposition united by a conjunctive copula (e.g., 'and', 'or', 'if…then'). So, 'man is an animal and man is rational' is a compound proposition resolved into the component parts 'man is an animal', first, and 'man is rational', second. This would be the least complex of compound propositions: one sentence composed of two categorical propositions as its component parts. But the parts of a compound proposition don't have to be *only* categorical propositions. No, the parts of a compound proposition could *themselves* be *compound propositions*. Take the following example. 'The socialist legislators are outspoken and the anti-socialist legislators are timid'. This is immediately resolved into two categorical propositions: 'the socialist legislators are outspoken' and 'the anti-socialist legislators are timid'. But we can use this compound proposition to make an even larger compound proposition: 'if the socialist legislators are outspoken and the anti-socialist legislators are timid, then the continued existence of the family is in danger.' Hence, a compound proposition can, in fact, be *very* compound. And we'll see that each proposition has rules which it must be followed in order for it to be true; so in a compound proposition containing many other kinds of propositions, there will be many rules which must be met before the whole proposition can be pronounced true. And if any of its component propositions fails a rule, the entire compound will be false.

Now, the compound proposition is usually very easy to spot: it has two or more verbal copulas (i.e., is, am, are) which are found in the *component propositions*, and it has conjunctive, non-verbal copulas like 'and', 'if…then', 'either…or', which unite the smaller component propositions. So, 'man *is* an animal AND man *is* rational'. When the logical copulas are clearly expressed, we call it an *openly* or *formally* compound proposition. But sometimes a proposition can be *formally categorical* (i.e., it has only one verbal copula) but nevertheless it is *virtually* compound—that is, there is another proposition which is not explicitly given, but which is necessarily implied. We call these *occultly* or *virtually* compound propositions. So, for example, the proposition 'only civil authority is something which has the right to military coactions (i.e., the use of military force)'. It is *formally* categorical because it only contains *one* logical copula, 'is'. But it necessarily implies two distinct propositions: 1) Civil authority has the right to military coaction, 2) nothing other than civil authority has the right to military coactions. The distinction

between these two propositions is not explicitly given in the original sentence, but it must be recognized because if either of these two occult or hidden propositions is false, then the original proposition would be false.

We'll deal first with openly compound propositions, and then we'll talk about occultly compound propositions.

Openly Compound Propositions

Openly compound propositions unite two or more categorical propositions by means of a conjunctive, non-verbal copula such as 'and', 'or', 'either...or' (again, remember, a logical verb is something derived from 'to be'; so 'is', 'am', 'are' would be the logical verbs in English and they are used to construct categorical propositions—but there are also copulas such as 'and', 'either…or', 'if…then', which are non-verbal and these are used to join *several* categorical propositions together into a larger compound proposition) . Sometimes this uniting is as simple as the affirmation in the categorical proposition—it merely puts or links the two component propositions together and it signifies the mind *simultaneously* assenting to each component part (e.g., 'man is an animal AND man is rational'). We call this a *conjunctive* proposition. In the conjunctive proposition the mind commits itself to the truth of each part; e.g., my mind is assenting to the fact that man is both an animal and rational. But sometimes, the mind doesn't commit itself to the truth of each part but only to the truth of a certain relation *between* each part. We call these compound propositions *hypothetical.* For example, the proposition 'if socialists are in power, then the family is in danger.' Neither one of the component propositions is being assented to by the mind; i.e., the mind is not committing itself to the truth of either part. What the intellect *is* doing is committing itself to the truth of the *relation* or nexus between the two component parts. It's committing itself to the relation that if the first component proposition is true, then the second component proposition will also be true—the 'if…then' relation is only one kind of hypothetical proposition. We'll examine the conjunctive proposition first, then the hypothetical proposition.

The Conjunctive Proposition

The conjunctive proposition is a compound enunciation which unites or divides its component propositions by the non-verbal, conjunctive copula 'and' signifying the simultaneous assent of the intellect to each part. This is the simplest kind of compound proposition. It signifies nothing more than the simultaneous assent to each component part of the proposition. 'Man is an animal AND he is rational', 'the socialist legislators are outspoken AND the anti-socialist legislators are timid'. These are conjunctive. In the first example, the component part 'man IS an animal' (a categorical propositions) is being joined to 'man IS rational' (again, a categorical proposition); and the compound proposition 'man is an animal AND man is rational' signifies the intellect assenting to or recognizing *both* component parts as being true *at the same time*. This last point is what is characteristic of the conjunctive proposition when compared to the hypothetical propositions. *Each* component part is true and simultaneously, and nothing more than this simultaneous truth is being assented to—we aren't saying that the first component proposition *causes* the second part (as some hypotheticals do, as we'll see) and it isn't saying that *at least* one part is true (as some hypotheticals will) or that any component proposition is *false* (again, as some hypotheticals will). It's merely recognizing that each part of the compound correctly states the way things are.

Laws of truth

So the intellect is stating that each component part of the conjunctive proposition rightly represents reality. And, remember, truth attains when the intellect assents to the way things really are; while

falsity attains when the intellect assents to a proposition which, in fact, *doesn't* represent the way things really are. So, since the conjunctive proposition represents two component judgments which are assented to at the same time, if either part is wrong, then the intellect will not be in conformity with reality; i.e., it will be a false judgment.

So the rule for having a true conjunctive proposition is this: *each part must be true.* And in order for a conjunctive proposition to be false: *only one part must be false (though both may be false).* The Latins have an expression: *bonum ex integra causa, malum ex quocumque defectu*: goodness is from the whole, bandness is from any single defect. In other words, a thing is only truly good if each of its parts are good; but if it falls short of being truly good in any of its parts, the thing as a whole falls short of being truly good. So a truly beautiful person has perfect features, while a single physical blemish (let's say a nose the size of swollen apple) is enough to make them ugly. A piece of music is perfect only when every note is perfect, but it's imperfect when any note is wrong. The conjunctive proposition is the same way. In order for the conjunction to be good, the parts joined must be good as well. And the parts joined are the component propositions. So if just one proposition is false, the conjunction will be false. So 'man is an animal AND he is non-rational' is a false proposition because in assenting to this, the mind would assent to man being non-rational—the mind would be in disconformity with reality.

The Hypothetical Proposition

So the truth of the conjunctive proposition will depend on the truth of each component proposition. But sometimes, as I said, the mind doesn't assent to the truth of each component part, but to the truth of the *relationship between* each component part. These sorts of compound propositions are called *hypothetical*. Truth of these hypothetical propositions doesn't depend upon the truth of their component parts. 'If the sun is burnt out, then there is no life on earth'. I'm not saying that the sun has died out or even that the sun will die out, nor am I saying that there is, in fact, no life on earth. The mind doesn't commit or assent to any of the component propositions, but instead assents to the relation between those propositions; in the case of the example, the mind assents to the fact that an absence of the sun would also mean an absence of life. And there are three kinds of these hypothetical propositions: conditional, alternative, and disjunctive.

Sometimes the TRUTH of one part entails the TRUTH of another just like a cause entails its effect—this is the sequential or conditional proposition. Sometimes the FALSITY of one part entails the TRUTH of the other part—this is the alternative proposition. And sometimes the TRUTH of one part entails the FALSITY of the other—this is the disjunctive proposition. Let me elaborate on this a bit.

Sometimes the copula signifies the mind judging that the truth of one component part entails the truth of the other part—judging that, in some way, the truth of one part *causes* the truth of the other part: 'if socialists are in power, then the family is in danger.' In this proposition the truth of the latter part—that the family is in danger—would be caused by the truth of the former—the socialists are in power. We will call this a *sequential* or *conditional* proposition, because there is a certain sequence or succession from the truth of one part to the truth of the other as an effect. So, here the mind is judging that the TRUTH of one leads to the TRUTH of the other (TRUTH→TRUTH).

Sometimes, the copula signifies the mind judging that *at least* one part must be *true*; i.e., its component propositions are so related that they cannot all be false. For example, the proposition 'either socialism will be defeated or the family will be in danger' signifies the mind judging that *at least* one scenario must be true in this case: that the mind is presenting two possibilities as being alternates. So, if one scenario is not true, then the other scenario must be true. If the family is *not* in danger, then there will

be no threatening forces in the world, and that will rule out socialism. And if socialism is NOT defeated (i.e., if the first component proposition is FALSE) then the family will always be threatened by it (i.e., the the second component proposition will be TRUE. In other words, in this kind of compound proposition, the mind is judging that the component parts bear such a relation to each other that *at least* one must be true—i.e., the falsity of one part entails the truth of another (but they might, nevertheless, *both* be true, as we'll see). We call this an *alternative* proposition. So, since the mind is judging that at least one alternative must be true, if we find one part to be false, we will know that the other part is true: the FALSITY of one part leads to the TRUTH of the other (FALSITY→TRUTH).

Sometimes, the copula signifies the mind judging that *at least one* of the component parts must be *false:* e.g., 'the kiwi bird cannot both exist and not exist at the same time', 'one cannot be simultaneously Catholic and pro-choice'. In an alternative proposition we're judging that the falsity of each part is incompatible; that they cannot be false together at the same time, so that if we know one is false, we must admit that the other is true. In this case present case, however, we are judging that two the TRUTH of each part is absolutely incompatible; that they cannot possibly be true at the same time. We call this a *disjunctive* proposition. Since, they cannot possibly be true at the same time, if we discover that one is true, we must admit that the other is false: the TRUTH of one part leads to the FALSITY of the other (TRUTH→FALSITY).

So we have three kinds of hypothetical proposition (i.e., compound propositions which signify the mind judging something about the *relationships* between component propositions, and not judging the *truth* of those component propositions themselves): Conditional, Alternative, Disjunctive. Conditional or sequential when the copula signifies that the TRUTH of one part leads to the TRUTH of the other; alternative when the copula signifies that the FALSITY of one part means the TRUTH of the other; and disjunctive when the copula signifies that the TRUTH of one part means the FALSITY of the other.

Let's take a closer look at each kind.

The Sequential or Conditional Proposition

'If Christ did not rise, you faith is in vain.' 'If and only if man's body is in complete cellular decay, then we can know for certain that he is dead.' 'If the mailman had come, then the dog would have probably barked.' These are sequential or conditional propositions. In them, the truth of neither component proposition is being asserted by the copula 'if…then'—nor must it be asserted. The copula, instead, signifies a peculiar connection or nexus *between* the propositions; the nexus being such that given the truth of the first part, the second part will be true as well. The conventional sign in English which signifies this relation of sequence of succession is the phrase 'if…then,' or an equivalent expression. The component proposition corresponding to the 'if' is called the ANTECEDENT or CONDITION. The component proposition corresponding to the 'then' is called the CONSQUENT or CONDITIONED. The peculiar relation signified by the copula 'if…then' is called the implication or CONSQUENCE.

In the conditional proposition we are not asserting the truth or falsity of either the antecedent or consequent—I'm not saying that Christ DID NOT rise or that my faith IS vain. Rather, we are stating that if the CONDITION is met, the second proposition follows as a consequence: that really the truth of the antecedent is the condition for the truth of the consequent.

Now, there are two kinds of conditions: sufficient and necessary. A sufficient condition is one which is adequate to bring about the consequent. 'If you take deadly poison, you will die.' Poison suffices to end your life. Nevertheless, it isn't *necessary* to end your life. There are many other ways that you might die, so we say that taking poison is *sufficient but not necessary*. A necessary condition is one which is

indispensable for bringing about the consequent. 'If you render your body incapable of retaining your soul, then you will die'. No matter what method you use, all that is *necessary* for ending one's life is making the body incapable of supporting the soul. Death immediately and necessarily follows. So we say that this is *sufficient and necessary*, and if this sort of condition is met, the consequent will always be true. On the other hand, sometimes we can have a condition which is *necessary* but *not sufficient*. If you are to kill yourself, then you must damage you health: damaging your health is a necessary condition for bringing about your death. But it's not sufficient. We damage our health in many ways and very frequently, but we don't die from it. More will be required in order to compass our own deaths, and hence a condition which is necessary but not sufficient merely makes the consequent *possible*: 'if you damage your health, then it is *possible* you will die.' This becomes more or less possible depending upon how many other necessary conditions are required before it becomes sufficient. We'll deal more with possibility later one when we discuss 'modality'.

Now, a *necessary* condition gives us a special kind of conditional propositional called a *reciprocal* proposition. It is true that 'if you take deadly poison, you will die': granting the sufficient condition (i.e., taking deadly poison) we also grant the effect (i.e., your death). That is, we go from the truth of the antecedent to the truth of the consequent. But we cannot reverse the order and use the consequent as though it were the antecedent. We cannot say, 'if you are dead, you took deadly poison'. This is because taking poison, though sufficient, is not the only possible cause of death: it's not *necessary* for bringing about your life, so just because you find a dead person doesn't mean that he took poison. But when I say 'if you have organic functions, then you are living' the antecedent is *necessary* for the consequent. Every living thing, as we'll learn in psychology, depends upon organic functions *necessarily.* When these functions cease, life ceases. When an antecedent is *necessary* to the consequent, that consequent cannot be found without the antecedent. A living thing cannot be found without organic functions because these are necessary for life. So not only can we go from the truth of the antecedent to the truth of the consequent (i.e., from the truth of having organic functions to the truth of being alive) we can also go from the truth of the consequent to the truth of the antecedent (i.e., from the truth of being alive to the truth of having organic functions). This is what we mean by a *reciprocal* proposition.

To sum up, there are two kinds of conditional or sequential propositions depending on whether the sequence goes only from the truth of the antecedent to the truth of the consequent or *also* from the truth of the consequent to the truth of the antecedent. Let's look at each one a little closer.

Simple Sequential Proposition

Sometimes the copula signifies merely that the antecedent cannot be true without the consequent being true; i.e., that if the first component proposition is true, the second component proposition is true—that if the condition is met, the effect is sure to follow. Again, we call this a *simple sequential or conditional* proposition. It's copula in English is simply 'if…then'. In this simple conditional proposition, the antecedent is a sufficient but not necessary condition for bringing about the consequent. And, again, in assenting to this proposition, we needn't assent to the truth of either the antecedent or consequent, of either the condition or conditioned, but to the relationship of succession between them.

Law of Truth

So, in order for a simple sequential proposition to be true, it is not necessary that either component proposition be true, but that the *consequence* or *implication* be valid; that the truth of the consequent would follow upon the truth of the antecedent.

Reciprocal Sequential Proposition

Sometimes, though, the copula signifies that the truth of the antecedent entails the truth of the consequent, AND that—vice versa—the truth of the consequent entails the truth of the antecedent. In other words, we sometimes assert that if the second proposition is true, it could only have been caused by the first proposition and nothing else—that the antecedent is necessary for the consequent such that the consequent couldn't possibly be true without the antecedent being true. So when I say 'if and only if all the links are strong, then the whole chain will be strong.' The first component proposition (i.e., all the links are strong) is *necessary* for the second component proposition (i.e., the whole chain is strong). But vice versa, if it is true that the whole chain is strong, then it must also be true that each and every link is strong—because a weak link makes the whole chain weak. The first part cannot be true without the second part being true, and the second part cannot be true without the first part being true. Again, we call this kind of hypothetical compound proposition a *reciprocal sequential (or conditional)* proposition. It's copula in English is always something like 'if AND ONLY if'. This indicates that the condition is necessary—without out it, the consequent wouldn't be possible.

Law of Truth

In order for a *reciprocal* sequential proposition to be true, it is not necessary that either component proposition be true, but that the condition be *necessary* to the conditioned so that the truth of the antecedent would necessitate the truth of the consequent, and the truth of the consequent would necessitate the truth of the antecedent.

The Alternative Proposition

So the sequential or conditional moves from truth to truth. It assents to the fact that one component part being true, the other must be true as well; and this conditional will be false, if that sequence between antecedent and consequent doesn't really exist.

The alternative proposition, on the other hand, doesn't move from truth to truth (i.e., from the granting of the condition to the granting of the conditioned) but rather from falsity to truth. It signifies an opposition between component propositions so that if one is false, the other must necessarily be true. In other words, an alternative proposition signifies an opposition of FALSITY: i.e., the two propositions cannot *both* be false. At least one must be true.

In the alternative proposition, the copula signifies that one component proposition must be true. That's it. The copula doesn't signify anything beyond the fact that one part must be true. So when I say, 'either a judgment is true or a judgment is false', the component parts are put into a special relation by the copula 'either…or'. And this special relationship signified by 'either…or' requires that at least one part must be true; i.e., they cannot both be false. And it requires this because 'either…or' signifies a certain opposition between the component propositions. In other words, if both component propositions are false, it would violate what this copula is demanding (i.e., an alternative) and hence the compound would be false. This would be what we call a false alternative. 'Either green lights means go or Neil Armstrong was the first man on the moon.' This is a false alternative because there is no opposition between green lights meaning go and Neil Armstrong being the first man on the moon (we'll examine the kinds of opposition between propositions below).

So, this 'either…or' makes it impossible for both to be false, but it isn't impossible that both be true. Indeed, sometimes *both* component propositions *may* be true. But other times *only one* will ever be true. For example, when I say 'either you will wear your seatbelt while driving, or you will endanger

your life' there is still the possibility that you will do *both.* You might be wearing your seatbelt but still endangering your life by driving recklessly. This kind of proposition we call *inclusive* because it includes the possibility that both component parts are true (we also call is improperly alternative because we don't have strict alternates). But I might also say, 'either a human is male or a human is female.' In this case, the truth of one component part *excludes* the possibility that the other part is also true: if a human is male, it cannot also be female. Hence, we call it an *exclusive* alternative (we also call it properly and strictly alternative).

The Inclusive Alternative Proposition

Inclusive Alternatives are propositions in which *at least* one component part must be TRUE. That is, if one part is false the other part must be true, but they could also conceivably *both* be true. 'Either you are wearing your seatbelt or you are breaking the law'. The component propositions in this are so related that if the first part is denied, the second part *must* be affirmed. However, it's possible that *both* parts be affirmed: you are wearing your seatbelt AND you are breaking the law (because, let's say, you are running a red light). We're not affirming or denying the truth of *any given part* of the proposition (i.e., we're not judging that indeed you *are* wearing your seatbelt or that you *are* breaking the law), but we're merely assenting to the nexus or relation between the proposition signifies by the copula 'either…or'; the relation that if one is denied the other must be affirmed, because 'either…or' signifies that at least one must be true. If you are NOT wearing your seat belt then you must be breaking the law, and if you are NOT breaking the law then you must be wearing your seatbelt. It is perhaps clearer if we add 'or both' to the end of the inclusive alternative: 'either you are wearing your seatbelt or you are breaking the law, or both'.

Laws of truth

In order for the inclusive alternative to be true (i.e., a real alternative), it is only necessary that one part of the proposition be true, but the component propositions must be so related that the falsity of one part WOULD entail the truth of the other. The inclusive will be false if both parts *can* be false together (not necessarily *that* they are false, but *can* be false). Inclusive alternatives *can indeed* be true together, so if they can be *false* together as well, then there is no opposition between the component parts. This would be what we call a *false alternative*. 'Either Rome is north of London or dodo birds exist.' These two component propositions are not alternatives because they can be both false and true together. 'Either…or' means absolutely nothing in this case.

The Exclusive Alternative Proposition

These are stricter alternates than the inclusive. The exclusive alternative proposition also asserts that at least one proposition must be true, but it differs from the inclusive proposition in this: both parts *cannot* be true together. That is, only one can ever be true. Either London is north of Dublin or Dublin is north of London. If one is true the other must be false, and if one is false the other must be true. 'Either all men are saints or some men need to improve themselves': saints don't need to improve themselves, so if all men are saints, then no one needs to improve himself. And so if someone needs to improve himself, not all men would be saints.

Laws of Truth

In order for the exclusive alternative to be true, only one component proposition can be true and, hence, its truth must rule out the truth of the other parts. The exclusive will be false if both parts can be false (because then there would be no alternate opposition) and it will also be false if both parts can be true

(because then it wouldn't be exclusive). So if I say, 'either the Allies won WWII or the Axis won WWII or nobody won WWII', a denial that the Allies won means that one of the other parts *must* be affirmed. And if I affirm that the Allies won, then each other part must be denied.

The Disjunctive Proposition

The disjunctive proposition declares that one thing cannot exist simultaneously with two determinations because they are *pertinent of repugnance*. It asserts that two concepts or terms are incompatible in the same subject at the same time. 'A human cannot be male and female', 'a thing cannot be both white and black at the same time in the same way'. Whereas the opposition in an alternative is such that they cannot both be false, the opposition in a disjunctive is such that they cannot both be true. The copula here (which is a combination of 'cannot' and 'and'—or something similar) signifies that both parts cannot be true simultaneously: 'a body CANNOT move AND remain at rest.' The component propositions of this disjunctive are these: 1) a body moves 2) a body remains at rest. And the copula 'cannot…and' signifies that the mind judges that at least one part must be false. It denies that both component parts could be true at the same time in the same way. Nevertheless, they might *both* be FALSE. If I say, 'a dog cannot sit and stand at the same time', this is a true disjunctive because between the propositions 'a dog is sitting' and 'a dog is standing' at least one of those must be false. But there are other possibilities as well: maybe the dog is lying down. Hence, in a disjunctive it is possible that there *both* parts of the disjunctive be FALSE. The dog is neither sitting nor standing.

In a disjunctive proposition the opposition properly speaking isn't between the propositions, but between the several determinations, concepts, or terms which mutually exclude each other in a single subject. So, 'a dog cannot be both black and white in the same way at the same time'. In this proposition, we're denying that 'the dog is black' and 'the dog is white' can be true at the same time. But the reason we are denying it is because 'black' and 'white' are pertinent of repugnance (recall our discussion of the opposition between concepts): they are contraries. And when I say 'a thing cannot both exist and not exist', the opposition is really between the 'existence' and 'non-existence' which are contradictories. Now, remember we said that some opposites have a middle ground while some do not. Between being and non-being there is no middle ground, while between black and white there are many shades of grey, and between sight and blindness there is non-seeing. Well, when there is no middle ground between the opposed terms of a disjunctive proposition, then one must be true and one must be false. But when there *is* a middle ground, both *might* be false. So, 'the dodo cannot both exist and not exist.' In this case, there is no middle ground between existing and not existing. Hence, both parts cannot be denied. Let's call this an *immediate* disjunctive. But if I say, 'a man cannot be both a genius and an idiot' there is still the possibility that he is neither. Maybe he's smarter-than-the-average-bear, but somewhat less than, say, Thomas Aquinas. There is middle ground between genius and idiocy. Let's call this kind of disjunctive a *mediate* disjunctive.

In the case of an immediate disjunctive, the falsity of one part entails the truth of another. If 'a dodo exists' is false, then 'a dodo doesn't exist' will be true. There's no third possibility. Likewise, the truth of one part entails the falsity of the other. If 'a dodo exists' is TRUE, then 'a dodo doesn't exist' will be false.

But in the case of a *mediate* disjunctive, the falsity of one part DOES NOT say anything else about the other. Take this proposition: 'a dodo cannot be both black and white'. If it is false to say 'a dodo is black' we still know absolutely nothing about the proposition 'a dodo is white'. It could be true, it could be false—we don't know what color the dodo is simply by denying that the dodo is black. But if it is TRUE to say 'a dodo is black' then it is false to say the dodo is white. Hence, in the case of the mediate

disjunctive, the mind moves only from the TRUTH of one part to the FALSITY of the other, but not from the FALSITY of one part to the falsity of the other.

Law of truth

For a disjunctive to be true, be it mediate or immediate, only one thing is necessary: *the component propositions cannot be true at the same time*. In other words, at least one part must be false. As long as the two determinations which are predicated of the same subject *mutually expel* each other, the disjunction will be true.

Reduction of the Alternative and Disjunctive to the Sequential

The sequential proposition is the most fundamental type of hypothetical proposition because the alternative and the disjunctive reduce to it. That is, the alternative and disjunctive proposition can both be stated as a sequential proposition. In fact, stating the alternative and the disjunctive as a sequential or conditional proposition is a good habit to develop because it is the conditional proposition which will be used in a syllogism; not the alternative and disjunctive. So let's see how each can be reduced to the sequential.

The Inclusive Alternative

This proposition states that at least one of its component parts must be TRUE. That is, if you only have two component parts, and one is false, the other must be true or else we wouldn't really be dealing with alternates. So:

Either America embraces sound political doctrine or she is doomed.

This is an inclusive alternative because both parts might be true. Perhaps American embraces sound political doctrine but then she is conquered by China.

The categorical component parts of this compound alternative are 1) American embraces sound political doctrine, and 2) America is doomed. Now, what is key to an alternative proposition is that one part MUST be true—the alternative states that they cannot both be false. Deny one part and you must affirm they other. In other words, the falsity of one part will be a sufficient condition for the truth of the other part. So, if one part is false, the other part must be affirmed as a *consequence*. That is IF one part is false, THEN the other part will be true; the truth of one part follows the falsity of the other part as a consequence. So IF it isn't true that America embraces sound political doctrine, THEN it will be true that America is doomed. We can rephrase this: IF America DOES NOT embrace sound political doctrine, THEN America is doomed. We've turned the inclusive alternative into a conditional.

However, this is a SIMPLE conditional only. America not embracing sound political doctrine is not a NECESSARY condition for her doom. Again, perhaps she was invaded by China. We cannot say, IF America is doomed, THEN she did not embrace sound political doctrine. The reason is because in an inclusive alternative the denial of one part is the CONDITION for the affirmation of the other part. But when I say 'IF America is doomed, THEN she did not embrace sound political doctrine' the condition here is not a denial of one part of the alternative, rather it is an affirmation of one part; i.e., that America is doomed. But an affirmation of either part in an inclusive alternative, tells us nothing about the other part: they could *both* be true, remember?

So the inclusive alternative reduced to the SIMPLE conditional.

The Exclusive Alternative

Now, the exclusive does not allow for both parts to be true. So, if one part is true, the other part must be false; and if one part is false, the other must be true. So in the proposition:

Either all men are perfect or some men can improve themselves

The two component propositions are 'all men are perfect', and 'some men can improve themselves'. And the copula 'either…or' in this case demands that one of the be true and ONLY one be true. So if the first one is true, the second will be false; if the second is true, the first will be false. Again, if the first is false, the second is true; if the second is false, the first is true.

So what happens IF we deny the first one? THEN the second one must be affirmed. IF all men are not perfect, THEN some men can improve themselves. And what happens IF we affirm the first one? Then we must deny the second one (because they cannot both be true in the exclusive alternative). So IF all men are perfect, THEN no men can improve themselves.

Now, unlike the inclusive alternative, the exclusive alternative reduces to the RECIPROCAL conditional, because men being perfect is the NECESSARY condition for men not being able to improve themselves, and men NOT being perfect is the necessary condition for men being able to improve themselves. So it is true that IF all men are perfect, THEN no men can improve themselves; and it's also true that IF no men can improve themselves, THEN all men are perfect. Hence, we can phrase this conditional as IF AND ONLY IF all men are perfect, THEN no men can improve themselves.

The Disjunctive

Consider this disjunctive:

A Catholic cannot be loyal to the Church and pro-choice.

The two propositions being compared by this mediate disjunction are 'A Catholic is loyal to the Church' and 'A Catholic is pro-choice'. And the copula 'cannot…and' signifies that the mind is judging 'loyalty to the Church' and 'pro-choice' to be pertinent of repugnance. At least one part must be false when these two are compared. And since at least one part must be FALSE, if any part is affirmed, the other part MUST be denied. So if we affirm that a some Catholic is loyal to the Church, we must likewise deny that he is pro-choice. Hence, IF a Catholic is loyal to the Church, THEN he is NOT pro-choice. Again, if we are to affirm that he is pro-choice, we must deny that he is loyal to the Church: IF a Catholic is pro-choice, THEN he is NOT loyal to the Church.

However, these are only SIMPLE conditional propositions because of the non-necessary relationship between the parts. Consider: IF a Catholic is loyal to the Church, THEN he is NOT pro-choice. Being loyal to church is not necessary to being *not* pro-choice. Many non-Catholics are *not* pro-choice. Again, IF a Catholic is pro-choice, THEN he is NOT loyal to the Church. Being pro-choice is not necessary for being disloyal to the Church. There are many conditions which could account for a person being disloyal. Perhaps he is a supporter of concubinage.

Now, the *immediate* disjunctive will be different. It will reduce to the reciprocal because there is a necessary relationship between the immediately opposed terms: it isn't one it must be the other, and vice versa. 'A living thing cannot be both healthy and sick'. Healthy and sick are immediate contraries. Since at least one must be false (i.e., either 'the living thing is healthy' or 'the living thing is sick'), if I affirm that the thing is sick, I must deny that it is healthy. And if I affirm that it is healthy I must deny

that it is sick. Hence, the immediate disjunctive will always be reciprocal; not being sick is a necessary condition for being healthy. In order for one to be sick it is necessary that one not be healthy.

EXERCISES: Label each of the following as Conditional, Inclusive Alternative, Exclusive Alternative, or Disjunctive. If a proposition is not stated in strictly logical form (e.g., Either A or B, but not both) rephrase it. If any of these are false, point them out. In the case of the Alternatives and Disjunctive, try to reduce them to the Conditional.

1. Either Logic is necessary for science or a course in logic is a waste of time.
2. A Catholic politician cannot be both a good catholic and a good politician.
3. If all prophets spoke the truth some would be believed.
4. If anyone is just he cannot also be cruel.
5. He is either incredibly smart or incredibly stupid
6. If the government is good, the people are happy.
7. An argument is either valid, or its conclusions don't follow from its premises.
8. If the barometer falls it will rain.
9. One cannot be both very shy and very modest.
10. A quiet person is either very shy or very modest.
11. The soul is either material or immaterial.
12. Either there is an afterlife, or some wickedness goes unpunished.
13. If and only if man has no free will, the human race is not morally responsible for our present state of degradation.
14. Whenever a match is applied to gunpowder, then there will be an explosion.
15. Either socialism will eventually be unsuccessful or the free world will be destroyed.
16. There are painful virtues if patience is a virtue.
17. You will either pass or fail.
18. A triangle is either scalene or equilateral , but not both.
19. Either golf is a healthy sport or millions of Americans are wasting their time.
20. Either no men are crazy, or some men are crazy, or some men are crazy while others are not.
21. Men are different from brutes if and only if men have intellects.
22. Either the prisoner is innocent or guilty or both.
23. The elections last week turned on either the issue of health care or the recession.
24. Not all Americans are loyal as long as some follow Alinsky.
25. God will punish the wicked if He exists.
26. It is impossible for a home to be well run and the parents to be vicious.
27. Either sound travels in waves or in particles, but not both.
28. If and only if Dublin is north of London, then London is south of Dublin.
29. If a swan is not black it is white.
30. We must either be vaccinated or run the risk of swine flu.
31. Anyone who acts this way is either dishonest or unwise.
32. A blood vessel is a vein if it is an artery.
33. Living things are either mortal or immortal.

ADDENDUM: Grammatical Relatives

At the end of the section on categorical propositions, we discussed a case where a categorical seems to possess an extra copula: 'that man who is white is a teacher'. Although a categorical such as this *doesn't* include an extra proposition, as I pointed out, a sentence like 'men, who are rational animals, argue' *does* indeed have a second proposition within itself. The word 'who' in this case is being used as a stand-in for another term. Though the word 'who' *of itself* doesn't signify anything, when it is used in a proposition like this it refers to a term which *does* signify something. In this case, it's referring the mind *back* to the *term* 'man'; and thereby it refers the mind to the concept *signified* by the term 'man'. The word 'who' when it is used in this way is called a grammatical relative.

We use grammatical relatives like this very frequently in speech and writing. When I say, 'Peter is learned and HE argues', the word 'he' is referring the mind back to the concept signified by 'Peter'. In fact, without this reference to a term found elsewhere, 'he' wouldn't have any signification; at least not a clear and determinate signification. When someone says 'he' without referring to a name, we tend to respond 'he who?' And when someone begins a sentence with the words 'they say…' we tend to ask 'well, who are they?' So terms like 'who' and 'he' and 'which' (as in 'the liquor store, which is closed on Sunday, won't sell you any alcohol') don't immediately signify anything themselves, but refer the mind to another term. Hence, we define these relative terms as 'terms referring to a name given elsewhere' or terms which signify only by referring the mind to a name given elsewhere.

Now, the name given elsewhere might come *before* the relative term and it might come *after* the relative term; it depends on the sentence. In the example, 'Peter is learned and he argues', 'he' refers to the name Peter which came before. But sometimes we might say, 'they are funny animals, prairie dogs.' Here the word 'they' is relative to the name 'prairie dogs' which comes at the end of the sentence. And sometimes these terms refer to a name in a completely different proposition: 'The men robbed the bank. They were pursued by the police.' 'They' points to those men who robbed the bank.

And sometimes the relative refers not to a *name* but to an entire *proposition*, such as 'Men are rational, which is the reason why men are risible.' Here the word 'which' refers to the whole proposition 'men are rational'; it's indicating that the proposition 'men are rational' will be used in a syllogism to prove that men are risible. We'll return to these sorts of relatives when we deal with the syllogism and argumentation.

So, why do we call these 'grammatical' relatives? Consider again this fairly simple example, 'Peter is learned and HE argues'. Well, logically speaking, this means exactly the same thing as 'Peter is learned and Peter argues'. The concepts being used for 'Peter' and for 'he' are exactly the same. The only difference is that *language* makes us do a little extra work before we know what concept is signified by the term 'he'. Instead of *directly* signifying the concept, the word 'he' *directly* signifies the name 'Peter' and only *indirectly* signifies the concept represented by 'Peter'. So instead of our minds jumping straight from the sign to the concept, we have to use our memory and recall a sign that was given before; or we have to remember the relative term and recall it when we get to a name later on (like when we say 'they told me I was invited, the White House staff did!' we must remember the word 'they' and recall it when we get to the term 'the White House staff'). So while the concepts are the same, language introduces an extra step in *getting* those concepts. Why does it do this? For the sake of pleasantness and utility. Language would be very dull and tedious if we explicitly stated the subject and predicate of every single proposition. And it would take far too long to communicate anything. So, instead of repeating our subjects and predicates endlessly, we take shortcuts. And these shortcuts are fine as long as the

signification of these terms doesn't become confused; which, unfortunately, happens often. Let's take a closer look at how these relatives are constructed.

Reciprocal Relatives - First of all, a relative might refer to a name given in the *exact same* proposition. For example, when we say 'Peter is himself'. The predicate refers the mind back to the subject. The concepts signified by the subject and predicate are the same; the only difference is that the subject signifies the concept immediately, the predicate signifies the concept indirectly and by means of the subject. This is called a *reciprocal* relative. It is one in which the relative term brings back the subject as the predicate. To put this in logical form, just drop the relative term and replace it with the term that directly signifies the concept: 'Peter is Peter'. Note that sometimes the subject is brought back as only a *part* of the predicate: 'Peter loves himself'. The whole predicate is 'something which loves himself'. This is in practice no different from the previous example. Just drop the relative and put in the name it refers to: 'Peter loves Peter'.

I should also point out that reciprocal relatives often seem to be used as subjects when a statement is put in an illogical form: '*it* is not good for man to be alone'. 'It' refers to the complex concept 'for man to be alone' which is here placed after the predicate 'good'. This, however, is not a real reciprocal. It's what we'll call an *improper* reciprocal. The reciprocal uses the same concept as both subject and predicate. In this example, though it appears that the same concept is used here as both subject and predicate, it is not. 'For man to be alone' (which is what 'it' refers to) is not both the subject and part of the predicate; otherwise, the proposition would mean 'for man to be alone is not good for man to be alone', which is nonsense. Rather, the English language here has misplaced the subject ('for man to be alone' has been stuck wrongly in the place of predicate) and added another indirect sign to signify that very subject which was misplaced (i.e., the word 'it'). So really, English is using two signs in the same proposition to represent the same concept; but one of those signs is direct (i.e., 'for man to be alone') and the other is indirect (i.e., it). Such an addition is wholly unnecessary from the logical point of view, but that's just one of the funny things that English does. To put this into logical form, simply drop the 'it' and put the subject where it *ought* to be: 'for man to be alone is not good'.

Another apparent use of a reciprocal relative as subject is when the relative term really refers to another proposition. When I say 'HE is a doctor', the word 'he' is not referring to the predicate but to something outside this proposition. In a case like this, we always ask 'he who?' The answer will point us elsewhere, 'that man over there'.

Again, it seems we use a reciprocal as subject when we say 'Peter himself caused the accident'. Is the subject relative to itself in this case? No. A second instance of the concept 'Peter' is not being used here. Otherwise the proposition would mean, 'Peter Peter caused the accident' which is nonsense. In a sentence like 'Peter himself caused the accident', the word 'himself' simply adds emphasis to the fact that Peter was the proper cause of the accident—it merely calls attention to the identity of the subject. But aside from this emphasis, it adds nothing new to the proposition. Logically, these two propositions mean the same thing: 'Peter caused the accident', and 'Peter himself caused the accident.'

Non-Reciprocal Relatives - Second, a relative might refer to a name given in a *different* categorical proposition. For example, when we say 'Peter is learned and HE argues'. In this case, we have a conjunctive proposition composed of two categoricals. The first categorical is 'Peter is learned' and the second is 'He argues'. The 'he' in the second proposition isn't referring to any name in that same proposition (as happens with the reciprocal relative). Rather, the 'he' refers to a name given in the first proposition: namely, Peter. We call this a non-reciprocal relative. It is a relative term which refers to a name given in another proposition.

These non-reciprocal relatives can refer to one of two things: the *subject* of another proposition, or the *predicate* of another proposition. 'Peter is learned and he argues'. 'He' refers to the subject of the first categorical. 'Snow is white and such is a swan'. 'Such' refers to the predicate, white, and not to the subject, snow. Otherwise, we would be saying 'snow is white and snow is a swan'. Let's talk first about relatives referring to the subject.

Relative to the Subject - When I say 'Peter is learned and he argues', 'he' is employing the same concept signified by 'Peter'. The concepts are identical. Hence, we call this 'he' ***relative of identity***. But I might also say, 'Peter works and another sleeps'. 'Another' does indeed refer back to 'Peter' but not for the purpose of using the concept Peter in the same way. Instead, it refers to Peter in order to *exclude* Peter from this new proposition. The concept signified, then, isn't simply 'Peter', but 'someone besides Peter', or 'someone who is not Peter'. We call this kind of relative ***relative of diversity***. To put each of these in strictly logical form, drop the relative term and replace it with a term that directly signifies the concepts being used. So, 'Peter is learned and he argues' simply becomes the conjunctive 'Peter is learned and Peter argues'. And the proposition, 'Peter works and another sleeps' would become 'Peter works and someone besides Peter sleeps'.

There's a special consideration for sentences like 'Peter, who is learned, argues.' Here, the proposition with the relative term (i.e., who) is inserted in the proposition containing the term referred to (i.e., Peter). To put this into strictly logical form, you must separate the two propositions and get rid of the relative term. So it would become 'Peter is learned AND Peter argues'. You might ask, "how is this proposition (i.e., Peter, who is learned, argues) different from the proposition 'the man who is white is a teacher'? Shouldn't this also be separated into two propositions—the man is white and the man is a teacher?" No. In this case, 'the man who is white' is a complex term: a man qualified by whiteness. It means the same as 'the white man'. So if someone were to ask me 'which of these men is a teacher', I wouldn't respond 'the man is white'. That wouldn't answer the question. Rather, I would say 'the man who is white', or 'the white man'. These are both complex concepts and complex terms, but not new propositions. Perhaps a clearer example of this comes from a proposition like 'every animal which is rational is risible'. The 'which' is not a relative term in a new proposition. If it were, then we would separate the propositions and get 'every animal is rational AND every animal is risible'. But that's not what I'm saying. I didn't say that every animal is rational. What I meant was that, among animals, the rational ones are risible. Hence, 'every animal which is rational' is a complex concept being used as a subject. It's important not to confuse complex concepts with new propositions; you must be careful to distinguish your meaning when you think through propositions. Fortunately, the English language gives us a valuable tool to distinguish complex concepts from propositions: the comma. Consider the following: 'every animal which is rational is risible' and 'animals, which possess senses, interact with the world.' In the first proposition, the subject is a complex term, 'every animal which is rational'. But if I add commas, it seems to become a compound proposition: 'every animal, which is rational, is risible'. It seems to be saying that every animal is rational. And so the proposition becomes false when the commas are added. In the second proposition ('animals, which possess senses, interact with the world') the subject is an incomplex term, 'animals'. And the 'which possess senses' appears as another proposition stuck there in the middle because it is separated by the commas. But if I get rid of the commas, the subject suddenly becomes complex, 'animals which possess senses'. But, this complex concept is repetitive because *all* animals possess senses. And it lends itself to confusion because the hearer might conclude that there are some animals which *do not* possess senses; this would be false. So, pay attention to your commas—they could be the difference between truth and falsity (although not *every* common signifies a new proposition)!

Relative to the Predicate – While a sentence like 'Peter is learned and he argues' has a relative term—i.e., 'he'—referring to the *subject* of the first proposition, a sentence like 'Peter is learned and such is John' has a relative term—i.e., such—referring to the *predicate* of the first proposition. These relatives of predicate are divided just as the relatives of subject: into *identity* and *diversity*. 'Peter is learned and such is John'. The relative term 'such' refers back to the predicate 'learned' (otherwise we'd be saying Peter is learned and Peter is John); and it's using learned in exactly the same way: the concepts signified by 'learned' and 'such' are identical concepts. But if I say, 'Peter is learned and John is otherwise', the term 'otherwise' does indeed refer back to the name 'learned' but for the purpose of *excluding* it from the new predicate. To put relatives of predicate into logical form, first drop the relative term. Then, if you're dealing with a relative of *identity*, simply use the other predicate as the new predicate (in place of the relative term). So 'Peter is learned and such is John' would become 'Peter is learned AND John is learned' (you could also say 'Peter is learned and some learned thing is John' but this is an indirect proposition, as we discussed above). But if you're dealing with a relative of *diversity*, you'll make a negative proposition and deny the other predicate of the new subject. So, 'Peter is learned and John is otherwise' would become 'Peter is learned and John IS NOT learned.'

APPENDIX: The Symbolic Representation of Compound Propositions

In each example that we've given of the various compound propositions, we've applied the proposition to some kind of matter. 'Either socialism will eventually be unsuccessful, or the free world will be doomed.' This is an example of using an alternative proposition in the area of Political Science. 'Living things are either mortal or immortal'. This is an example of an alternative being used in Psychology. While it's the copula—i.e., the form—which determines what *kind* of proposition we're using, it's the component propositions—i.e., the matter—which determine what *subject* we're talking about (e.g., 'either…or' tells us we're dealing with an alternative propositions, while the terms 'socialism' and 'the free world' tell us we're dealing with a political matter). To talk about the form without any reference to the matter, would be to talk about nothing (e.g., 'either [blank] or [blank]' gives us no knowledge). Yet sometimes we leave behind the consideration of any *particular* matter to discuss simply the role of the copula in general. For example, when we say 'every A is B' merely to illustrate the role of the verbal copula 'is', we ignore what A and B mean, but we don't say that they mean nothing. Leaving behind the matter to examine the role of the copula is fine to an extent—in fact considering these relations in general is the function of Formal Logic. But problems arise when we convince ourselves that these forms *alone* will provide us any insight into reality. They will not.

Yet, modern logic prescinds from any consideration of what 'A' and 'B' stand for; thinking that the form alone is all we need to study in order to perfect our thought. Modern logic separates itself from what A and B are and considers only the copula in general; assigning different symbols to represent the diverse ways they think A and B might be related. For this reason, modern logic is also called 'symbolic logic'—various logical structures are signified by written symbols (e.g., the conditional proposition is represented by →). Using symbols can be helpful (indeed, we've often used them ourselves in this course), but it can also be taken too far: reasoning will never be complete if the symbol are taken as the whole of the rational process. Let's take an example from symbols that we ourselves have employed:

A is B;
But B is C;
Therefore A is C

This logical structure is perfect. But it doesn't help us to come to a reasoned conclusion in any way whatsoever UNLESS we can be sure that, in fact, A *really is* B and that B *really is* C. So how do we know that A really is B? Well, in traditional logic we'd have to ask what A and B stand for. Let's say that A stands for 'man' and B stands for 'animal'. Then we'd be asked to prove that man *really is* an animal. We'd do this by looking at the definition of animal and seeing if it applies to man—that is, we'd see that an animal is a life form having senses, and we'd see that man is a life form having senses, and then we'd be able to put man and animal together. In other words, we'd prove that A is B by means of a syllogism: Every life form which has senses is an animal; but man is a life form which has senses; therefore, man is an animal. And if someone then asked us to prove that an animal is a life form with senses, we'd do this by means of another syllogism; and we'd prove that new syllogism by means of another one, and so, and so.

Now, this process cannot continue forever. We can't keep proving the premise propositions of one syllogism by means of another syllogism, and those propositions by means of another, etc. unto infinity. If all the propositions depended upon a previous syllogism, then we wouldn't know anything for certain. Everything we'd claim to know would have to be proven and the process would never end. Instead of an 'endless regress', as it is called, we have *self-evident propositions*. We'll deal with self-evident proposition in detail a little bit later. For now, let me just explain a few major points. Self-evident

propositions are propositions which don't depend upon a syllogism in order for us to know them with certainty. I don't have to prove to you that 'the whole is greater than the part.' As long as you know what a whole is and what a part is, then you will know that this proposition is true. So a self-evident proposition is one which is known for certain simply by an examination of the definitions involved: e.g., the definition of 'whole' and the definition of 'part'. And, eventually, all our syllogisms will trace their way back to these self-evident, indubitable, and certain starting points. In fact, every science (if it is truly a science) must begin with these unquestionable starting points and gradually work their way to new conclusions (of course, modern 'science' never even broaches the topic of self-evident principles, leaving all their conclusions suspect). As you'll see when you start Physics, all natural science must start with the self-evident principles of matter, form, and privation. And there will be as many distinct sciences as there are sets of distinct self-evident, first principles. So by reducing all our knowledge to these indubitable starting points we can slowly but surely prove that A is indeed B.

But modern logic cannot do this. When asked how we know that A is B, modern logicians will come up with a variety of logical structures which *might* prove that A is B if ever we were to know what A and B stand for. For example, they might say, 'how do we prove that A is B? Oh, that's easy. If C is Q, then A is B, but C *IS* Q, therefore A is B.' We would then ask, 'but how do you know that C is Q?'. And they would respond, 'well, since every C is Z, and every Z is Q, then we can be sure that every C is Q'. Of course, we would then be compelled to ask how they know that every C is Z and that every Z is Q. This process would be never-ending. As long as we deal with symbols, we will never arrive at self-evident propositions. We will never be able to say that 'Y is P' is a self-evident proposition. If you were to ask someone, 'is it true to say that Y is P?', they wouldn't respond, 'of course, you dolt! Have you no common sense?' But since modern logic cannot reduce anything to self-evident propositions, all of their conclusions are only *theoretical* (i.e., hypothetical). All they can say is that

IF A is B,
And *IF* B is C,
Then, B will be C.

This is a long way from certitude. And symbolic logic will never be able to go further than this because *they have no way of ever* proving *that A is B or that B is C*. Symbols will only take us so far, you see. This is especially evident when we deal with the various kinds of compound propositions. Let's take a look at the shortcomings of the symbolic representation of the proposition.

We've examined categorical propositions, conjunctive propositions, simple conditional propositions, reciprocal conditional propositions, inclusive alternative propositions, exclusive alternative propositions, and disjunctive propositions. Now to assign a symbol to each.

The categorical proposition will be symbolized simply by a lowercase letter: e.g., a, b, c…x, y, z. Don't confuse this with the capital letters which we've already used to signify terms (e.g., A is B). The lowercase letters signify whole propositions; proposition 'a', for example, might mean 'A is B'.

Conjunctions (e.g., Every A is B *and* every C is D) will be symbolized by a dot (.). So, the conjunctive proposition 'P is Q *and* S is M', might be symbolized 'a . b' where 'a' means the proposition 'P is Q', 'b' means the proposition 'S is M' and '.' means the non-verbal copula 'and'.

Negations will be symbolized as a hyphen, '—'. So, the proposition 'it is not true that man is a stone' might be symbolized —a, where 'a' means 'man is a stone', and '—' means a denial of the proposition 'man is a stone'. And the negation of a *conjunctive* proposition might be symbolized as '—(a.b)'. This

might mean something like 'it is not true that man is a stone *and* man is an animal'. The 'a' would mean 'man is a stone', the 'b' would mean 'man is an animal', the '.' would mean the conjunctive copula 'and', while the hyphen would deny that this conjunction is true.

The simple conditional proposition is symbolized by an arrow pointing one direction, →. This is appropriate because the truth of the antecedent, in a sense, points to or causes the truth of the consequent. So the simple conditional 'if man is rational, then man is not a brute' might be symbolized 'a→b', where 'a' means the proposition 'man is rational', 'b' means the proposition 'man is not a brute', and '→' means the 'if…then' relationship.

The reciprocal conditional is symbolized by an arrow pointing in two directions, ←→. This is appropriate because not only does the truth of the antecedent point out the truth of the consequent (as in the simple conditional), but the truth of the consequent also points to the truth of the antecedent. So, 'if and only if man has organic composition, then man is alive', might be symbolized 'a←→b' where 'a' means 'man has organic composition', 'b' means 'man is alive', and '←→' means the 'if and only if…then' relationship (this example is *reciprocal* because wherever you find a living man you must find an organically composed being, and wherever you find an organically composed man, you have a living man—organic composition is necessary for man to be alive).

The inclusive alternative proposition is symbolized by '\/'. So, 'either McCain lost the election or Obama lost the election or both (if, say, a third party candidate won)', might be symbolized as 'a \/ b', where 'a' means 'McCain lost the election', 'b' means 'Obama lost the election', and '\/' means the 'either…or…or both' relationship.

The exclusive alternative proposition is symbolized by '/\'. So, 'either McCain won the election or someone else won the election, but not both' might be symbolized as 'a /\ b', where 'a' means 'McCain won the election', 'b' means 'someone else won the election', and '/\' means the strict 'either…or' relationship.

Finally, the disjunctive proposition would be symbolized by 'n—'. So, 'a man cannot be both happy and sad' might be symbolized as 'n—(a.b)', where 'a' means 'a man is happy' and 'b' means 'a man is sad', and the 'n—' means that these two propositions cannot be true at the same time.

To sum up:

a, b, c…x, y, z = examples of categorical propositions

p . z = example of a conjunctive proposition

—(p . z) = example of a negation

r→t = example of a simple conditional

i←→k = example of a reciprocal conditional

o\/f = example of an inclusive alternative

s/\c = example of an exclusive alternative

n—(h . g) = example of a disjunctive

Okay, so now we've got a symbolic representation for each kind of compound proposition. But how will we know when any one of these compound propositions is true? For example, without knowing what 'r' and 't' stand for, how will we know if the compound proposition 'r→t' is true or false? Symbolic logicians answer thus: 'we can know the truth of the compound proposition by knowing the truth of the component propositions'. That is, symbolic logicians tell us that we can know whether or not 'r→t' is true simply by knowing whether 'r' is true and whether 't' is true. In other words, they say that if 'r' is true and if 't' is true, then 'r→t' will be true as well. Never mind the fact that the symbolic logician has no way of ever really *proving* the truth or falsity of 'r' and 't', but even if we were to grant—for the sake of argument—that 'r' and 't' were indeed true, would that be enough to prove that 'r→t' is true? No.

Symbolic logicians believe that all proposition are what is called *truth-functional*. A truth-functional proposition is one in which the truth of the whole proposition depends on nothing more than the truth of its component parts. For example, 'man is an animal and man is a substance'. This is a conjunctive compound proposition, and it is truth-functional. This whole conjunction will be true so long as its two component propositions are true. And it would be false if even just one component propositions were false. In other words, the truth of the whole conjunction can be determined simply by knowing the truth of the component parts. We can even leave out the various terms in this conjunctive proposition (i.e., 'man', 'animal', 'substance') and consider the whole thing symbolically: 'a . b'. As long as 'a' and 'b' are true (regardless of what 'a' and 'b' stand for) the conjunction 'a . b' will be true. And if just one is false (either 'a' or 'b') then the whole conjunction of 'a . b' will be false. So you see, the truth of the conjunctive proposition depends on nothing else than the truth of the component propositions, and we call this *truth-functional*. Let's illustrate this with the following table (called a *truth table*):

a	**b**	**a.b**	**—(a.b)**
T	T	T	F
T	F	F	T
F	T	F	T
F	F	F	T

As you can see, there are four columns: the first is for proposition *a*, the second for proposition *b*, the third for the compound proposition *conjoining* propositions *a* and *b*, and the fourth *denying* the conjunction of propositions *a* and *b*. Underneath propositions *a* and *b*, we consider various scenarios where the truth of *a* and *b* is changed. In the first row under *a* and *b*, for example, we consider what would happen if both *a* and *b* are true. In that case, the conjunction *a.b* would also be true, and the denial of this conjunction, *—(a.b)*, would be false. To put content behind these symbols, let's say that proposition *a* means 'man is an animal' and proposition *b* means 'man is rational'; each of these are true and so the conjunction 'man is an animal AND man is rational' would likewise be true. And the denial of this conjunction—'it is not true that man is an animal and man is rational'—would be false.

In the second row, we consider what would happen if *a* were true but *b* were in fact false. In such a scenario, the conjunction *a.b* would also be false because it would join together truth and falsity. And since the conjunction *a.b* would be false, the denial of this conjunction would be true, *—(a.b).* Again, to put content behind these symbols, let's say that *a* still means 'man is an animal' but now *b* means 'man is a stone'. Obviously, it is false to say that man is a stone, hence it would be false to say 'man is an

animal and a stone' (*a.b*). And it would be true to say, 'it is not true man is an animal and a stone', —*(a.b).*

The third and fourth rows consider a scenario where *a* is false but *b* is true, and where BOTH *a* and *b* are false. Each of these scenarios yields the same result as the second row: the conjunction *a.b* will be false, and the denial of this conjunction, —*(a.b)*, will be true.

So, when we're dealing with conjunctive propositions, we're dealing with truth functional propositions. All that is necessary to know the truth of the conjunction is to know the truth of its component parts. When each of the component parts is true, the conjunction will be true. Whenever a part is false, the conjunction will be false. But while this is all well and good for conjunctive propositions, it's not quite so simple when we deal with hypothetical propositions. No combination of true or false component propositions will *ever* guarantee the truth of a hypothetical compound. Remember, a hypothetical proposition is not concerned with the truth of its parts, but with the nexus or relationship between the parts—regardless of their truth or falsity. Consider: a→b. This is a simple conditional which says that the truth of the antecedent entails the truth of the consequent; the truth of proposition *a* entails the truth of proposition *b*. Now consider this: *if there is no God, the world doesn't exist*. The component propositions are both FALSE, but the whole conditional proposition is TRUE; the world wouldn't exist unless there was a creator sustaining it in existence. Now, consider another conditional: *if Pearl Harbor was bombed, then the dodo bird had eyes.* Each component proposition is TRUE, but the conditional is FALSE. The fact that Pearl Harbor was bombed has no influence on the vision of dodo birds. Once again, that first conditional is true even though its component parts are false, and the second conditional is false even though its component parts are true. So, the truth or falsity of the component propositions cannot guarantee the truth of the conditional proposition itself. Here's an illustration:

a	**b**	**a→b**
T	T	?
F	F	?

Whether or not the sequence is true depends on what *a* and *b* stand for. Simple knowing that they are true or false will not tell us if a real sequential relationship exists between them.

However, though knowing the truth and falsity of the components will never lead us to the TRUTH of the conditional, sometimes knowing the truth and falsity of the components is enough to tell us that the conditional MUST BE FALSE. Sometimes the combination of truth and falsity in the component parts rules out the possibility that a sequential relation can exist. Remember that in a TRUE conditional the truth of the antecedent will yield the truth of the consequent, that the truth of *a* will entail the truth of *b*. So if we have a scenario where *a* is true but *b* is, in fact, FALSE, then the truth of *a* has not entailed the truth of *b*; there is no sequential nexus. Hence, there will not be a true conditional. Here:

a	**b**	**a→b**
T	F	F

So if *b* is false while *a* is true, there cannot be a sequential relationship in which the truth of *a* would cause the truth of *b*. The conditional would be false. But this is the *only* instance where the truth and

falsity of the components would tell us the truth or falsity of the whole conditional. Even if *a* were false and *b* were true, this wouldn't tell us anything about the truth of the whole sequential. Remember, the simple sequential says that the truth of *a* entails the truth of *b*, but not that the truth of *b* entails the truth of *a*. For example, this is a true conditional: *if a lit match is touched to the right sort of gunpowder, then there will be an explosion.* But this is a SIMPLE conditional. If the second component proposition, *b,* is true (i.e., there is an explosion), this could be caused by many other things besides a lit match and gunpowder. That is, *a* could be false (i.e., a lit matched was NOT touched to gunpowder) yet *b* could be true (i.e., there was an explosion), but still the conditional might be true (i.e., a lit match applied to gunpowder entails an explosion). So, *a* being false and *b* being true tells us nothing about the sequence between *a* and *b.* Hence:

a	**B**	**a→b**
F	T	?

So a truth table for the conditional proposition—a table outlining the various combinations of truth and falsity in the component propositions—can never be used to tell us when a conditional proposition is true, yet *sometimes* it can tell us when it is false. And what we've seen regarding the simple conditional proposition is true also of all the other hypothetical propositions: reciprocal conditionals, inclusive alternatives, exclusive alternatives, and disjunctives. None of these are truth-functional propositions; that is, no amount of fiddling with the truth and falsity of their component propositions will ever lead us to the truth of the whole compound, though occasionally the truth/falsity of the component propositions will tell us when the compound is impossible. Here is a chart outlining all the combinations of truth/falsity in the components of the various compound propositions:

a	**b**	**a.b**	**a→b**	**a←→b**	**a\/b**	**a/\b**	**n—(a.b)**
T	T	T	?	?	?	F	F
T	F	F	F	F	?	?	?
F	T	F	?	F	?	?	?
F	F	F	?	?	F	F	?

That's a lot of question marks. That's a lot of instances where the truth of the part tells you nothing about the truth of the whole. And this is a pretty glaring difficulty when it comes to hypothetical propositions. Yet, modern logic apparently fills in the gaps. Here's the modern truth table:

a	**b**	**a.b**	**a→b**	**a←→b**	**a\/b**	**a/\b**	**n—(a.b)**
T	T	T	T	T	T	F	F
T	F	F	F	F	T	T	T
F	T	F	T	F	T	T	T

F	F	F	T	T	F	F	T

How did they do this? Has modern logic discovered something that was unknown to traditional logicians? No. The answer is this: modern logicians equivocate. Though they use many of the terms that we use (e.g., conditional, alternative, etc.), they have given them totally different meanings which might lead you to think that they have filled in the gaps left by traditional logic.

Take the inclusive alternative. What do we mean by an inclusive alternative? We mean that at least one proposition *must be true* in light of the falsity of the others—that the falsity of one component proposition is in some way responsible for the truth of the other. Either a man is a patriot or a man is not a good American (or both). The falsity of being a patriot entails the truth of not being a good American—you cannot be a good American if you are not a patriot. Likewise, the falsity of not being a American entails the truth of being a patriot—if you are good American you have a love of country (i.e., patriotism). The falsity of one entails the truth of the other and, as a consequence, at least one part must be true.

But this isn't what the modern logician means by an inclusive alternative. He means simply that at least one of several component propositions *is* true; i.e., that at least one part happens to be true, NOT that one *must* be true in light of the choice given. He means only this: it is not the case that *both* are false, regardless of the relationship that they bear to one another. Either Europe is north of Australia or squirrels are plants. Here we have a situation where one of two component propositions is true. Not that Europe's location has anything to do with the nature of squirrels, but nevertheless *at least one* of these propositions is true, and, hence, is considered a true alternative by the modern logician. For him, an alternative is akin to an examination in which you are asked, 'Which one of the following statements is true?

a) Squirrels are plants

b) Europe is north of Australia

c) Water is composed of Pepto-Bismol'

This is a scenario in which one of several propositions just happens to be true. And modern logicians define an alternative as just such a scenario. Hence, this is, for moderns, a true alternative, whereas for us it is a false alternative because there is no nexus or alternative relationship between the propositions themselves—the propositions have nothing to do with each other. So for the modern, any 'either…or' proposition in which at least one component is true, will be a true alternative; and the only possible false alternative would be an 'either…or' proposition in which *both* component propositions are false. So:

a	**B**	**a\/b**
T	T	T
T	F	T
F	T	T

F	F	F

In reality, then, what the modern logician actually means by an inclusive alternative proposition is the denial of a certain *conjunctive* proposition: namely, 'it is not true that both proposition *a* is false AND proposition *b* is false', or symbolically, —(—a. —b). He doesn't mean an alternative at all.

Likewise, the exclusive alternative for the modern logician means simply a case in which only one proposition out of several is true (such as the examination example I gave above). *We* mean by exclusive alternative that the truth of one proposition is such that it makes the truth of the others impossible: either a man is mortal, or a man is immortal. Being mortal rules out the possibility of being immortal. The modern means only that you have a situation where several propositions have been given to you, but only one happens to be true. He means, it is not true that both components are true and that both are false, or symbolically, —(a.b) . —(—a.b).

So as long as only one proposition is true, the modern logician will tell us we have a true exclusive alternative.

a	**b**	**a/\b**
T	T	F
T	F	T
F	T	T
F	F	F

The same sort of equivocation happens in regard to the conditional and disjunctive. The simple conditional doesn't mean that, in some way or another, the truth of the consequent is caused by the fact that the antecedent is true—that there is a causal nexus between the two component propositions—rather, it simply says it is not the case that the antecedent is true while the consequent is false (so for the modern the only false simple conditional is when the antecedent is true but the consequent is false). The reciprocal conditional simply means that the component parts must be true or false *together* (so the only false reciprocals are when one component is true and the other is false). The disjunctive for the modern logician means simply a negation of a conjunctive propositions: —(a.b), it is not the case that both parts are true.

The Occultly Compound Proposition

Back when we first introduced the compound proposition, we said that there were two kinds: openly (or formally) compound, and occultly (or virtually) compound. The openly compound proposition has several verbal copulas (in its component propositions) and at least one non-verbal copula: 'man *is* an animal AND man *is* rational'. The occultly compound proposition was, we said, *formally* speaking categorical; it only has one copula. 'Only God is a creating being.' Yet, it implicitly or virtually contains several propositions within it. And the truth of the whole occultly compound proposition will depend on these hidden component propositions. 'Only God is a creating being', for example, is only true if 1) God *is* a creating being, 2) no other being is a creating being. So the occultly compound propositions need to

be 'blown up' into their component parts; they need to be 'expounded', and, hence, are appropriately named 'exponible' propositions. These expounded parts are then joined together into a conjunctive compound proposition which is equivalent in meaning to the original exponible proposition: 'only God is a creating being'='God is a creating being AND no other being is a creating being'.

Thus far, we've been discussing the openly compound proposition. Now we'll examine the various kinds of occultly compound propositions. There are three: exclusive, exceptive, and reduplicative.

The Exclusive Proposition

An exclusive proposition is one which is affected by an exclusive, syncategorematic term (e.g., alone, only, etc.). This exclusive term does one of two things: either 1) it removes any other subject from the extension of the predicate (e.g., when I say 'man is the only rational animal', the word 'only' excludes all other subjects besides man from the extension of the predicate 'rational animal'), or 2) it removes any other predicate from the subject (e.g., when I say 'man is only a rational animal' it excludes from the subject 'man' any other predicate besides 'rational animal' and the things connected with being a rational animal). In the case of number '1' (i.e., when it removes any other subject from the extension of the predicate), the exceptive term can be attached either to the subject (e.g., ONLY man is a rational animal) or it can be attached to the predicate (e.g., man is the ONLY rational animal); they both mean the same thing.

Method of Expounding the Exclusive Proposition

So the exclusive proposition will need to be 'blown up' so that we can see its hidden component parts—it needs to be expounded upon. Let's outline the steps for how this is done using two examples as our guide. The first example: *only man is a rational animal*, where all other SUBJECTS are being excluded from participation in the predicate. The second example: *man is only* (or merely) *a rational animal*, where all other PREDICATES are being excluded from the subject.

FIRST, you must *affirm* that the predicate really does pertain to the subject. In both examples this means affirming that 'man *is* a rational animal'.

SECOND, you must *deny*, or make a negative proposition either 1) by denying the predicate of all the excluded subjects, or 2) by denying all the excluded predicates of the subject. In the case of the first example, you must deny 'rational animal' of all other subjects (e.g., everything else besides man IS NOT a rational animal). In the case of the second example, you must deny to man every other predicate besides rational animal (e.g., man IS NOT anything other than a rational animal).

These two propositions—the affirmative and negative—must then be joined together into a new conjunctive proposition. 'Only man is a rational animal' becomes 'man is a rational animal AND everything else is not a rational animal.' This new conjunctive proposition is identical in meaning to the original occult proposition. Since they're identical, if and only if this new conjunctive proposition is true (and, therefore, if and only if the conjunctive's component propositions are true) will the original proposition be true. In other words, if we want to know whether it is true to say 'only man is a rational animal' we will have to ask, 'is man a rational animal? And is anything else a rational animal?'

The Exceptive Proposition

Beside the exclusive proposition, another type of occultly compound proposition is the *exceptive*. The exceptive proposition is one which is affected by an excepting, syncategorematic term (e.g., except, unless, apart from, save, etc.) by which something normally included in the extension of the subject is

left out. When I say 'all beings except God are finite', I'm removing God from the extension of 'all beings'. When I say 'all citizens except the members of congress know that raising taxes will hurt the economy', I'm removing 'the members of congress' from their normal place under the extension of 'citizens'. Again, 'all legal residents, unless they are clergy, must pay income tax' removes clergy from their normal place within the extension of 'legal residents'.

Method of Expounding the Exceptive Proposition

A proposition like 'all beings except God are finite' will be true only if 1) God is a being, 2) all other beings are finite, 3) God is not finite. Hence, the original proposition, 'all beings except God are finite' will be equivalent to the conjunctive proposition 'God is a being AND all other beings are finite AND God is not finite.'

So how is this expounding done?

FIRST, you must *affirm* that the excepted term (e.g., God) is normally included within the extension of the term from which it is excepted (e.g., all beings)—God is a being.

SECOND, you must *affirm* the predicate (e.g., finite) of the subject (e.g., all beings other than God) from which something has been excepted—All other beings are finite.

THIRD, you must *deny* the predicate (e.g., finite) of the excepted term (e.g., God)—God is not finite.

These three propositions are then joined into a single conjunctive proposition which is equivalent in meaning to the original occult proposition.

The Reduplicative Proposition

The third type of occultly compound proposition is the reduplicative proposition. This is one whose subject is qualified by a reduplicating, syncategorematic term (e.g., as, inasmuch as, insofar as, etc.) which gives the reason or cause why the predicate is united to the subject. 'Man, inasmuch as he is an animal, has emotions'. This is saying that man's *animal nature* (as opposed to, say, his intellectual nature or his corporeal nature) is the reason for the existence of his emotions. 'Obama, insofar as he is president, might command our obedience'. This is saying that the nature of *president* is the reason that we might need to obey Obama (as opposed to, say, his astounding mental prowess, unquestionable veracity, and indubitable ability to lead a world power in his first executive role ever).

Method of Expounding the Reduplicative Proposition

A proposition like 'man, inasmuch as he is animal, has emotions' will be blown up into the following conjunctive: 'man has emotions AND man is animal AND man's animal nature causes his emotions.' We reach this expounded form as follows:

FIRST, we *affirm* the predicate (i.e., something which has emotions) of the subject (i.e., man)—man has emotions.

SECOND, we *affirm* the reduplicating predicate (i.e., animal) or the subject (i.e., man)—man is an animal.

THIRD, we *affirm* the causal relationship between the first predicate (i.e., something which has emotions) and the reduplicating predicate (i.e., animal)—animal nature is the nature whereby man has emotions; because he is animal, he is rational; animal nature causes man's emotions. As we'll see when

we get to the third operation of the intellect, this last causal affirmation (e.g., because…) is really a syllogism, but in abbreviated form.

Exercises: Expound the following occultly compound propositions

1. All organizations which make money, except non-profits associations, are taxable.
    a. Non-Profit Associations are organizations which make money AND all other organizations which make money are taxable AND non-profit organizations are not taxable
2. Man is the only creature which laughs.
    a. Man is a creature which laughs AND no other creature laughs
3. The state alone has the power to put a criminal to death.
    a. The state has the power to put a criminal to death AND no other entity has the power to put a criminal to death
4. As a mother, Jane is morally responsible for the virtuous formation of her children.
    a. Jane is morally responsible for the virtuous formation of her children AND Jane is a mother AND being a mother is the cause of Jane being morally responsible for the virtuous formation of her children.
5. Unless it is for medical purposes, marijuana is illegal.
    a. Medical marijuana is a kind of marijuana AND all other kinds are illegal AND medical marijuana is not illegal
6. Some say that marijuana is immoral only when it is illegal; but marijuana is immoral insofar as it deprives a rational being of the use of his reason.
    a. Some say that marijuana is immoral when it is illegal AND those same ones say that marijuana is not immoral when it is legal; Marijuana is immoral AND marijuana deprives a rational being of the use of his reason AND depriving a rational being of his reason is the cause of marijuana being immoral
7. The government is merely the guardian of the state.
    a. The government is the guardian of the state AND the government is nothing other than the guardian of the state.
8. Water freezes at 0 degrees Celsius unless it isn't at sea level. S
    a. ome water is elsewhere than at sea level AND all other water freezes at 0 degrees Celsius AND water elsewhere than sea level does not freeze at 0 degrees Celsius.
9. Except for Monday, every day this week was beautiful.
    a. Monday was a day of this week AND every other day was beautiful AND Monday was not beautiful.

10. As a cheap thriller, the book was worth the time, but as an example of English literature, it wasn't worth the paper it was printed on.

    a. The book was worth the time AND the book was cheap thriller AND being a cheap thriller was the reason the book was worth the time AND the book was an example of English literature AND the book wasn't worth the paper it was printed on AND being an example of English literature was the reason it wasn't worth the paper it was printed on (the 'but' indicates a kind of opposition between the first reduplicative proposition and the second, and the causal relationship between being an example of English literature and being worth little needs to be explained by the speaker).

Division of the Proposition by Reason of Matter

We said some time ago that the form of the proposition is the *copula*, while the matter of the proposition is the *subject and predicate* which are united or separated by means of that copula. To recap: the terms themselves which are employed as subject and predicate are wholly indifferent to being in any given proposition; just as clay is indifferent or indeterminate to being any particular statue. 'Man', 'brute', and 'rational' are not a proposition, but they are the concepts out of which a proposition is made. What kind of proposition you get (e.g., affirmative or negative, categorical or compound) depends entirely on the kind of joining or separating that the copula signifies. If we give 'man' and 'rational' the form of 'is', then we get an affirmative proposition: man is rational. And if we give them the form 'is not', then we get a negative proposition: man IS NOT rational. Furthermore, if we give the form 'either…or' to the material of 'man', 'brute', and 'rational' then we get an alternative proposition: either man is a brute or man is a rational.' So the form or determining element of a proposition is the copula. The matter or indeterminate element to which the copula is applied (and out of which the whole proposition is made) is the subject and predicate. We've spent the last pages looking at the various kinds of copulas that a proposition can have (i.e., we've divided the proposition by reason of form), now we want to look very briefly at the kinds of matter that the proposition can have.
There are three kinds of matter (subject/predicate combinations) that can receive a copula: necessary matter, impossible matter, and contingent matter.

Necessary matter is a subject/predicate combination in which the predicate necessarily belongs to the subject—the predicate pertains to the very essence of the subject or else necessarily follows upon the essence as an effect. 'Man' and 'rational', 'triangle' and 'three angles equal to two right angles', 'God' and 'immaterial'. In each of the examples, the predicate belongs to the subject necessarily; i.e., it can't *not* belong to the subject, and wherever you find the subject, you will also find the predicate—wherever you find man, you will find an animal. Necessary matter contains two concepts which are *pertinent of sequel* (i.e., the subject includes the predicate; cfr. the section on the relations of concepts amongst themselves). Necessary matter is sometimes called *natural matter* because in it the predicate pertains to the very nature of the subject.

Impossible matter is a subject/predicate combination in which the predicate necessarily *does not* belong to the subject; it's incompatible with the subject. In impossible matter, the predicate is radically opposed to the essence of the subject such that they can never exist together. 'Man' and 'stone', 'triangles' and 'circles', 'God' and 'finite'. In each example, the predicate is wholly incompatible with the subject; i.e., it can never belong to the subject—if something is a man, it is *not* have a stone. Impossible matter contains two concepts which are *pertinent of repugnance* (i.e., the subject excludes the predicate). Impossible matter is sometimes called *remote* matter and *unnatural* matter because in it the predicate is *removed* from the very *nature* of the subject.

Contingent matter is a subject/predicate combination in which the predicate accidentally belongs or does not belong to the subject; it may or may not be said of the subject. 'Man' and 'white', 'plants' and 'tall', 'politicians' and 'smart'. In each example, the predicate might in fact belong to the subject, but it is equally capable of *not* belonging to the subject—i.e., the essence of the subject doesn't *demand* the predicate. Contingent matter contains two concepts which are *impertinent* (i.e., the subject neither includes nor excludes the predicate).

Because of these three kinds of matter which a copula can inform, there are three kinds of propositions (when the proposition is looked at materially). There are *necessary propositions, impossible propositions, and contingent propositions.*

Necessary Propositions

These are propositions which state something that cannot be in any other way. 'Man is rational', 'Plants are mortal', 'God is infinite'. In each example, the proposition cannot possibly be false, rather it is necessarily true and will always be true. At first glance, you might think that speaking of necessary *propositions* is the same as speaking of necessary *matter*: both seem to mean simply that the subject and predicate will always go together. It would seem that saying 'man' and 'animal' are necessary matter is the same as saying that 'man is an animal' is a necessary proposition. But this is misleading. Even a proposition in *impossible matter* can in fact be a *necessary proposition.* If I say 'man is not a stone', we have a proposition in *impossible matter* (i.e., man and stone can never go together) yet it is a *necessary proposition*—it can never be false. Hence, a *necessary proposition* may be either in *impossible* matter, or in *necessary* matter. However, it can never be in *contingent matter*. Contingent matter is capable of being another way; e.g., man is able to be white and able not to be white, so the proposition 'man is white' cannot be necessary.

Impossible Propositions

Whereas the necessary proposition states something which *must* be, the impossible proposition, on the other hand, states something that *cannot* be. 'Man is a stone', 'plants are immortal', 'God is a tree'. In each example, the predicate cannot be united to the subject because they are wholly incompatible. But, again, the impossible proposition is not the same thing as impossible matter. An impossible proposition might be in necessary matter. 'Man is not an animal'. This proposition is negative, and it attempts to divide 'man' from the nature of 'animal'. But 'man' and 'animal' *cannot* be divided because they are in necessary matter. So the proposition, 'man is not an animal' is an *impossible* proposition even though it is in *necessary* matter.

Given what we've said about necessary/impossible matter and necessary/impossible propositions, we can lay down a few rules:

1) Every *affirmative* proposition in *necessary matter* (e.g., man IS an animal), and every *negative* proposition in *impossible matter* (e.g., man IS NOT a stone) is a necessary proposition. The reason for the first part is because an affirmative proposition joins two things together—if those two things *always* go together, then their composition can never be denied (i.e., negated). The reason for the second part is that the negative proposition separates two things—if those two things are *always* separated, their composition can never be affirmed.

2) Every *negative* proposition in *necessary matter* (e.g., man IS NOT an animal), and every *affirmative* proposition in *impossible matter* (e.g., man IS a stone) is an impossible proposition. The reason for the first part is because such a negative proposition would separate two things which must always be joined. The reason for the second part is because the negative proposition would join two things which must always remain separate.

Contingent Propositions

Contingent proposition are ones which states something that *can* be another way. 'Man is white', 'Dogs are not fluffy.' We could just as easily say, 'man IS NOT white', and 'dogs ARE fluffy'. Every contingent proposition *must* be in contingent matter because only in contingent matter can the subject and predicate be both joined AND separated—necessary matter *cannot* be separated and impossible matter *cannot* be joined.

Exercises: Label the following as necessary propositions, impossible propositions, or contingent propositions.

1. The dodo bird is not extinct, contingent
2. Man is a brute, necessary
3. Houses are made of brick and stone, contingent
4. Animals are vertebrates, contingent
5. Virtue is opposed to vice, necessary
6. Minerals are not living, necessary
7. Donkeys are substances, necessary
8. Donkeys are not substances, impossible
9. Deer are hard to kill, contingent
10. Man is an organism, necessary

Division of the Proposition by Reason of Quantity

Universal Propositions

Sometimes a categorical proposition is such that the predicate pertains to all the inferiors of its subject; like when we say 'EVERY man is an animal'. The predicate 'animal' is being distributed to each and every man because the subject, 'man', is a univocal, distributive, *non-restricted*, universal concept (cfr. our division of the concept by reason of extension) as indicated by the syncategorematic term 'every'. We call this kind of proposition a *universal* proposition.

Particular Propositions

Sometimes a categorical proposition is such that the predicate pertains, not to all the inferiors of its subject, but to an indeterminate portion of those inferiors; like when we say 'some man is white'. 'White' is not being predicated of each and every member within the extension of 'man', but to only a portion of that extension; and this because 'white' is being predicate of a *restricted* universal concept, as indicated by the syncategorematic term 'some'. We call this kind of proposition a *particular* proposition.

Singular Propositions

Sometimes a categorical proposition is such that the predicate pertains, not to all the inferiors of its subject, nor even to an indeterminate portion, but to a determinate and identifiable portion of those inferiors; like when we say 'Peter is an artist' or 'these books are heavy'. Artist and heavy are being predicated of singular things, namely, Peter and these books. The subject is always a singular concept. We call this kind of proposition a *singular* proposition. In these propositions, either there is no syncategorematic term affecting the subject (the subject of its very nature representing a singular thing, such as the name 'Peter') or else there is a syncategorematic term but one that limits the extension to singular things (e.g., 'this', 'that', 'these', 'those). Don't let English grammar confuse you here: in common parlance, when we say 'particular' we mean a determinate thing. Not the case here. By particular we mean 'indeterminate', and what in common usage is called particular we call singular. Furthermore, 'singular' here can refer to what is grammatically speaking *plural*. 'These books' is, in grammer, plural and not singular. But logically it refers to an determinate set of individuals just as 'Peter does' and is therefore a logical 'singular'.

So, by quantity, a proposition is divided into universal, particular, and singular.

Indefinite Propositions

But sometimes, a proposition doesn't tell us at all what the extension of the subject is—it has no syncategoremetic term that indicates its extension and it isn't a singular word like a proper name. For example, 'man is a fickle creature'. Does this mean all men or some men? We call this kind of proposition an *indefinite* proposition. Psychologically speaking, the person who enunciates such a proposition *intends* for it to be either universal, particular, or singular, but when he signified this proposition to us, he gave us no clue as to his intention. Yet it's important that we figure out what he meant because the truth or falsity of the proposition may depend on it: if he meant ALL men are fickle, then his proposition would be false; but if he meant SOME men are fickle then his proposition would be true.

Again, the news media uses these indefinite proposition all the time in an attempt to confuse you; they want you to assume that it is a universal proposition when in fact it is particular. For example, how

many times have you seen a headline like, 'Scientists fear global warming'? The journalists are hoping you will think, 'well, gosh, if the scientific community is worried about it, then it must be real'. But their proposition was really particular: SOME scientists fear global warming. Now, a particular proposition applies only to a portion of the subject's extension. But to what portion of 'scientists' does 'fearing global warming' extend? Technically, it might only extend to *one* scientist and yet it would still be true that 'some' scientist fears global warming.

So we will need someway to determine if an indefinite proposition is really universal, particular, or singular lest we mistake one for the other. Here are a few rules:

1) If the indefinite proposition is in *necessary matter* or *impossible matter,* it must be universal. 'Man is animal'. There is no syncategorematic term here which indicates that it is a universal proposition—e.g., there is no 'every' or 'all'—but it still must be universal. The reason is that in necessary matter the predicate pertains to the very essence of the subject; so wherever you have the subject you will have the predicate. Hence, it's a contradiction to think of 'some' men not being an animal. Again, in impossible matter, there is no conceivable instance, under pain of contradiction, where the subject is found with the predicate—*all* subjects exclude the predicate.

2) If the indefinite proposition is in *contingent matter,* it must be particular or singular. 'Scientists fear global warming'. There is no syncategorematic term here limiting the extension (e.g., 'some') but it still must be particular. The reason is that in contingent matter there are instances—real or merely possible—in which the predicate *does not* pertain to the subject. Not all scientists fear global warming, though some might. In fact, *some* scientists would even welcome a global warming given the desirable effects that it would have on deciduous forestation.

Now, the indefinite proposition is not really a distinct kind of proposition in addition to the universal, particular, and singular. Rather, it's a universal, particular, or singular *in confusion*. So there are really only three kinds of proposition by reason of quantity: universal, particular, and singular. And although the particular and singular are logically distinct, they function in a syllogism almost exactly the same. So there are really only two propositions that we'll be interested in right now: the universal and the particular.

As we saw, all categorical propositions can be either affirmative or negative. And since the universal and particular propositions are categorical, we end up with four distinct proposition:

Universal Affirmative (e.g., every man is an animal)

Universal Negative (e.g., no man is a stone; means the same as 'every man is not a stone')

Particular Affirmative (e.g., some man is white)

Particular Negative (e.g., some man is not white)

The universal affirmative is called an *A* proposition, and the particular affirmative is called an *I* proposition. They were given these titles from the Latin word **a**ff**i**rmo which means 'I affirm'. The first two vowels in 'affirmo' are 'a' and 'i'.

The universal negative is called an E proposition, and the particular negative is called an O proposition. This comes from the Latin word n**e**g**o** which means 'I negate'. The two vowels in 'nego' are E and O.

So, once again, we have four categorical propositions that interest us, A, E, I, and O.

n

A – Every man is an animal ——————— E—No man is a stone

f | g |

f

I – Some man is white ——————— O—Some man is not white

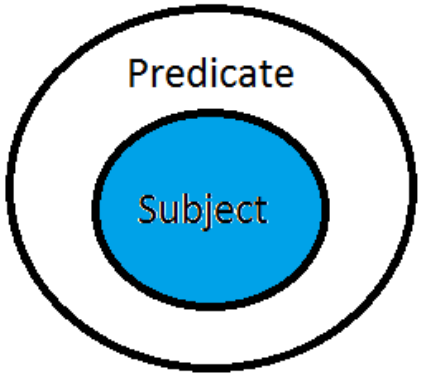
r

m

o

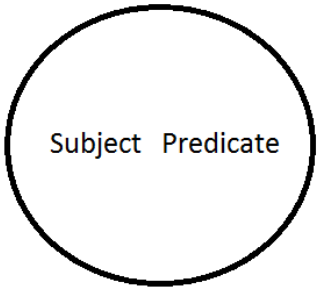
We'll be spending a lot of time with these.

The Quantity of the Predicate – we introduced the idea of the predicate's quantity in the section on the categorical quantity. We said that ordinarily in an affirmative proposition (e.g., man is an animal), the subject is being placed within the extension of the predicate:



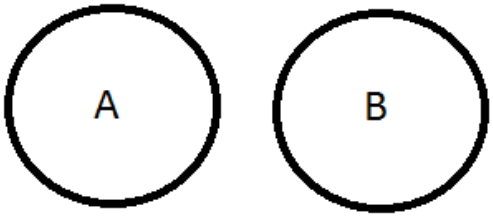
So, the predicate is particular, because the subject is only being identified with a *portion* of its extension.

It might also be the case that the subject and predicate have the *same* extension. We call this being coextensive. This happens in the case of a definition and the thing defined: e.g., 'triangle is a three sided plane figure'. Graphically we would just have:



However, the fact that they are coextensive is not indicated by the first proposition. Simply saying 'every triangle is a three-sided plane figure' doesn't signify coextension, because it doesn't eliminate the possibility of other three-sided plane figures which are not triangles. All that the original means is that 'at least some three-sided plane figures are triangles, though possible all'. To indicate coextension we would have to use an exclusive proposition: 'only triangles are three-sided plane figures', which means 'triangle are three-sided plane figures and nothing else is a three-sided plane figure'. So, the most that the categorical affirmative states is that the subject is identified with at least some of the predicate's extension.

And we said that in a negative proposition (e.g., man is not a stone), the subject is completely removed from the extension of the predicate. For example, in the proposition 'no A is B' we have:



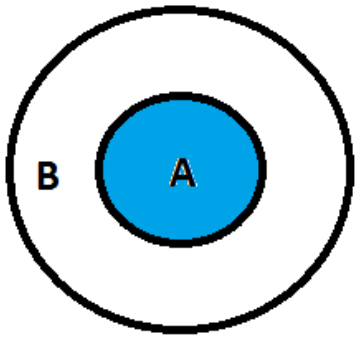
So, the predicate is *universal* because the subject is being removed from *all* of the predicate's extension, not simply from a portion of its extension.

These diagrams, though, only pertain to the A proposition (universal affirmative) and the E proposition (universal negative). Let's now continue the discussion and see what the quantity is for the I and O propositions.

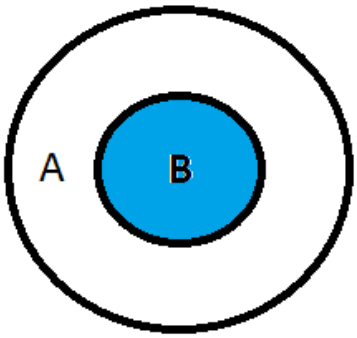
In an I proposition (e.g., some men are white), the subject is particular and so is the predicate. This means that a *portion* of the subject (e.g., a number of men) is contained under a portion of the predicate (e.g., some white things), so that the general sense of the proposition is this: certain men are numbered among some of the white things that can be found. The particular affirmative might be expressed graphically like this:

Some of the things contained under the extension of the subject are also contained under the extension of the predicate.

Now, if it is true that some A is put in the extension of B (i.e., 'some A is B'), it might be the case that there are others As which are outside of B and other Bs which are outside of A, as the two circles above indicate. But it *could* be the case that there are *no* other As outside B. That is, if 'some A is B' is true, the following could also be true:

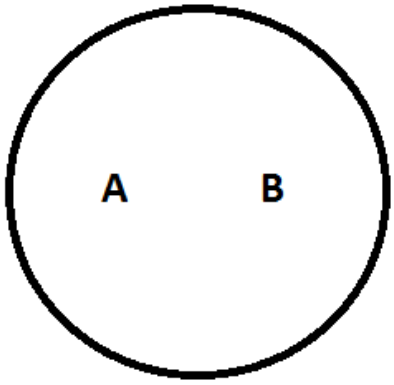


Here, not only some but all of A is put into the extension of B. This is equivalent to an A proposition. Furthermore, if it is true to say 'some A is B' (so that a portion of A is identified with B) it *could* also be a fact that there are *no* other Bs which are not As. Thus:



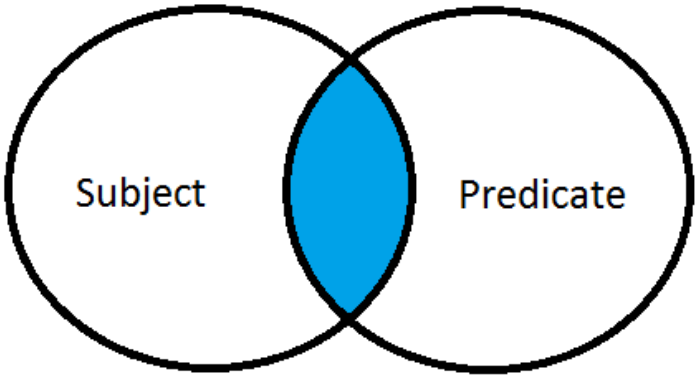
So it is still true that some A is B, even though all Bs are A. And in this case the predicate is, in fact, universal, though the original proposition doesn't tell us that. In order to make evident that the predicate in 'some A is B' is universal, we would need to add the proposition, 'and all Bs are A'.

Finally, there is also the possibility that A and B are coextensive. In which case it would still be true to say that some A is B, even though, as a matter of fact, the situation looks like this:



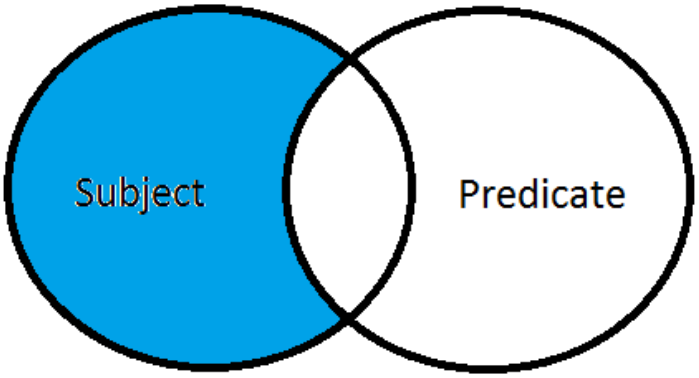
In this situation, A and B would in fact both be universal, thought the original proposition doesn't say as much. In order to make A's and B's universality evident, we would have to add the following 'and *all* As are B, and *all* Bs are A'.

Each of these different scenarios *could* be the case, yet all that we can be sure of from the proposition 'some A is B' is that *at least* a portion of A's extension if identified with *at least* a portion of Bs extension, or rather:



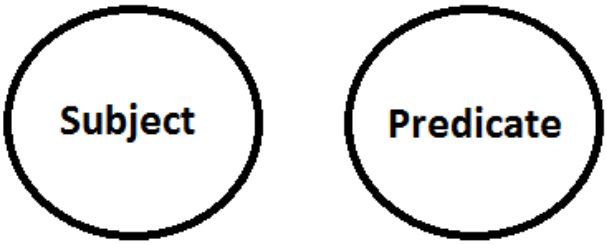
So the I proposition by itself only gives us a particular subject and predicate.

In an O proposition (e.g., some A is not B), we have a similar state of affairs. All that the original proposition tells us is that a portion of A is *removed* from the entire extension of B.



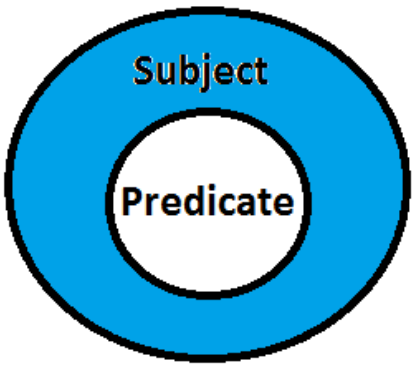
So the predicate is really universal here, because the subject is totally removed from it.

Now, even though the original proposition told us that a portion of the subject is removed from the predicate, it isn't telling us that a portion of the subject is *identified* with the predicate. So, even if the original is true it *could* also be the case that *all* of the subject's inferiors are removed from *all* the predicate's extension. Thus:



But, that *no* A is B goes beyond that original proposition, because it requires a universal negative whereas the original was merely a particular. So even if this happens to be the case, we don't know it from the original.

Again, even though the original tells us that some of the subject is removed from the predicate's extension, it *could* be the case that none of the predicate's extension is ever removed from the subject:



Yet, even if this happens to be the case, the predicate is still universal because the portion of the subject that we're talking about in 'some A is not B' is entirely removed from *all* of the predicate's extension.

So, to sum up, in an affirmative proposition all by itself (assuming it is not occultly exclusive and iis not a singular term as in 'Peter is *the* teacher') we can only be sure that the predicate is particular. To assume it is universal will be to assume too much; the proposition by itself doesn't indicate this. On the other hand, the predicate of a negative will always be universal because whatever portion of the subject we're talking about is being wholly removed from whatever portion of the predicate we're talking about.

EXERCISES: Label the following as universal, particular, or singular propositions. In the case of universals and particulars, label them as A, E, I, or O.

1. All students like time off. Universal, A
2. Some professors like to deer hunt. Particular, I
3. Professor McCloskey is not a good shot. Singular
4. Man is able to think. Universal, A
5. Some men are not able to think well. Particular, O
6. Many runners are not athletes. Particular, O
7. Plato is frightfully dangerous for modern minds. Singular
8. Usually, boys like to shoot. Particular, I
9. Plants possess distinct organic parts. Universal, A
10. Some of man's parts are organic; some of man's parts are not organic. Particular, I and Particular, O
11. No brutes possess reason. Universal, E
12. No living things lack a soul. Universal, E
13. All things which lack a soul do not possess reason. Universal, E

Division of the Proposition by Reason of Accidental Quality

So far we've divided the proposition according to all its essential elements: form, matter, and quantity. These are things that every proposition must have. The form, which is the copula, is essential to the proposition because without it we would have merely concepts; if you take the 'is' out of 'man is rational' you get simply 'man' and 'rational'. Not a proposition. And if you take the matter out of the proposition you get a meaningless 'is'—'is' only means something in relation to the concepts joined by it. And every proposition has a certain quantity because the predicate is always being applied to or separated from the subject's extension—sometimes to all inferiors, as in universal propositions, sometimes to a few inferiors, as in particular propositions, and sometimes to only one thing, as in singular propositions. But it must be one of these three, otherwise the predicate wouldn't be related to anything—in other words, it wouldn't be a proposition. So matter form and quantity are essential to propositions. Every proposition has these elements.

Now, we want to look at something that not every proposition has. An *accidental* or *incidental* quality attached to some propositions—a quality that isn't necessary to a proposition. Now, an accidental quality is sometimes called a mode. Being 'just' is an accidental quality of man; not every man is just. So, we say that being a 'just man' is being a certain *kind* of man; being just is a certain *mode* of being a man. And when an accidental quality is attached to a proposition, we call that proposition *modal*. So don't let the terminology confuse you. A mode simply means a non-essential quality attached to a thing. And a modal proposition is simple one which has a non-essential quality.

So what kinds of accidental qualities can we have in a proposition? Well, since an accidental quality is always joined to something else, we have to look at the elements in the proposition which can have something joined to them. There are three: the subject, the predicate, and the copula. Take the following proposition:

Socrates is running.

This is as simple a categorical as you can get. It has everything necessary for a proposition and only those things necessary for a proposition. But we can add something over and above the basic elements here. We might say, for example:

WISE Socrates is running.

We now have Socrates being considered not absolutely, but with a certain accidental quality or mode—Socrates qualified by wisdom. So we can have modes attached to the subject. We can also say:

Socrates is running QUICKLY.

We now have Socrates not only running but running in a certain way. 'Quickly' is an accidental quality added to running. It doesn't have to be there. We could just have easily said Socrates is running *slowly*. So we have modes that qualify the predicate.

But these modes attached to the subject and predicate don't really pertain to the proposition as such. They pertain to the terms only. We can think 'wise Socrates' without predicating anything; that is, we can conceive of this outside the proposition. We're not dealing with a mode of the proposition, but with a mode of the concepts. But look at this sentence:

Man is NECESSARILY rational.

Here the mode is not attached to the subject (we're not saying 'rational man', which is redundant) and it's not attached to the predicate (we're not saying 'rational necessity'). No, the accidental quality here is attached to the copula itself. It's telling us the precise manner in which the subject and the predicate are joined. And this kind of mode pertains to the proposition alone—'is necessarily' is meaningless outside the proposition. This is what we mean by a modal proposition; one in which the very composition of the matter is qualified. One in which the relation between the concepts joined or separated is explicitly given.

De Inesse Propositions

For the sake of terminology we have to make a distinction between propositions which have these various modes, and propositions which *do not* have these modes. Propositions which have them are, obviously, called *modal* propositions. Propositions which *do no*t have these accidental qualities joined to the copula, but simply state subject, copula, and predicate are called *de inesse*. So your standard, old fashioned categorical proposition is called *de inesse*. Why do we call it that? 'Inesse' means belong to or existing in. Well, in the categorical all we are saying is that the predicate belongs to or exists in the subject. Nothing more. So, don't let the Latin term confuse you. It just means your average run-of-the-mill subject-copula-predicate proposition. It is one which denotes without qualification that the predicate fits the subject and is present in it.

Modal Propositions

Modal propositions on the other hand, give you something more than the subject-copula-predicate enunciation by adding something to the copula—namely, the relation between concepts which are joined. So instead of saying 'man is not a stone' we say 'man is necessarily not a stone.' The modal proposition is one which denotes that the predicate is in the subject together with the mode by which it is present in and fits the subject. Now, there are six of these modes: truth, falsity, necessity, impossibility, possibility, and contingency.

Modal Truth

A proposition with the mode of truth is one which states that the composition of two concepts is in accordance with reality: 'man is truly an animal'. We use this kind of modality very frequently to emphasize our statements and, primarily, to signify that a certain proposition is *judicative* and not merely enunciative. Remember our distinction between judicative and enunciative propositions? An enunciative proposition is one which is expressed but doesn't really signify the actual judgment of the mind. So I can say 'man is a stone' and I have enunciated a proposition. But I don't believe this proposition; it doesn't represent my judgment. Only if I intellectually assent to or accept a proposition is it judicative. So how do we signify this assent to others? Well, in English we often do this by adding modal truth: 'man *really is* an animal.' In this way we are stressing to others the fact that a given proposition represents our judgment—that we believe this proposition to be in accordance with reality. However, though this might have some practical applications, logically speaking, there is no difference between a proposition which says 'man is an animal' and one which says 'man is *truly* an animal'. The same predicate is being said of the same subject. Hence, this mode is of little concern to the logician.

Modal Falsity

A proposition with the mode of falsity is one which states that the composition of two concepts in NOT in accordance with reality: 'man is falsely said to be a stone' or ' it is false to say that man is a stone'. Again, these highlight that our propositions are judicative but they add nothing logically new to the

signification of the categorical. To say 'it is false that Socrates runs' means the same as 'Socrates does not run'. So this mode is also not of great concern to us.

Modal Necessity

A proposition with the mode of necessity is one which states that the two concepts are essentially joined or are necessarily separated: 'man is necessarily an animal', 'man is necessarily non-stone'. This mode points out that the matter of the proposition is necessary matter. And it is of concern to us because it adds something beyond the mere categorical. To say 'man is rational' and to say 'man is NECESSARILY rational' is to say two different things.

Modal Impossibility

A proposition with the mode of impossibility is one which states that the concepts are essentially repugnant to each other: 'man is impossibly a stone', 'that animals be inanimate is impossible'. This mode points out that the matter of the proposition is impossible matter, or rather pertinent of repugnance.

Modal Possibility and Modal Contingency

Here we have a very misunderstood distinction in the history of Logic. Many logicians combine possibility and contingency, thinking that they are one and the same. This is not the case. Consider these two: 'John is possibly running' and 'John is contingently (i.e., not necessarily) running'. If I see John sitting on a bench, I won't say to myself, 'John is contingently running'. This wouldn't make any sense because John at this moment is not running at all. Contingency, you see, signifies some form or determination or perfection which is here and now possessed; but which, at the same time, might *not* be possessed. It signifies the presence of a form together with the possibility that that form might not be present. 'John is contingently running' means that John is here and now engaged in the act of running, but this act of running is not essential to him, and he might very well *not* be doing it. In other words, it signifies existence together with the possibility of non-existence; hence, it points out that the matter of the proposition is contingent matter.

Possibility, on the other hand, doesn't necessarily signify the actual existence or presence of a form. Rather, it signifies the non-repugnance or compatibility of two things. So 'man is possibly a runner' means that the form of runner is not incompatible with the nature of man. Now, because possibility signifies simply the compatibility of two concepts, possibility can be in both necessary and contingent matter. For example, it is just as true to say 'man possibly runs' as it is to say 'that man be an animal is possible'; even though the first proposition is in contingent matter ('man' and 'running') and the second proposition is in necessary matter ('man' and 'animal'). After all, a proposition wouldn't be necessary if it wasn't possible—it wouldn't be true to say 'man is an animal' if it wasn't *possible* that 'man' and 'animal' be joined. So strictly speaking, possibility is a genus which is divided into necessary possibility and contingent possibility.

We will return to modal propositions when we discuss opposition among propositions.

ADDENDUM: The Expression and Understanding of Modal Propositions

We have to make a distinction in modal propositions between the *mode* and what is called the *dictum*. The dictum is simply the matter which is joined or separated, and the mode is what qualifies this

composition or division. So, in 'man is necessarily an animal', the dictum is 'man is an animal' and the mode is 'necessarily'.

Now, a modal proposition can be expressed in two ways. Sometimes the mode directly affects the copula as a grammatical adverb while the dictum is the standard categorical proposition: 'man is necessarily an animal'. But sometimes the mode itself is used as predicate while the dictum is taken as subject: 'that man be an animal (dictum) is necessary (mode)'. These two kinds of expression only pertain to grammar, not to Logic. Because in each case the logical purpose of the mode is the same: to state the essential connection or relationship between those concepts which are joined or separated. In English though, I should point out, the second way of expressing the modal proposition (i.e., with the mode as predicate) is usually the one used for possibility and impossibility. Though we could say 'man possibly runs', we are accustomed to saying 'for man to run is possible' (or with an improper reciprocal we might say 'it is possible for man to run'); again, though we could say 'man is impossibly a stone' we would more likely say 'for man to be a stone is impossible).

So both expressions are valid in English, as long as they are understood correctly. You see, there are two senses in which we can take these modal propositions: simultaneously and successively. What do I mean? Take the following: the seated possibly stand. Here we have two forms, two determinations, or perfection: being seated and being standing. Now, these two cannot exist together at the same time in the same subject in the same way; if a person is seated he cannot also be standing. So when we say 'the seated possibly stand' this proposition is true or false depending on whether we understand it in a simultaneous (or composite) sense or a successive (divisive) sense. If we take it in a simultaneous sense—the seated are possibly also standing—then it is false; we would have a contradiction. But if we understand it successively—the seated possibly go from being seated to being standing—then the proposition is true.

In Latin, it's very easy to differentiate between these two senses. When the mode is used as predicate (e.g., that the seated stand is possible) we have a simultaneous sense in Latin (hence the Latins called this a composite modal). When the mode affects the copula (e..g, the seated are possibly standing) we have a successive sense in Latin (hence they called this a divisive modal). But in English, both expressions can signify composite and divisive senses: 'that the seated stand is possible' might mean 'that the seated are at the same time standing is possible' or it might mean 'that the seated go from being seated to being standing is possible'. So, as English speakers we must be on our guard for any confusion that might arise from improperly identifying the sense being used.

Division of Propositions by Reason of Origin

We've looked at many different kinds of propositions so far. We've examined them according to those elements which all propositions have; that is, their form (i.e., the copula), their matter (i.e., the subject and predicate), and their quantity (i.e., of how many subjects the predicate is being said). We've also looked at some of the non-essential characteristics that a proposition might have; namely, the modes which determine precisely how the predicate is given to the subject. But our discussion has left aside a consideration of how we *get* these propositions. We've been taking for granted the fact that we have these different kinds of propositions and—assuming their existence within our minds—we've gone about classifying them. However, the fact remains that not every proposition occurs to our minds in the same way; be it categorical or composite, necessary or contingent, universal or particular, etc., etc., any given proposition can be formed by our mind from a variety of motives. That is, we join the subject and predicate—we judge that the predicate pertains to the subject—for many different reasons. I might form the proposition 'the weather is pleasant' because I feel the refreshing air on my skin. Then again, I might form the proposition 'China exists' not because I've seen it, but because my geography teacher once told me a long time ago that it existed. Again, I might say 'all triangles are three sided' because it's self evident to me and my mind has no choice but to assent to that proposition; or I might say it because some mathematician told me that it's true and I believe him. We form these propositions, rather, we assent to the composition of subject and predicate for many different reasons. So it remains for us to consider what all those different motives for assent might be.

Keep in mind, though, that we are talking about judicative propositions here, not enunciative propositions. Remember, judicative propositions really signify the judgments of our intellects, whereas enunciative do not. So, I can *enunciate* 'the sea is made of chardonnay wine' but, regrettably, this is not true and such a proposition does not represent what's taking place in my judgment. But when I *judge* 'the sea is NOT made of wine', that is, when I assent to the truth of this proposition and state it, I wish to communicate what is really talking place in the second operation of my intellect. Enunciative propositions have their origin only in the free will; I can form these propositions at whim. Watch me: 'The moon is made of cheese', 'pigs fly', 'Frenchmen are hygienically sound'. None of these represent a composition of subject and predicate which is truly accepted by my mind. What we're asking in this section is what causes us to *assent* to a proposition; what motivates us to form a *judicative* proposition.

First of all, notice a difference between these two scenarios:

SCENARIO A: I'm in the kitchen with a bowl of cold soup. I don't particularly care for cold soup—be it intentionally prepared that way or otherwise—so I decide to 'nuke' it. I stick it in the microwave and randomly hit buttons in the hope of heating it (a technique I've found to work very well with a variety of kitchen appliances, even those not explicitly designed to heat). Alas! I realize all too late that I've left my metal spoon in the bowl! Sparks begin to fly. Though I had heard that metal sparks in a microwave, I had never before seen it. It now seems quite evident to me that the proposition 'metal sparks when microwaved' is a true proposition. I assent to that proposition because I have witnessed for myself the unity of subject and predicate; the identity of the subject 'metal' with the predicate 'something which sparks when microwaved'. The fact that the predicate is applied to the subject is clear to me because of my unintended experimentation. It is clear to me because of my experience of the subject itself; I'm familiar with the subject and predicate *in themselves* and my knowledge of them motivates me (or causes me) to form the proposition. In other words, assenting to the proposition 'metal sparks when microwaved' is an effect of my direct experience.

SCENARIO B: Let's say that before I stuck the bowl into the microwave, my wife stopped me. Let's say she prompted me to remove the spoon with the warning 'metal sparks when microwaved'. And let's say that I didn't already know that. I now assent to the proposition, but I've never witnessed the sparking metal. Nor could I explain to you chemically why metal would have such a trait. Nevertheless, I believe the proposition. I have assented to it, but with a free assent. My mind is not *compelled* to accept the proposition, but I *choose* to accept it. I'm not familiar with the connection between the subject and predicate *in themselves* but I assent to their composition and form the proposition for motives *extrinsic* to any experience or knowledge that I have of metal and microwaves.

In scenario A, I accept the proposition and judge that 'metal sparks when microwaved' because I have *evidence;* my knowledge of the subject and predicate makes the proposition *evident* to me. I conclude to the proposition because I have knowledge of the subject, the predicate, and connection between the two *in themselves*. We call this kind of proposition an *intrinsic* proposition, because it is formed after examining the subject and predicate, and it is formed precisely because that examination yields some sort of obvious connection between the subject and predicate that the mind must accept as true. But in scenario B, I've not in any way examined the subject and predicate. And the reason that I join them is not because I understand them to be connected, not because I see (visibly or intellectually) that the predicate follows upon the subject; rather, the reason I join them is because of something wholly *extrinsic* and foreign to the subject and predicate: namely, the faith that I have in my wife. That metal sparks when microwaved is not *evident* to me in this scenario, but I *choose* to assent to the truth of that proposition because I believe a) my wife knows what she is talking about, and b) my wife would not deceive me. So we call this kind of proposition an extrinsic proposition, because what motivated me to accept it has nothing to do with the nature of the subject and its connection to the predicate. The reason I assent to the proposition is outside the nature of the proposition itself: the authority of my wife.

So we have two radically different kinds of propositions: those we accept because they are evidently true given the nature of the subject and predicate (intrinsic propositions) and those which we accept as true for reasons outside the nature of the subject and predicate (extrinsic propositions). We deal with the latter first.

Extrinsic Propositions

These are propositions assented to (i.e., accepted as true) by the mind for reasons which are incidental to the matter of the proposition. I form these judicative propositions not because I see that they are true, but because I *choose* to believe them from other motives. And these motives can come from two sources: **ourselves** (we'll call judgments coming solely from ourselves *judgments from prejudice*) and **others** (we'll call judgments accepted because of others *judgments from authority)*.

There is a story of which I'm fond about Napoleon's occupation of Rome. Apparently, immediately after entering Rome, Napoleon ordered his horses put under lock and guard. When asked why, he responded, 'because all these Romans are thieves!' To which the Pope retorted, 'not all of them, but a good part', which in Italian is 'non tutti, ma una *buona parte*'.

Why did Napoleon Bonaparte form this proposition, 'all Romans are thieves'? Let's assume for a minute that none of his advisors *told* him that this was the case, and certainly Napoleon did not have a working relationship with each and every Roman. Let's assume that there was no other motive than this: his personal hatred of the Roman people and Church. He has formed this proposition because he *wants* it to be true. The motive has nothing to do with an examination of the Roman people or their habits of

thievery, but from his own emotional state. In this case, his passions are corrupting the proper workings of the intellect by misdirecting its attention and forcing the will to choose what the intellect should accept. We call this *prejudice*. Though the motive for assent is *extrinsic* to the nature and connection of the subject and predicate, nevertheless it is *internal* to the one making the judgment; it comes from his will and emotions. We will return to prejudice a little later.

Let's consider another possibility. Maybe Napoleon was as stunted intellectually as he was physically, and he formed the proposition 'all Romans are thieves' because one of his trusted advisors *told* him that such was the case. Well, now he is accepting the proposition not because of his personal knowledge of Romans and their vices, and not because he *wants* it to be true (though this might embolden his judgment, as we'll see) but because he has faith in the *authority* of the one revealing the proposition. All Romans are believed to be thieves because so-and-so said they are and Napoleon believes so-and-so.

There are two kinds of authority which may motivate our assent: **natural** and **supernatural**.

A natural extrinsic proposition is one assented to because it is revealed by a human person in whom one has faith. We base the vast majority of our knowledge about the world on natural authority. When a biology professor lectures out of a biology textbook, it is very unlikely that he has personally performed all the experiments and witnessed all the results which are claimed by the book; he simply doesn't have time to redo every experiment ever performed on a given organism. If ever he wants to make scientific progress, we must accept certain things on faith—the faith he has that other scientists have performed these experiments properly, and that they have truthfully reported their findings.

An historian who writes a book on world history has not possibly read all primary texts that he references in that book and witnessed sufficient evidence that all the events he speaks of really did happen. No, instead he takes on faith that other historians were good and truthful, and that the authors of primary texts were not trying to deceive. Further, anyone who reads that book on world history and who has not personally verified all the information accepts that history on faith. Even if the author cites primary texts, we have faith that he did not misquote them.

Even something as simple as your birthday is accepted on faith. Do you remember the day you were born? More than likely, you do not. You assent to the proposition 'I was born on such-and-such a day' because of the testimony of you parents, or your doctor, or your birth certificate, etc. But there are many reasons why someone would forge a birth date. You accept it because you have faith in the authority of the person revealing it.

And this authority is supposed by you to have two things: knowledge and truthfulness. Knowledge, because you believe that this person knows what he is talking about and knows how to communicate it accurately. Truthfulness, because you believe that this person would not attempt to deceive you.

Now, in natural authority, we can never be absolutely certain that a person possesses these two criteria: no matter how smart a person may be, they always have the possibility of error. And no matter how virtuous they seem to us, there is always the possibility that they will lie to us. But this is not the case in supernatural authority.

A supernatural extrinsic proposition is one which is accepted as true on the authority of God revealing. Since God can neither deceive nor be deceived (as is proven in Metaphysics), if we are certain that it is indeed God who is revealing a proposition, then we can be certain of that proposition's truth. Hence, there is an important distinction between the certitude possible with natural authority (a certitude

which is at best a very high probability) and the certitude which is possible with supernatural authority (an absolutely certitude).

ADDENDUM: Mixed Extrinsic Motivation

So, extrinsic propositions are accepted as true not because an analysis of the subject and predicate lead the mind to understand that they are connected, but because of something foreign to the proposition itself—either an internal desirous motivation (i.e., I *want* this to be true) or an external motivation (so-and-so tells me this is true and I believe that he is knowledgeable and truthful). Both internal and external motivations are *voluntary*—that is, our mind is in no way *forced* to accept these propositions.

Now, it's possible for each of these motives to influence one another. Perhaps I desire for some proposition to be true and I look around for confirmation in the opinions of others. Talk radio and the nightly news gather much of their audience not by proving that something is true, but by offering confirmation of what the listeners want to believe—in this case, our desires influence our acceptance of authority. Vice versa, authority, which is an *external* motivation, might influence our *internal* voluntary motivations. Perhaps I am indifferent to the proposition 'health reform is needed' but when I hear a trusted political commentator say this, I *want* it to be true lest I discover that my trust was misplaced.

Whenever an internal voluntary motivation (i.e., prejudice) enters argument, our certitude is destroyed. Accept no truth because of desire; as you'll learn in Psychology, the movements of the will give us no insight into reality because they are *responses* to knowledge, not *acts* of knowledge.

Intrinsic Propositions

When I assent to the truth of 'metal sparks when microwaved' after witnessing the phenomenon myself, I have an intrinsic proposition. These propositions are not based on authority or personal desires, but on evidence. And conclusions in this case are not chosen, but witnessed or proven. According to the greater or lesser evidence involved, the mind is more or less *forced* to assent to these propositions.

Intrinsic propositions are formed because an examination of the subject yields some sort of connection with the predicate, so that the mind understands or 'sees' that they are identified or separated; regardless of what I *want* to be true, and regardless of what others say. These propositions are formed by our minds in two way: either *without* the help of previous propositions or *with* the help of previous propositions. For example, if I know what a 'part' means and I know what a 'whole' means, then I know that it is true to say 'the whole is greater than the part'. No one needs to prove this to me with a syllogism, because the truth of the proposition is known simply by an acquaintance with the terms involved. But when it comes to a proposition like 'the temperature will probably be cold tomorrow', I might indeed doubt this. To make it evident would involve a syllogism like 'if the clouds are in such-and-such a formation, the following day's temperature will likely be cold; but the clouds *are* in such-and-such a formation; therefore, tomorrow's temperature will likely be cold'. Simply by knowing what each term in the proposition means (e.g, knowing what 'tomorrow' means) isn't enough to make me form a proposition like 'tomorrow will be cold'. It must be *proven* to me in order to make it clear and evident; to know that tomorrow will be cold depends on the help and mediation of other propositions like 'if the clouds are such-and-such' etc.

Hence, we divide intrinsic propositions by origin into *immediate* (which do not need other propositions to make them evident) and *mediate* (which *do* need other propositions to make them evident).[92]

Immediate Propositions

So an immediate proposition is one which is evident to us without needing to be proven[93]; without needing prior propositions to make it evident—the connection between subject and predicate is obvious without needing a middle term to connect them. And there are different kinds of these immediate propositions. Sometimes the evidence of the proposition is guaranteed by the sensible experience of the subject and predicate, while sometimes it is guaranteed by the intellectual understanding of the subject and predicate. For example, when I say 'chocolate is pleasing to me' the truth of this proposition doesn't depend on simply knowing what the words 'chocolate' and 'pleasing to me' mean. You might know everything there is to know about chocolate, but until you actually taste it, you won't know if you like. The truth of this proposition will only be guaranteed once you taste chocolate, and it might not be a true proposition for everyone. On the other hand, a proposition like 'the whole is greater than the part' is known to be certainly true as soon as you know what 'whole' and 'part' mean—you needn't be referring to any particular whole or part, and the proposition will be true for everyone and for all time. In this case, the evidence of the connection between subject and predicate is found in the very terms themselves. Hence, the immediate proposition is divided into *factually evident* and *self-evident*.

Factually Evident Proposition

Factually evident propositions are propositions assented to by the mind immediately (i.e., without the help of other propositions) upon experience of a real situation or state-of-affairs. This is nothing more than a statement of the way things happen to be. When I say 'the weather is pleasant today', I assent to the proposition because 'pleasing weather' happens to be the factual situation which is evident to my sense knowledge. And this situation can change. Though it might be true right now that 'the weather is pleasant today', tomorrow that proposition might be false. Simply knowing the meaning of 'weather' and 'pleasant today' won't guarantee that the proposition is true, and without the sensible experience to back it up, my mind is not forced to accept the proposition. But when I do indeed sense that the weather is pleasant today, I have no choice but to accept that proposition as true, even if I form an enunciative proposition verbally denying it.[94]

Sense knowledge is not the only source of factually evident propositions. Any internal experience is also a source. When I want some tiramisu, no one needs to prove to me that the proposition 'I desire tiramisu' is a true proposition; it's immediately evident to me. But it's not evident because of the terms involved (i.e., 'I' and 'desire tiramisu' do not appear to my intellect as necessarily going together), rather it's evident from the internal experience of my appetite. Again, 'I am thinking' is immediately and factually evident to me.

Self-Evident Proposition

[92] Cfr. In I Post. Anal., lect. 7, n. 7; In IV Meta., lect. 6.

[93] In I Post, Anal., lect. 4

[94] Peri H p 122

The self-evident proposition (called *per se nota* in Latin) is different. Its truth is not guaranteed because of some personal experience which might, in fact, change. No, its truth is guaranteed because of the very definitions of the terms involved. These proposition are known to be certainly true as soon as the subject and predicate are understood. 'The whole is greater than the part'. In propositions like this, the subject and predicate are in necessary matter; and they are so closely connected to each other that the intellect is forced to assent to the proposition in which they are joined. And whereas the factually evident proposition might be false as soon as the real situation changes, the self-evident proposition will always and everywhere be true because it abstracts from particular factual situations, considering the nature of things in themselves; e.g., the nature of a 'whole' and a 'part' independently of any particular whole and part.

So, self-evident propositions are those in which the relation between the subject and predicate can be immediately known from the very terms—the predicate is included in the notion of the subject. And self-evident propositions may be, like all categorical propositions, affirmative or negative.

- An AFFIRMATIVE self-evident proposition is a proposition in which the predicate is the essential definition of the subject (or an element in this definition), *or* the predicate is a first property of the subject (don't worry too much about this know because we haven't yet covered essential definitions and properties; we'll come back to this in Material Logic). So, the proposition 'a triangle has three sides' is self-evident because 'three-sided' enters the essential definition of a triangle; once you know what triangle means and what three-sided means the proposition is assented to. Again, anyone who understands perfectly what man is will find the proposition 'man is a rational animal' to be self-evident. For him, once man has been defined he has no choice but to assent to that proposition. Or to bring the examples closer to home, once you know what a beer bottle is, the proposition 'a beer bottle is a type of container' becomes self evident because being a container enters into the very essence of being a beer bottle, and it would be a contradiction to think of a beer bottle as anything but a container of some sort—no one needs to prove it to you. Again, connotative terms have relations to other things as part of their essential definition, so a proposition which states this connection will be self-evident to anyone who knows the connotative term. So 'the whole is greater than the part' has the term 'part' which always implies a relation to a whole. 'Part' is essentially connotative and so cannot be understood without understanding how it is related to a whole. Hence, if you understand 'part' you must understood its being less than a whole. We'll return to a discussion of essential definitions and first properties in Material logic, after we learn the Predicables and Predicaments.

- A NEGATIVE self-evident proposition is a proposition in which the predicate is immediately opposed to the essential definition or first property of the subject (cfr. our discussion of opposed concepts, or concepts which are 'pertinent of repugnance'). So, 'the whole is not less than the part' is self-evident because being 'less than the part' is immediately opposed to the property of being a whole; namely, the property of being greater than the part.

We'll clarify how self-evident propositions are formed in Material Logic.

Now, not all self-evident propositions are of the same kind. In a self-evident proposition, the truth is known as soon as the terms are understood because the predicate is included in the notion of the subject. In a case like 'the whole is greater than the part' the terms 'whole' and 'part' are easily understood by the human mind. However, sometimes the terms involved far surpass the human mind, so that even though a knowledge of them *would* yield a self-evident proposition to us, nevertheless,

such a knowledge of the terms is beyond the capacity of our human minds. Hence, we divide self-evident propositions into self-evident *in themselves (in se)* and self-evident *to us (quoad nos).*[95]

Propositions Self-Evident IN SE

I said that sometimes a self-evident proposition involves one term which is the essential definition and another term which is the defined. And the proposition becomes self-evident as soon as the identity of the subject and predicate as referring to the exact same thing is understood—the predicate irrevocably enters into an understanding of the subject so that you can't understand the subject without understanding the predicate. But sometimes the subject *cannot* be understood fully by our minds. In this case, even though the predicate is essentially a part of the subject (meaning that a perfect understanding of the subject necessitates understanding the predicate as part of it), the proposition would still not be self-evident to us.

The most famous example of this concerns the proposition 'God exists'.[96] This proposition is self-evident in itself because existence *is* the very essence of God; yet because most of us do not know perfectly the essence of God, this proposition is not self-evident to us. You see, in every creature there is a distinction between essence and existence. For example, existence is not a comprehensive note in the nature of man. Whatever enters the essential comprehension of a thing is always found with that thing, so the essence of man must always include substantiality, materiality, life, sentience, and rationality—he cannot be found without these essential notes. But *existence* is not always found with man; man *might* have existence, but he also *might not* have existence as was the case before he was born. Therefore, existence is not part of the essence of man. Rather, it is added to him and can be taken away from him—it is, in a sense, a *part* of man. Now, this cannot be that case with God. As you'll learn in Metaphysics, God cannot have parts, hence if He exists, existence pertains to his entire essence. But God does exist, as is proven elsewhere, and therefore his existence is his entire essence. That is, 'to exist' is an essential note of the essence of God. So anyone who perfectly comprehends the essence of God would see the proposition 'God is something which exists' to be a self-evident proposition—they'll see that He couldn't be God if He didn't exist. But our poor minds don't comprehend this essence perfectly and so, even though it's self-evident *in se*, we have to *make* it evident to us by proving God's existence—by arguing from the effects of the world back to their necessary cause.

Propositions Self-Evident Quoad Nos

These propositions involve terms which the human mind *can* perfectly understand, such as 'whole' and 'part'. But these, again, are of two types. Sometimes the terms involved are so common that they occur to everyone's intellect and are certainly known by all who reason—they are called self-evident to everyone, or *quoad omnes*. But sometimes they involve terms which are only known to persons schooled in a particular science—they are called self-evident to the learned, or *quoad sapientes*.[97]

Self-Evident Quoad Omnes

These are the first principles of the mind. Without them no reasoning is possible. Therefore, everyone who reasons has assented to these propositions. The subjects and predicates of these propositions are

[95] Cfr. In I Post. Anal., lect. 5; I, q. 2, a. 1; SCG, I, c. 11; De Veritate, q. 10, a. 12; De Pot., q. 7, a. 2, ad 11.

[96] I, q. 2, a. 1; De Veritate, q. 10, a. 12; In I Sent., 3, I, 2; In Beot. De Trin., I, 3, ad 6; SCG, I, c. 10-11

[97] In I Post. Anal., lect. 5

always closely allied to the concept of 'being' which is the first concept of the mind; and these propositions are formed as an immediate consequence of this concept—as soon as being is known, the mind by an natural impulse forms these judgments based on the 'definition' and first properties of being.[98]

Some of these principles are *speculative* and some are *practical*; meaning some of them are required for *all* reasoning processes and some of them are required *only* for reasoning processes which lead to human action.[99]

Among the speculative principles, the first is that of *non-contradiction*: the same thing cannot simultaneously be and not be.[100] In other words, being is not non-being (*ens non est non ens*). Following upon this are other first principles[101]:

- the principle of identity (a being is undivided from itself);[102]
- the principle of the excluded middle (between being and non being there is no middle ground);
- the principles of agreement and discrepancy (two things identified or separated from the same third thing are identified or separated from each other—these are also called the principles of triple identity and the separating third);
- the principles of 'dictum de omni' and 'dictum de nullo' (whatever is universally affirmed/denied of a subject must be affirmed/denied of all inferiors of that subject);
- the principle of sufficient reason (nothing is without an adequate explanation for its being).

Self-evident propositions *quoad omnes* are also called *axioms*. We will return to several of these axioms later on in the course. A full treatment and defense of these principles, though, pertains to Metaphysics.[103]

Among the practical principles, the first is 'what is good should be pursued and what is bad should be avoided'. This is the foundation for ethical science and the natural law and, in fact, for *all* human activity. All further investigation into practical activity concerns determining *what* exactly is good and what bad.

Self-Evident Quoad Sapientes

So a proposition is self-evident in itself whenever the predicate is of the very essence of the subject, or is an immediate consequence of the subject. And whenever someone understands what the subject and predicate signify, they will grasp the truth of the proposition without needing to reason. Sometimes the

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[98] I put 'definition' in quotes here because, as we'll learn later, 'being' cannot be properly defined.

[99] Upon recognizing the first principles the intellect develops a habit of always employing them. The habit of the first speculative principles is called in Latin 'intellectus' which is perhaps best translated as 'understanding' so as not to confuse it with the intellect itself. The habit of employing the first practical principles is called *synderesis;* this all treated in psychology. Cfr. I, q. 79, a. 12; I-II, q. 51, a. 1; In II Post. Anal., lect. 20, n. 3.

[100] I-II, q. 94, a. 2; II-II, q. 1, a. 7; De Veritate, q. 5, a. 2, ad 7

[101] Cfr. In II Post. Anal., lect. 12, n. 2 et lect. 20, n. 14

[102] Cfr. In IV Meta., lect. 3, et in V, lect. 11,et in VII, lect. 17;

[103] In IV Meta., lect. 6 et In XI, lect. 5; In I Post. Anal., lect. 20, n. 3

signification of the subject and predicate are so universal and common that everyone knows them (and these are *per se nota quoad omnes*; the subject and predicate are abstracted straight from sensible experience without needing to reason), but sometimes they are less common terms that are not known by every mind. Propositions containing this latter type of subject and predicate are what we call *per se nota quoad sapientes*. In these propositions, the subject and predicate are known only after a process of reasoning, but once they are known they are understood to imply one another. That is, these propositions (which are already self evident *in themselves* because the predicate really pertains to the essence of the subject) *become* self-evident to us; and once they are shown to be essentially related, they have no further need of being proven. So, 'every triangle has three sides' is self-evident to every geometrician and he has no need of proving it to himself; once he has understood what 'triangle' means and what 'three-sided' means, he has no choice but to accept the proposition.

Whereas propositions which are self-evident *quoad omnes* are called axioms, these propositions which are self-evident *quoad sapientes* are called 'theses'.

We'll give a fuller explanation of axioms and theses in Material Logic.

Mediate Propositions

So, immediate propositions do not require another proposition to make evident the connection between subject and predicate; either because it is evident to consciousness (as when I know that sense or understand something) or because the meaning of the subject and predicate is *itself* the reason of their connection, such that you cannot understand the subject without understanding its relation to the predicate (e.g., every father has a child)—the relation of subject and predicate can be known from the very terms used.

Mediate propositions, on the other hand, always require *proof* in order to make their connection evident; because it is not known from conscious experience, and because the predicate is not immediately connected to the essence of the subject. For example, 'a dog is an animal' becomes self-evident to whoever knows what a dog is. But the proposition 'a dog exists' is in no way *self-evident* because existence doesn't pertain to the essence of being a dog—dogs might go extinct. Hence, the notion of existing in no way enters the essential concept of 'dog', and the *fact* that dogs exist must be in some way proven. In other words, the predicate of a mediate proposition is not included in the notion of the subject, so it is possible to understand the subject without understanding its relation to the predicate. That connection is made evident only with the help of other propositions through the syllogism. Hence, a treatment of the various mediate propositions depends on a treatment of the third operation of the intellect—i.e., reason—which we cover below.

The Properties of the Proposition

So we've taken a look at the nature of propositions. We've seen those elements that necessarily make them up (subject, predicate, copula), we've seen the matter, the quantity, and the origin of these propositions. Now, we want to look at some the chief characteristics that always follow as a consequence from the propositions; we want to look at the properties of propositions.

Recall way back at the beginning that a thing in reality has its own characteristics. A man has a certain height, weight, color, etc. But when he is placed in the mind, he takes on new characteristics; e.g., man takes on comprehensive notes and extensive inferiors. Well, the same thing happens when we take the terms and place them in propositions. Now in addition to all the properties man gathered when he became an object of knowledge, he gathers *new* properties in virtue of his role in the proposition. Furthermore, each proposition has characteristics which are proper to itself: every proposition has a certain quantity, for example, be it A, E, I, or O. But when one proposition is placed relative to another proposition it will take on even more properties such as opposition (in the same way, the concept took on new properties of sequence and repugnance when placed in relation to other concepts).

So there are some properties which follow the *terms* of the proposition (i.e., properties which attach to the terms only once they are placed as subject and predicate) and there are some properties which attach to the *whole* proposition once it is placed in relation to other propositions.

The properties attaching to the *terms* are:

- *supposition*, when a term is substituted for something for something besides what it simply signifies;
- *reimposition* (sometimes called appellation), when the signification of the term is applied to another term.
- *amplification* (sometimes called ampliation), when the term is extended to a greater supposition
- *restriction*, when a term is limited to a smaller supposition;
- *transfer* (sometimes called remotion or alienation), when a term is removed from its proper supposition;

The relative properties following on the *whole* proposition are:

- opposition
- conversion
- equipollence

For our purposes, it will suffice for now to examine only supposition, reimposition, and the three relative properties. The others will be treated in an appendix to this work for those who want further reading.

The Properties of the Parts of the Proposition

Supposition

Recall that terms are signs. They signify something; namely, the quiddity or nature of some being. 'Man', for example, signifies human nature. 'Triangle' signifies three-sided plane figure. 'Animal' signifies animality. And we saw that when one term is used twice with the exact same signification, it is called a univocal term. When I say 'Peter is living and John is living', the term living is used to signify the same exact same nature found in both Peter and John. And when a term is used twice, but each time

with a different signification, we have equivocation. 'The bark of the dog and the bark of the tree'. Bark is used twice but signifying two entirely different natures. When equivocation is used in a syllogism it will invalidate reasoning. Take the following example:

Every ship has a bow.
But the USS Constitution is a ship.
Therefore, the USS Constitution has a bow.

There is nothing wrong with the syllogism. In the premises, bow is being used to signify the exact same thing. This is perfectly valid. But take a look at this next syllogism:

Every ship has a bow.
But a bow is the action of bending at the waist
Therefore, every ship has the action of bending at the waist.

This is a pretty obvious case of equivocation. Bow is being used to signify two entirely different things. Now take a look at this syllogism:

Boat has greater extension than wooden boat.
But a wooden boat is a boat.
Therefore, a wooden boat has greater extension than a wooden boat.

Something has happened here. This is obviously flawed, but where is the flaw to be found? We don't have equivocation here, because 'boat' signifies the same thing in each proposition—the comprehensive notes are exactly the same in each use of the word. So what's the problem?

The problem is that, even though the signification has stayed the same (boat means the same nature in each proposition), the thing to which the signification is applied has changed. Let's take another example to help clarify this:

Man is a species.
But John is a man.
Therefore, John is a species.

Again man means exactly the same thing in each proposition—it means human nature. But In the first proposition, the term is referring to human nature as it exists in the mind, while in the second proposition it is referring to human nature as it exists in individuals. It is *supposing* or substituting for different things even though its signification (i.e., human nature) has remained unchanged.

Remember that a term signifies a concept. And concepts, being universal, abstract from existence. I can think 'dodo' without having to think of an existing dodo. But when a word is placed in a proposition it refers to some definite mode of existence—be it existence in the mind, or the imagination, or some individual, etc. Whenever it is placed in relation to a copula we are making a commitment to the way things are; to the way they exist. 'Some man IS president', 'Peter WAS good', 'the Antichrist WILL BE a liar', etc. Hence, a term in a proposition refers to some existing thing. That thing is called its supposition.[104]

[104] I can't stress enough that we are dealing here with *terms* (oral, written, or otherwise gesticulated) which are the *signs* of concepts and not concepts themselves. Supposition attaches to the terms and not the concepts, because the speaker knows to what he is referring before he speaks the term. Don't deceive yourself into thinking

This supposition is entirely different from a term's signification—the signification can remain the same even if the supposition changes. In fact, some terms have supposition even if they don't signify anything at all. The word 'blitiri', for example, has no signification. But it can still have supposition in a proposition: 'blitiri is a vocal sound'. The term is here being used to stand only for itself and not for anything else.

And some terms signify even if they don't suppose; i.e., even if they don't refer to anything which has the kind of existence that the proposition demands. For example, 'the Antichrist was a liar'. Antichrist signifies the person who will herald of the end of time, but in this proposition the word 'Antichrist' doesn't refer to anything that has the kind of existence that the copula demands. That's not to say that 'liar' cannot be predicated of 'Antichrist'; it most certainly can. But it cannot be predicated of the Antichrist as existing in the past, because he hasn't yet existed (presumably). The word here has no supposition; it doesn't refer to anything in the past which is capable of receiving the signification of Antichrist.

So supposition is the property of being used to refer to some existing thing. The traditional definition is 'acceptance of a term for something of which it is verified' or rather for something to which the term truly refers or in which the term is found to exist. And this property does not exist outside of the proposition. At first glance a term like 'every man' might seem to suppose for all possible men. But perhaps by 'every man' I'm referring to the entire collection of men, as in 'every man wouldn't fit into this room'; I couldn't then argue, 'but Peter is a man, therefore Peter wouldn't fit into this room'. Though the speaker understands what he means by 'every man', the thing to which that term refers—the thing about which he is speaking—will only be evident to us from the context of the proposition. Even singular terms do not have supposition outside the proposition. 'Peter' signifies the person of Peter, but it may refer to that person in different ways: for example, 'Peter is contained under a species'. You will never be able to point above Peter and say, 'there's the species!' because the term 'Peter' here supposes for his existence in the mind, not in reality. Again, I might say 'Peter is name', and this doesn't refer at all to what is *signified* by the word 'Peter' but it refers only to the word itself. And don't make the mistake of thinking that you can easily do away with supposition just by making the term complex like 'the vocal sound Peter'. Even that complex term will have varying supposition in various propositions: e.g., 'the vocal sound Peter is a complex term' and 'the vocal sound Peter proceeded from my mouth'.

So because of the context of the proposition, a single word, a single term can refer to a multitude of objects even if the signification of that word doesn't change at all.[105]

There are many different kinds of supposition depending on the different things to which a term can refer. The following outline will help you with this section.

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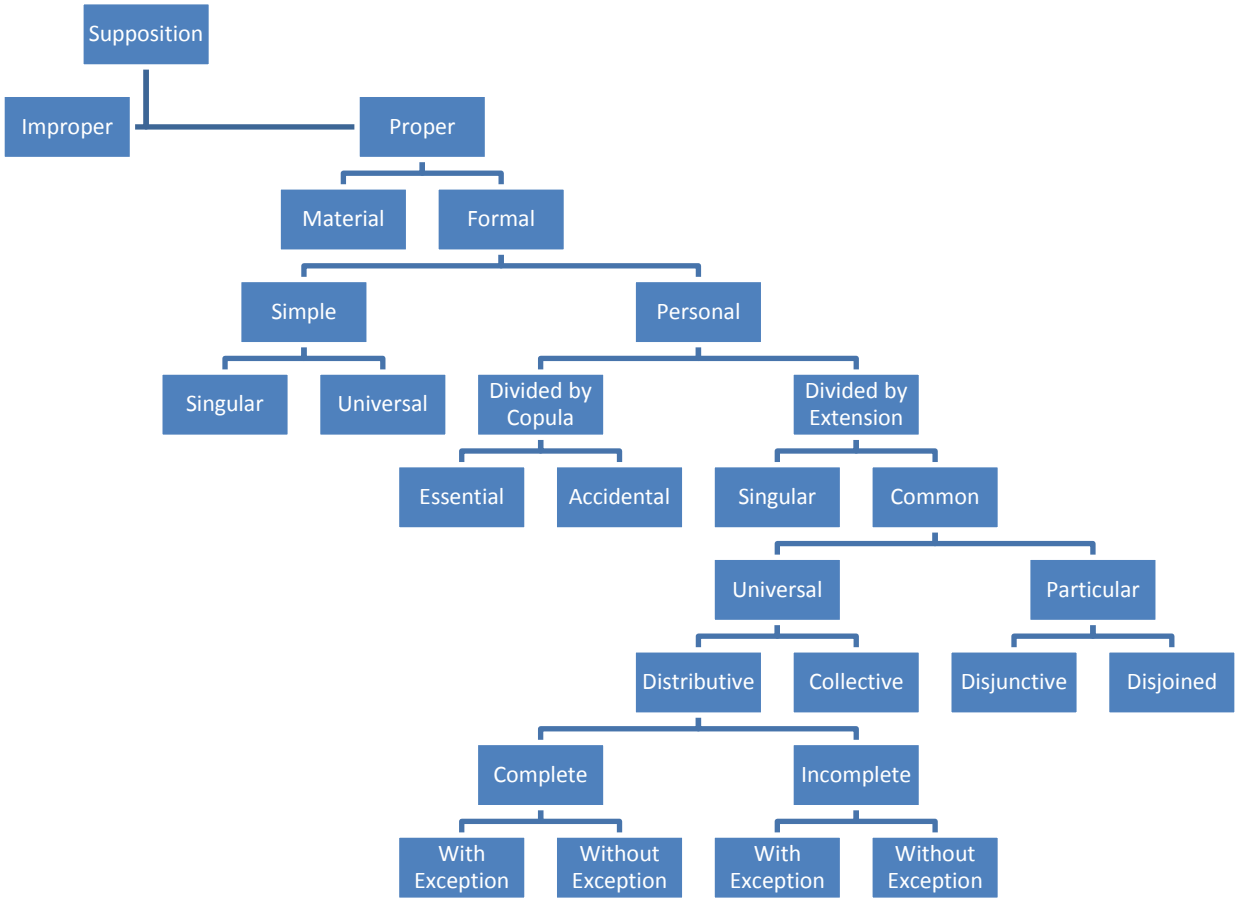
that what you understand by a term by itself is exactly what the speaker intends by using that term. When you hear 'Peter' for example, don't jump the gun and think that the speaker is referring to the *person* of Peter, because he might only be referring to the *name* 'Peter'. You have to wait for the speaker to clarify his supposition. Don't read more into a term than is really there.

[105] De Pot., q. 9, a. 4, c. et ad 6; I q. 39, a. 5, ad 5; III, dist. 6, q. 1, a. 3, c. et ad 1



First we must distinguish proper supposition from improper supposition.

Improper Supposition

This is when a term refers to something other than what it properly signifies or represents—more strictly, this is when a term supposes for something other than what it naturally or conventionally represents; when a term refers to something else because of a special relation added to it by the mind. When I say 'the lion entered the battlefield' and by 'lion' I mean to refer to King Richard, I am using improper supposition. We'll speak more of this down below.

Proper Supposition

Proper supposition is the use of a term to refer to something which that term of itself represents. How exactly proper and improper differ will become evident in what follows.

Now, there are two kinds of proper supposition: material and formal.

To begin with, recall that a term is an instrumental sign. An instrumental sign is first and foremost a real thing, and only secondarily is it a sign. So the primary purpose of smoke is to be smoke. Only secondarily is it a sign of fire. And even if there was no fire signified by it, it would still be smoke. The same is true of terms. An oral term, for example, is first and foremost a sound. It's vibration of air along the vocal chords resonating beyond myself. Only secondarily is it a sign of my concepts, and then only because we *decided* that some certain vocalizations would be significant. So a term can be looked at from two points of view: 1) from the point of view of its physical existence as a real being (as a vocalization or as a written symbol, etc.); 2) from the point of view of its signification, i.e., insofar as it is a sign of something else.[106] When a term is being used to refer only to the real being itself, the physical existence of a term, it is said to suppose *materially* (as when I say '"John" is a sound'). When a term is being used to refer to something *signified* by the real being, and not being employed to refer the mind to the term itself, it is said to suppose *formally* (as when I say 'John is an animal'). In other words, formal supposition is the use of a term for the things that term signifies. When I say 'John is an animal', the name 'John' is referring to what is signified by the name—the vocalization 'John' is not an animal, but what is signified by that vocalization is an animal; namely, the nature of that individual person.

Material Supposition

So, material supposition is the use of a term for itself: 'man is a sound'. Nothing is signified by material supposition; the mind is not carried to knowledge of something besides the term itself. And material supposition not only refers to the natural qualities of the physical thing (such as being a vocalization or being an ink mark on a piece of paper) but also to the artificial qualities (such as being a noun or even being a sign—e.g., 'man is a sign').

Material supposition is found in three instances:

1. If a term is used for a thing which has no signification whatsoever, such as the sounds 'blitiri' and 'scandapsus', it is normally taken with material supposition. Obviously, since formal supposition is the use of a term to refer to something *signified* by that term, if nothing is signified by it, then it cannot *properly* have formal supposition (though it can have improper supposition, as I'll explain below).

2. If some another term is added which signifies material existence it is properly material supposition. So, 'this sound man', 'that name "John"'. Ordinarily, these terms fix the material supposition.

3. If something is used as predicate that doesn't signify anything but merely refers to the physical term itself, it must be understood with material supposition. So, 'man is a vocalization'; this proposition will only be true if taken materially because vocalization won't pertain to any of the things signified by 'man'.

Don't make the mistake of thinking that every term which is not significant (i.e., which doesn't conventionally signify anything) will always have material supposition. Some logicians believe that in material supposition we have found an exception to the rule that terms only have supposition within a proposition. How, they ask, could 'blitiri' have anything but material supposition?

[106] The concept of this physical being of a term considered precisely as a sign of something else is called a 'non-ultimate' concept by some scholastics because it is just a stopping point before the mind is carried on to the things signified by that term. Concepts of the things signified by the term are called 'ultimate'.

The answer is that material supposition is contained *under* proper supposition, but it could just as easily be transferred to *improper* supposition. The example I gave above for improper supposition (i.e., the lion entered the battlefield) uses a term with formal supposition (i.e., lion) in an improper and metaphorical sense. But words with material supposition can also be used in an improper and metaphorical sense. Even though 'blitiri' ordinarily and properly only stands for the word itself, you can also use it in a poetical and improper sense like 'blitiri is a depressing life'. Here blitiri is being used improperly to suppose for something else; perhaps the speaker intends it to refer to 'meaninglessness' or 'emptiness' or something of the sort. So, both formal and material supposition can be proper or improper, and only the context of the proposition will set the record straight.

Again, in the second rule, I say that *ordinarily* a term signifying the material existence of a word gives us material supposition: e.g., 'the word man'. However, even these can be used to refer to something *improperly* given the context of the proposition. If one says "the word 'man' brought down the Aristocracy during the French Revolution", man is not supposing materially, but improperly. Obviously, it isn't supposing properly because that would mean someone uttered the word 'man' and the Aristocracy was destroyed. What the term 'the word man' refers to is the prevalent doctrine in French society that placed the individual man at the center of all things.

Formal Supposition

Formal supposition is when the term is used in place of something that it signifies. That is, a term supposes formally when it refers to something signified by it. 'Man is an animal'. The predicate 'animal' doesn't pertain to the vocal sound, but to the nature signified by that vocal sound; namely, human nature.

Formal supposition and material supposition should never be confused. It would be invalid to argue: 'whatever I say passes through my mouth; but I say 'a house'; therefore, a house passes through my mouth.

Formal supposition is divided into simple (also called logical) and personal (also called real). To understand this division, though, we need to point something out. A term signifies two things.[107] First and foremost it signifies some nature—it signifies the comprehension of a concept. 'Man' primarily signifies human nature, and not Peter, Paul, John, etc. Secondarily, however, a term can signify all those beings which *have* this nature. So 'man' primarily represents human nature and secondarily all those inferiors in the extension of human nature which can have it; all real and possible individual men.[108] 'Animal' immediately signifies a living sensitive nature, and mediately signifies the different kinds of animal (i.e., man and brutes) as well as the individuals contained in these kinds. Singular terms, on the other hand, signify the individual primarily and the nature existing in that individual secondarily. So, 'Peter' primarily signifies some individual and secondarily signifies his human nature.[109]

Now, the mind can stop at the first signification without passing on to the second. I can stop at thinking about human nature without needing to think about Peter, Paul, John, etc.; and in singular terms, I can stop at thinking about the individual Peter without thinking about his human nature. When the term is

[107] In III Sent., dist. 6, q. 1, a. 3.

[108] De Pot., q. 9, a. 4.

[109] I, q. 89, a. 4.

being used to refer to what is primarily signified *only*, it is called *simple supposition*. When the term is being used to refer to what is primarily *and* secondarily signified, it is called *personal supposition*.[110]

Simple (Logical) Supposition

'Man is a species'. In this proposition, man refers to human nature considered in itself and not human nature as existing in individuals. That is, the term refers only to what is primarily signified and not to those individuals which *have* that primarily signified nature. Hence, it would be invalid to argue 'Man is a species; but John is a man; therefore, John is a species.' In the second proposition, 'man' is being taken for human nature as existing in individual men. But in the first proposition, human nature is being taken as it exists apart from individual men—we are considering only the common universal nature of man without considering the particular persons which *have* this nature.

So, in simple supposition we are referring to the comprehension, but in no way to the extension. We're referring to the universal nature as abstracted from all its inferiors, real and possible.

Now, the *mind* can certainly consider a universal nature like man abstracted from all individual men. However, universal natures don't *exist* on their own. That is, independently of the mind, these natures are not found in a universal state—they are found only individualized in this or that man. Human nature is not found floating around anywhere, but it is found only in individual men. Hence, simple supposition pertains only to a nature as it exists in the mind, not as it exists in reality. For that reason, simple supposition is also called *logical supposition*—the thing that the term refers to only exists in the mind.

I said that not only do universal terms signify something immediately and other things mediately; but also singular terms (like 'Peter') signify things immediately and mediately. For this reason, simple supposition can be divided into *universal simple* and *singular simple*. For example, 'Peter is in a species'—this is *singular* simple supposition because being 'in a species' pertains to Peter only as he exists in the mind, and it doesn't pass on to his human nature; we wouldn't say 'Peter is in a species, therefore man is in a species'.[111]

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[110] De Ente et Essentia, c. 3.

[111] Some Thomists add another division between simple and personal supposition. They call it logico-real supposition, which partakes of both simple and personal supposition. For example, if we say 'man is the noblest of all creatures', we can't then argue 'but John is a man, therefore, John is the noblest of all creatures'. Their division is based on a misunderstanding of simple supposition. They believe that simple supposition concerns only those properties of second intention with which Logic is concerned (i.e., genus, species, subject, predicate, etc.). This is incorrect. Simple supposition concerns *all* predicates which attach only to that universal nature primarily signified by a term, and among these predicates we find the logical properties. To be 'the noblest of all creatures' demands that human nature be unified, and this unity is possible only when human nature is abstracted from the divisions of individual men. Thomas explains: "In relation to the point being made here we have to consider the four ways in which something is enunciated of the universal. On the one hand, the universal can be considered as though separated from singulars, whether subsisting per se as Plato held or according to the being it has in the intellect as Aristotle held; considered thus, something can be attributed to it in two ways. Sometimes we attribute something to it which pertains only to the operation of the intellect; for example when we say, '*Man*,' whether the universal or the species, 'is predicable' of many. For the intellect forms intentions of this kind, attributing them to the nature understood according as it compares the nature to the things outside of the mind. But sometimes we attribute something to the universal thus considered (i.e., as it is apprehended by the intellect as one) which does not belong to the act of the intellect but to the being that the nature apprehended has in things outside of the soul; for example, when we say 'Man is the noblest of creatures.' For this truly belongs to human nature as it is in singulars,

Personal (Real) Supposition

A term is taken with personal supposition when it not only refers to the nature signified by the term but also it refers to those things which have this nature; i.e., it not only refers to what is primarily and immediately signified by a term, but it also refers to what is secondarily and mediately signified by a term. Therefore, whatever is predicated of a term taken with personal supposition can be extended to the inferiors of that term—and since these inferiors can exist independently of the mind (unlike universal natures) personal supposition is called *real* supposition.

When I say 'man is an animal', 'animal' not only applies to human nature (which is immediately and primarily signified by the term 'man'), but also to all those individuals which *have* human nature (which are mediately and secondarily signified). When I say 'triangle is three-sided', 'triangle' descends to all specific kinds of triangle, be they scalene, isosceles, etc.; it even descends to every individual triangle.

Now, personal supposition can be looked at from two points of view: from the point of view of the copula (which causes a term to suppose) and from the point of view of the extension (for *how many* of the secondary, mediately signified inferiors the term is supposing for).

Divided According to the Copula

According to the copula, personal supposition is either ***essential*** (also called *natural*) or ***accidental***. Essential supposition is when the subject-term is used to stand for a thing to which the predicate pertains necessarily; e.g., in 'man is an animal', 'man' is referring what is essential about human nature as it exists in inferiors. Accidental supposition is when the subject-term is standing for something to which the predicate doesn't necessarily pertain. When I say, 'man is running', running doesn't pertain to the real nature of man (and thereby to all of its inferiors), but only contingently to some of its inferiors.

Why is this important? Well, it has to do with the various *times* that a copula can indicate (past, present, future, possible, or imaginable); for example, when I say 'Peter WAS just' it indicates a time prior to when that proposition was formed. When I say 'man is an animal' it means that man is an animal at the moment the proposition is made (regardless of the past and future).

Now, in essential (or natural) supposition any copula will do. I can say 'man IS an animal; man WAS an animal; man WILL BE an animal' and these are always true because human nature can never be separated from animal nature—human nature cannot ever exist without animal nature, nor is it possible, nor can it be imagined without destroying the concept of 'man'. But when I'm dealing with accidental supposition, the thing referred to *must actually exist* at the time indicated by the copula. So, 'the human race is extinct'. Extinction doesn't pertain essentially to the human race. So, in order for this proposition to be true, it must refer to the human race in that precise time when extinction really will be said of the human race. In the case of 'the human race IS extinct', the time indicated by the copula is the present. But the predicate cannot pertain to the human race in the present; the term 'human race' can't refer to what the speaker is talking about. Hence, we say that the term is non-supposing. All affirmative propositions with a non-supposing subject are false—the predicate might be compatible with the subject, *but not according to the temporal demands of the copula.*

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since any single man is more noble than all irrational creatures; yet all singular men are not one man outside of the mind, but only in the apprehension of the intellect; and the predicate is attributed to it in this way, i.e., as to one thing. (In I Peri Herm., lect. 10, n. 9)"

Now, the various times are these: past, present, future, possible, and imaginable. And just because a term cannot suppose for one time doesn't mean it cannot suppose for another. If I'm writing a book that takes place in the future, I'm dealing with imaginable time: a world seen in my imagination. I could then rightly use the proposition 'the human race is extinct' and the term 'human race' would really refer to man. Hence, the proposition might be true in my imagination. Again, if I say, 'the human race is possibly extinct', the term 'human race' refers to (or supposes for) all individual men here and now; but they are considered in possible time. And this would be true.

If the subject refers to (i.e., supposes for) something to which the predicate pertains essentially, then any time indicated by the copula will be valid. If the subject refers to (i.e., supposes for) something to which the predicate does *not* pertain essentially, then it must be 'verified' in the time demanded by the copula.[112]

Let me point out that this division only concerns personal supposition. Simple (logical) supposition is not concerned with temporality—in abstracting from individuals it abstracts from time as well. So whatever true proposition you make about human nature as existing in the mind will always be true. 'Man is contained under the genus animal' is a true proposition about human nature existing in the mind. It is true today, tomorrow, yesterday, and in all times.[113]

Divided by Reason of Extension

We've talked about extension before. We said that every concept has extension, and every term has extension because it represents concepts. That is, every concept *can* be said of inferiors; it has the *ability* to be predicated of them. The extension of *supposition* is the actual exercise of the ability; it means actually using the term to refer to one or more of those inferiors. The extension of *signification* is always the same. The term 'man' will always signify all real and possible men because they each have the comprehensive notes of substance, material, living, sentient, and rational. But that doesn't mean that every time I use the word 'man' in a proposition I'm intending to *refer* to each and every man. In other words, a term like 'man' may be called a universal term because it represents a concept capable of

[112] For this reason, an addition is usually made to the classical definition of supposition: the acceptance of a term for something, of which it is verified according to the demands of the copula: *acceptio termini pro aliquo pro quo verificatur iuxta exigentiam copulae*.

[113] You might then ask, 'well, then isn't every proposition with logical supposition an essential proposition?' No. Take the proposition 'man is a contained under a genus', being 'contained under a genus' doesn't pertain to the essence of man *absolutely* (if it did then we could apply it to all man's inferiors); rather, it pertains to human nature precisely as *conceived* in the mind. And being conceived by the mind isn't essential to human nature; even if human nature wasn't being thought about by anyone, it would still have the same essence. So 'man' and 'being contained under a species' are not essentially connected; they are not in necessary matter. You might then ask, 'well, then isn't everything said about man as he exists in reality also accidental since man need not exist in reality?' No. Whether in reality or in the mind alone, the nature of man *must* have certain characteristics. For example, man *must* exist in reality as an animal; but he must also *be conceived by the mind* as an animal or else you wouldn't be thinking of human nature. There are certain properties without which man can neither exist nor be understood, and these pertain to his essence. Mathematical entities provide us with a different example. A triangle, for instance. Being a 'wooden' triangle or a 'brass' triangle or any other kind of material triangle is not essential to the nature of triangle. Matter (like wood or brass) pertains to triangle *only* as it exists in reality, but it can be conceived and understood without any matter at all. To say 'a triangle has three sides' is a necessary proposition because a triangle cannot exist or be conceived without three sides; but to say 'a triangle has three *material* sides' is accidental to triangle because material sides pertains to it *only* as it exists in reality.

being applied to many inferiors, but I don't have to refer to all those inferiors whenever I use it. So the extension of signification and the extension of supposition are two different things.

First of all, personal supposition (just like simple supposition) is either singular or universal.

Singular Supposition

Remember, a term signifies two things: one of them primarily and immediately, the other secondarily and mediately. So, 'man' primarily signifies human nature and secondarily Joe, John, Bill, etc.

Now, if what a term *primarily* signifies is a common nature capable of existing in inferiors (like 'man' which first signifies human nature) then we have *common supposition.*

But if what a term *primarily* signifies is an individual, we have singular supposition. Terms like 'Peter', 'this man', 'Gandalf'. In other words, singular supposition involves the use of a term which primarily and immediately signifies a nature which cannot be extended to anything besides itself; whereas common supposition uses a term which primarily and immediately signifies a nature which is predicable of many.

Common Supposition

So, common supposition is the use of a common term to refer to something in its extension. And there are as many kinds of common supposition as they are ways we can refer to those inferiors. But before we go on to enumerate those way, I need to explain the various manners that we can 'descend' from the common nature to the inferiors contained under it.

We 'descend', logically speaking, when we remove a common term and replace it for all the individuals in the extension of that common term. So we are said to 'descend' from the term 'man' by replacing it with 'man A, man B, man C…' and so on for all real and possible men. And there are four ways of doing this:

- Conjunctive Descent
- Conjoined Descent
- Disjunctive Descent
- Disjoined Descent

Conjunctive Descent is when a proposition with a common term is multiplied by as many inferiors as are being referred to in that common term, each new proposition being joined together by the word 'and'. So in the proposition 'man is mortal', the proposition is multiplied by all real and possible men. So I would descend to the inferiors by saying 'man A is mortal, and man B is mortal…and man Z is mortal.' If the original proposition is true, then each new proposition will be true.

Conjoined Descent is when the common term is replaced with all the inferiors referred to but joined together in the *same* proposition by the word 'and'; i.e., the proposition isn't multiplied. So in the proposition 'all citizens have one president' I don't multiply the proposition by saying 'citizen A has one president, and citizen B has one president, etc.' Rather, I replace the common term with each individual citizen but without creating new propositions for each one. Thus: 'citizen A and citizen B and citizen C…and citizen Z have one president.'

Disjunctive and disjoined descent are very similar to conjunctive and conjoined except that instead of putting the inferiors together, they take the inferiors apart.

Disjunctive Descent is when a proposition with a common term is multiplied by as many inferiors as are being referred to in that common term, but each new proposition is an alternative joined by 'either…or'. So in 'some Greek discovered the syllogism' this one proposition is multiplied by saying, 'either Socrates discovered the syllogism, or Plato discovered the syllogism,…or Zeno discovered the syllogism. This kind of descent is also called *determinate* because, even though 'discovered the syllogism' is predicated of many subjects, in the end it will only be true of one determinate subject; i.e., only one of these new propositions will be true.

Disjoined Descent is when the common term is replaced with all the inferiors referred to but separated from each other in the same proposition by 'either…or'. So in the proposition, 'some food is needed to sustain life' I don't multiply the proposition by saying 'either food A is needed to sustain life, or food B is needed to sustain life…or food Z is needed to sustain life'. Rather I replace the common term with each possible food in the same proposition, 'either food A or food B or food C is needed to sustain life.' This is also called *confused* descent because the predicate needn't be applied to any one determinate kind of food.

These descents only pertain to common personal supposition. They don't pertain to material supposition, logical supposition, or singular formal supposition, because none of these have inferiors. So keeping in mind these four kinds of descending to inferiors, let's look at how common supposition can be divided.

The personal common term can refer to (i.e., suppose for) either the whole of its possible extension, or a part of its possible extension. If for the whole, it's called *universal* supposition. If for the part, it's called *particular* supposition.

Universal Supposition

Universal supposition is the use of a common term to refer to everything which that term *mediately* signifies (i.e., its inferiors). But it can refer to all those inferiors in different ways. We divide it into *distributive* and *collective*.

Distributive Universal Supposition

This is when the common term is used to refer to all its inferiors according to *conjunctive* descent. So 'every triangle has three sides' means 'triangle A has three sides and triangle B has three sides…and triangle Z has three sides'. This 'distribution', though, can be either complete or incomplete.

Complete Distributive Universal Supposition

This is when the conjunctive descent from the common term can be made (i.e., distributed) all the way down to the *individual* inferiors. As when 'every triangle has three sides' means 'triangle A has three sides and triangle B has three sides…and triangle Z has three sides'. Or when I say all animals are sensitive, this can become 'this animal is sensitive, and that animal is sensitive, and that animal is sensitive, etc.'

Incomplete Distributive Universal Supposition

This is when the conjunctive descent from the common term *cannot* be made (i.e., distributed) all the way down to the individual inferiors, but is understood to stop somewhere along the line. As when I say 'every animal was on Noah's ark' I mean 'every SPECIES of animal was on Noah's ark'; I'm referring not to each individual but to each species of individuals. So, I cannot argue, 'every animal was on Noah's

ark; but my dog is an animal; therefore, my dog was on Noah's ark'. Other examples of incomplete distribution would be 'every animal was created in six days', 'geologists study every mineral', etc.

Now, both complete distributive supposition and incomplete distributive supposition can be made *with exception* or *without exception*, depending on whether or not some inferior is understood to be left out of the distribution. When I say 'all the animals were on Noah's ark' (which is incomplete distribution) it is understood that marine life was excluded. If the Pope says 'all men are sinners', one cannot argue 'but Christ was a man, therefore, Christ was a sinner', and then accuse the Pope of heresy. The exception of Christ is sufficiently understood.

Collective Universal Supposition

This is when each of the inferiors of the common term is referred to according to *conjoined* descent. When I say 'every part equals the whole', you cannot argue, 'but this is a part, therefore, this equals the whole.' The term 'every part' supposes for all the parts taken together: 'part A and part B and part C…and part Z equal the whole'. Again you couldn't say Peter equals twelve because all of the apostles equal twelve and Peter is an apostle.

Particular Supposition

Particular supposition is when a common term is being used to refer not to all its inferiors but to only a part of its inferiors. But as with universal supposition, it can refer to those inferiors in different ways. It is divided into *disjunctive* and *disjoined*.

Disjunctive (Determinate) Particular Supposition

This is when a common term is being used to refer to a part of its inferiors because all its inferiors are understood according to disjunctive descent. Thus in the proposition 'some Greek discovered the syllogism', 'some Greek' supposes disjunctively. Again, 'this road leads to some place' means 'either this road leads to place A, or this road leads to place B, etc.' One of those propositions will be true.

Disjoined (Confused) Particular Supposition

This is when a common term is being used to refer to a part of its inferiors because all its inferiors are understood according to disjoined descent. Thus, in the proposition 'some food is needed to sustain life', the term 'some food' supposes disjoinedly. Again, 'a ship is needed to sail' doesn't mean 'either ship A is needed to sail or ship B is needed to sail, etc.' Rather 'Either ship A or ship B or ship C, etc. is needed to sail'. Again, when a king falls on the battlefield and needs to escape, he says 'I seek a horse'. If someone offers him a steed he likely won't say, 'no, a different one.' He means 'I seek horse A or horse B or horse C, etc.'

From all these divisions one can see that syncategorematic terms like 'every', 'no', 'some', can have a wide variety of suppositions when placed into the proposition. 'Every', for example, might be distributive or collective, complete or incomplete, exceptive or non-exceptive. Hence, supposition—what the speaker is referring to—can only be understood from the context of the proposition, and not from the term by itself even when syncategorematic terms are applied.

There are many rules that traditional Logicians lay down to help determine the supposition of terms in a proposition. However, most of these rules are only probable guidelines and vary from language to language. So we won't go into them here.

The one thing that needs to be pointed out, however, and emphasized is that the primary kinds of supposition can never be changed in the middle of an argument. Now, by 'primary kinds' I mean *proper, improper, material, formal, simple, personal*. Any change in these kinds of supposition will invalidate a reasoning process. I cannot say 'All lions have tails, but King Richard was a lion, therefore, he had a tail'; this would be to go from proper to improper supposition. Again, 'man is a three-lettered word, but Joe is a man, therefore, Joe is a three-lettered word'; this would be to go from material to formal. And again, 'man is abstracted from John, Joe, Bill, etc., but John, Joe, Bill, etc. are men, therefore, John, Joe, Bill etc. are abstracted from John, Joe, Bill, etc.' This would be to go from simple to personal supposition.

Furthermore, in terms with personal supposition, it is *sometimes* legitimate to go from common supposition to singular supposition (e.g., man is an animal, but John is man, therefore, John is an animal), and it is *sometimes* legitimate to go from universal to particular supposition (from 'every man is an animal' to 'some man is animal'). However, it is *never* permitted to switch between collective and distributive, complete and incomplete, with exception and without exception, disjunctive and disjoined.

We'll see more of this when we discuss reasoning.

ADDENDUM: On Distinctions

When we're listening to the propositions of someone else, it is sometimes difficult to tell exactly what they are referring to; the way they phrase a proposition could be understood with several kinds of supposition. This is dangerous. We might affirm the proposition—i.e., admit it—thinking that it refers to one thing when in fact the speaker is using the term to suppose for something else. And perhaps, had we known what it *really* referred to we would have denied it. Argument can become very confused if we take something with a different supposition than what the speaker intends.

When a proposition is expressed so that it might be taken with several suppositions, it is best to proceed according to the Scholastic saying, 'rarely affirm, often deny, *always distinguish*'[114]. You should explicitly state the multiple senses that can be understood in the vague proposition and pass judgment on each individually (e.g, if taken in this sense, I deny it, if taken in this other sense, I affirm it).

So, for example, if someone were to say to you, 'The government should care for my elderly mother! Surely, you agree that the government should provide for the well being of all citizens!', you might respond, 'that the government should provide for the well being of all citizens in the collective sense, I agree; the that government should provide for the personal well being of *each* citizen in the distributive sense, I deny. The concern of the government is the *common* good of all citizens, not the *private* good of each citizen.'

We'll talk more about making distinctions in the section on Scholastic Disputation.

[114] 'raro affirma, saepe nega, semper distingue'

Reimposition

Reimposition (also called 'appellation') is defined the application of the formality signified by one term to the formality signified by another term. When I say 'Peter is a great logician', 'great' doesn't apply to Peter absolutely, but under the formality of being a logician. So before it can be applied to the person of Peter—before it can be applied to the individual for which Peter supposes—it must be applied to the signification of 'logician'. So, reimposition is a certain application of one term's signification to another term's signification; and this other term's signification is then applied to the thing referred to. So reimposition is had whenever a term is not absolutely applicable to something, but only under the formality of another term.[115]

Let me explain this. The predicates of a proposition signify some form which is going to be applied to the subject—e.g., in 'Peter is a logician and black' 'logician' and 'blackness' are being applied to and qualifying 'Peter'. The subject is a bit like the matter whereas the predicates are the form (remember our discussion of the four causes). The matter is being determined and specified by the form.[116] But sometimes in the proposition, the form cannot be applied to the matter right away. Instead it has to be applied to another form, and *then* applied to the matter. So, in 'Peter is a great logician', great is not qualifying Peter right away, but only by means of what is formally signified by 'logician'.

When the formality or signification of the predicate pertains to the subject without an intermediary, this is called material application; and this is nothing but good old fashioned predication. But when a term in the predicate pertains *first* to the formality or signification of *another* term in the predicate, we have formal application—this is what we mean by reimposition (and we call it reimposition because one term is imposed twice; first on the formality signified by one term, then on the thing supposed for—i.e., referred to—by the subject).

In reimposition, the term which is not absolutely applicable to the another is called the *reimposing* (or appealing) term. The term to which the reimposing term is not absolutely applicable is called the *reimposed* (or the appealed) term.

There are two kinds of reimposition:

- Real reimposition
- Logical reimposition

Real Reimposition

Real reimposition is when the reimposing term is applied to the subject in virtue of some real accidental formality that the subject has. When I say 'Peter is a great logician', 'great' is applied to Peter in virtue of 'being a logician'; and 'being a logician' is a real accident that pertains to Peter independently of the mind.

Logical Reimposition

But if I say 'Peter is contained under a species' we also have reimposition. This is because 'contained under a species' does not pertain to Peter absolutely, but as he is conceived by the mind. When a term

[115] Cfr. In II Peri Herm., lect. 6 et 7.

[116] III, q. 16, a. 7 ad 4 et ad 9; In I Peri Herm., lect. 10, n. 23.

is applicable to a thing only in a state of abstraction, not as it exists independently of the mind, we have *logical reimposition.*

There are a variety of rules given to determine reimposition. I reduce them to two sets: one general and applying to all reimposition, the other specific and applying separately to real and logical reimposition.

1. **General Rules**
    a. When the subject of a proposition is affected by a reduplicative term (cfr. our discussion of reduplicative propositions), there is reimposition according to that term. So, 'Peter, insofar as he is a logician, is great'.

    b. When a proposition does not have a reduplicative term, there is reimposition only according to the special rules given below.

2. **Specific Rules**
    a. For Real Reimposition
        i. When the subject of a proposition has *material* or *personal* supposition, and the predicate is

            1. a thing (i.e., a substance) OR
            2. a quality of a thing OR
            3. a quality and a thing (but not a thing and its own quality),

            there is no reimposition; only predication. Examples of each possibility:

            1. 'Peter is a logician'; a logician is substance.
            2. 'Peter is great'; great is a quality
            3. 'Peter is a black logician'; black is a quality, but not a quality of 'logician'

        ii. When a thing (i.e., a substance) AND its quality are placed together as subject or predicate (e.g., 'Peter is a GREAT LOGICIAN', 'a GREAT LOGICIAN argues') the *quality* is applied to the formality signified by the thing.

            This is fairly obvious when the thing and its quality are the *predicate:* 'Peter is a good painter'. 'Good' isn't immediately applicable to the person of Peter. In fact, Peter could be quite a bad person. 'Good' is first imposed on the formality of painter, and then in virtue of that it can be *re*imposed on Peter himself.

            The case is a little more difficult when the thing and its quality are taken as the subject. For example, the proposition 'A great mathematician is teaching this class'. Let's say that Peter is the person referred to (i.e., supposed for) by the term 'a great mathematician'. 'Great' is still not absolutely applicable to the thing referred to by 'mathematician'—it still doesn't immediately pertain to the person of Peter; but only in virtue of his being a mathematician.

    b. For Logical Reimposition
        i. In a proposition where the predicate is a logical property (cfr. our discussion at the beginning of the course about the difference between the properties a thing has in reality vs. the properties it has in the mind), we have *simple supposition*—so the predicate reimposes on what the subject signifies only in

virtue of being conceived by the mind. So, 'man is a species' has a predicate (i.e., species) that isn't absolutely applicable to human nature, but only insofar as human nature exists in the mind.

ii. A term signifying an interior act of the soul (e.g., knowing, desiring, sensing) applies to the object of that act only in virtue of the act itself. Take sensing, for example. The proper object of sight is color. When I say 'I see Peter' I don't mean that I see the personhood of Peter—rather, I see the color of Peter. In other words, I only see Peter in virtue of his being colored. Again, if I say 'I know the president', I mean that I know him under the formality of 'being president' and not personally.

Confusing logical reimposition can lead to many problems. Let's say that Peter is talk-radio show host. And let's say that I'm friends with Peter but I don't know that he has his own radio show. If someone asks me, 'do you know the host of the morning radio show?' and I respond, 'no', it would be wrong for the other person to conclude that I don't know Peter. I do know Peter, but not under the formality of hosting a radio show.

Any sort of change in reimposition will invalidate reasoning. Hence, if we know that Peter is a bad grammarian, we can't say that 'all who are bad should be punished, but Peter is bad, therefore, Peter should be punished.' In the first proposition, 'bad' reimposes in virtue of morality; in the second, it reimposes in virtue of grammatical ability. In changes of reimposition we have the foundations of what will be called the *fallacy of accident*.[117]

Once again, to avoid an unnecessarily long explanation at this point, we will discuss the other three properties of the terms—**amplification, restriction, and transfer**—in an appendix to this work.

[117] In II Peri Herm., lect. 7, n. 7.

The Relative Properties of the Whole Proposition

So far we've discussed the chief properties of the proposition's *terms*; properties of the subject and predicate. We now want to look at the properties of the entire proposition when it is placed in relation to other propositions. We've had a similar discussion in relation to the concepts. Some concepts follow upon each other—we called these pertinent of sequel—some concepts rule each other out—we called these pertinent of repugnance, etc. Proposition likewise take on logical relations among themselves. These are chiefly three:

- Opposition, the property of being incompatible with another proposition.
- Conversion, the ability for one proposition to change into another without changing its truth.
- Equipollence, the ability for two opposed propositions to be put in agreement.

We'll discuss each in turn, beginning with opposition because the other two properties are understood only in reference to opposition.

Opposition

Recall our previous discussion of opposition. We looked at the various ways that *concepts* can be opposed to each other. We saw, for example, that seeing was opposed to non-seeing by contradiction, and that seeing was opposed to blind by privation. Opposing concepts were those which could not apply to the same subject at the same time in the same way.

There is a similar characteristic with propositions and it is also called opposition.[118] However there is a difference between the opposition of concepts and the opposition of propositions. Concepts are opposed because they signify real *natures* which cannot *exist* together—this is called physical opposition. Propositions are opposed because they signify two logical relations which cannot be *true* together—this is called logical opposition.

Logical opposition is when one proposition *affirms* a predicate of a subject while another proposition *denies* that same predicate of that same subject—'man is an animal' versus 'man is not an animal'. And the truth or falsity of one proposition often tells us about the truth or falsity of its opposed propositions. For example, if we know that 'every man is risible' we can be certain that it is false to say 'some man is not risible'. So from the truth of the first we can pass on to the falsity of the second.

We need to stress what the definition says: affirmation and negation of the *same predicate* of the *same subject.*[119] This means the predicate and subject must have not only the same signification, but the same supposition as well—we may not switch between proper and improper, material and formal, simple and personal, distributive and collective, disjunctive and disjoined! For example, we'll see that the proposition 'every country has one president' is opposed to the proposition 'no country has one president' only if they both suppose *distributively*; where the first proposition means 'country A has one president, and country B has one president…and country Z has one president' and the second proposition means 'country A does not have one president, country B does not have one president, etc.' But if the first proposition supposes *collectively* while the second proposition supposes *distributively*, then these are not necessarily opposed—they could both be true if the first proposition means 'all the

[118] Cfr. In I Peri Herm., lect. 10 sqq.

[119] In I Peri Herm., lect. 9, nn. 8 et 9; ibidem, lect.12, n 7.

countries together are united under a single president' and the second proposition means 'no individual country has its own president'. So once again, the supposition must be the same.

Furthermore, in *accidental supposition* the terms must refer to the same time. 'Peter is laughing' and 'Peter is not laughing' are only opposed if they suppose for the same time. Otherwise, they might be true together; e.g., they could both be true if Peter was laughing when I said the first proposition, and not laughing when I said the second proposition. In *essential supposition*, however, verification in the same time is not necessary; e.g., 'man is animal' will be opposed to 'man is not an animal' no matter when it is said.

Now, opposition can be found between two of any kind of proposition: categorical, modal, or compound. We examine the opposition of each kind in turn, beginning with categorical since it is the basis for the other two.

Opposition among Categorical Propositions

Remember the categorical proposition is one which composed of one subject, one predicate, and one copula: 'man is an animal'. And we listed four kinds of categorical propositions, universal affirmative (which we called A), universal negative (which we called E), particular affirmative (which we called I), and particular negative (which we called O). There are also singular affirmative and singular negative propositions (we might call these A1 and E1, respectively—we'll examine the opposition of these singular propositions at the end).

Now, all of these propositions admit of different relations between each other. For example, we'll see that the A proposition is related to the O proposition as its contradictory (e.g., 'every man is just' is the contradictory of 'some man is not just'). Specifically, there are four kinds of relation between these propositions:[120]

- Contradiction
- Contrariety
- Sub-contrariety
- Sub-alternation

Only the first three are, strictly speaking, kinds of opposition: this is because two propositions can be opposed in truth *and* falsity (contradiction), or they can be opposed in truth alone (contrariety), or they can be opposed in falsity alone (sub-contrariety). The fourth relation (sub-alternation) is not really opposition, as we'll see. We deal with each of these in turn.

Contradiction

Contradictory propositions are defined as propositions opposed in truth and falsity.[121] This means that the truth of one excludes the truth of the other, and the falsity of one excludes the falsity of the other; i.e., they cannot both be true at the same time and they cannot both be false at the same time. These propositions purely and simply deny one another.

[120] Cfr. In I Peri Herm., lect. 11.

[121] In I Peri Herm., lect. 9.

Consider: 'every man is talented'. The contradiction of this, the pure and simple denial of this, would be to say something equivalent to 'it is not true that every man is talented', or rather 'not all men are talented'. This is expressed by saying 'some man is not talented'—one example of an untalented man would destroy the original proposition. In this way, the original proposition is simply shown to be false.

Contradiction occurs between an A proposition and an O proposition, and between an E proposition and an I proposition. Here are some examples:

Every man is just (A) – some man is not just (O)
All lawyers are crooks (A) – some lawyers are not crooks (O)
No country is well constituted (E) – some country is well constituted (I)

Because contradiction is opposition in truth and falsity, the following rules can be deduced.

1. Contradictory propositions can never be true together.
2. Contradictory propositions can never be false together.
3. One contradictory proposition *must* be true and one *must* be false. Therefore, the truth of one lets you know with certainty that the other is false, and the falsity of one lets you know that the other must be true.

Contrariety

Contrary opposition is defined as opposition in truth but not in falsity—that is, two propositions which cannot be true together, but which can be false together. This occurs between the A proposition and the I proposition (e.g., all dogs go to heaven vs. no dogs go to heaven; every man is just vs. no man is just).

Now, the A and the E propositions are universal; the predicate is being said of (or removed from) *all* the inferiors. When I say 'all dogs go to heaven', 'go to heaven' can be said of each and every individual dog. The I proposition and the O proposition are less extended formulations of the A and E. 'Some dogs go to heaven' is a less extended version of 'all dogs go to heaven' (neither of these is true, by the way). The contrary of 'all dogs go to heaven' not only denies this original proposition, but it also denies the less extended version. 'No dogs go to heaven' is opposed to *both* 'all dogs go to heaven' *and* 'some dogs go to heaven.'

Because a contrary proposition is opposed to another universal *and* that other universal's less extended counterpart, you might be led to believe that contrariety is a greater kind of opposition than contradiction. But this is not so. As the definition says, contradictory propositions are opposed in both truth and falsity; but contraries are only opposed in truth. It cannot be true that 'every man is an American' (A) and at the same time that 'no man is an American' (O)—one of these must be false. However, there is still the possibility that they are *both* false. If you find only one man who is American, then it cannot be true that all men are American. But likewise, because you've found one man who is an American, it cannot be true that *no man* is an American. Hence, the A and the E can be false together.

Because contraries are opposed in truth but not in falsity, the following rules can be deduced:

1. It is impossible for contraries to be true at the same time. If contraries could be true at the same time it would follow that contradiction could be true. This is because, if the A proposition is true, then its less extended version (i.e., the I proposition) would also be true. Again, if the E proposition is true, then its less extended version (i.e., the O proposition) would also be true. So

if the contraries (i.e., A propositions and E propositions) could be true at the same time, then the I propositions and the O propositions would be true at the same time. Therefore, the A, E, I, and O propositions would all be true. That is, contradictories would be true, and this violates the principle of non-contradiction.

To put this into examples, if it was possible for contraries to be true, then both of these would be true: 'every man runs', 'no man runs'. But if these are true, then their less extended version would also be true: 'some man runs', 'some man does not run'. So, it would be true that 'every man runs', 'no man runs', 'some man runs', and 'some man does not run'. But 'some man runs' is a contradiction of 'no man runs', and 'some man does not run' is a contradiction of 'every man runs'. Therefore, contradictories would be true together. But this is impossible.

So, if one contrary is true, you know for certain that the other one is false.

2. It is impossible for contrary propositions *in necessary matter* to both be false: 'every man is rational' vs. 'no man is rational'—because the predicate necessarily pertains to the subject, if one of these is true, the other must be false.
3. It is possible for both proposition to be false *in contingent matter*: 'every man is just' vs. 'no man is just'—one proposition affirms the predicate of the entire extension, the other proposition denies the predicate of the entire extension. There is still the possibility that the predicate pertains to only a *portion* of the extension.

Sub-Contrariety

Sub-contrariety is defined as opposition in falsity but not in truth. That is, they cannot both be false, but they might both be true. This occurs between the particular propositions: the I proposition and the O proposition (e.g., 'some man is just' vs. 'some man is not just').

Strictly speaking, these two proposition (i.e., the I and O) do not always deny each other. Let's say men A are just and men B are not just. When I say 'some men are just' and 'some men are not just' the subject of each is different; the subject of the first proposition supposes for (or refers to) men A, while the subject of the second propositions suppose for (or refers to) men B. Hence, it is possible that they are both true.[122]

Because these are opposed in falsity but not in truth, the following rules can be deduced:

1. It is impossible for sub-contraries to be false together. If it is false that 'some man runs', it must also be false that 'every man runs'. And if it is false the 'some man does not run' it must also be false that 'every man does not run'. So if 'some man runs' and 'some man does not run' are true at the same time, it follows that 'every man runs' and 'every man does not run' are false at the same time. Therefore, it would be false that 'some man runs', 'some man does not run', 'every man runs', and 'every man does not run'. But these are all contradictories of each other and contradictories cannot be at the same time. So if one of these sub-contraries is false you can know certainly that the other is true.
2. It is impossible for sub-contraries *in necessary matter* to be true at the same time. If it is true that some man is an animal, it cannot be true that some man is not an animal because the predicate pertains to the essence of man.

[122] In I Peri Herm., lect. 11, n. 2.

3. It is possible for sub-contraries in *contingent matter* to be true at the same time. This is the case if each subject refers to a different portion of its extension: some man is white, some man is not white.

Subalternation

I mentioned that the I proposition (e.g., some man is just) is the less extended formulation of the A proposition (e.g., every man is just)—less extended because the predicate is said only of a portion of the subject's possible inferiors. Likewise, the O proposition (e.g., some man is not just) is the less extended version of the E proposition (e.g., no man is just, which can also be phrased 'every man is not just'). This relationship between less extended and more extended proposition is called *subalternation.* It is defined as the relationship between two materially identical (i.e., same subject and predicate) affirmative propositions of which one is universal and the other particular, and between two materially identical negative propositions of which one is universal and the other particular. The universal proposition (e.g., every judge is cruel) is called *subalternating* while its particular formulation (e.g., some judge is cruel) is called *subalternated.*

The subalternating and subalternated are not, properly speaking, opposed. In fact, the truth of the subalternating necessitates the truth of the subalternated. If every single judge is cruel, then it would be impossible not to have some judge who is cruel. So if you know that the subalternating is true, you can be certain that the subalternated is true. Likewise, if it isn't true that some judge is cruel it is impossible that all judges be cruel. So from the truth of the subalternating you can be certain about the truth of the subalternated, and from the falsity of the subalternated, you can be certain about the truth of the subalternating.

Furthermore, if the proposition is in necessary matter, then the falsity of the subalternating guarantees the falsity of the subalternated. For example, because they are geometric figures every triangle must have the same number of sides: having an equal number of sides is essential for every triangle. So if I know it is false that 'every triangle has two sides', I can be certain it is false that 'some triangle has two sides'.

Singular propositions are also subalternated to the universal. So, if we know that every American is subject to the U.S. Constitution, and we know that John falls into the extension of 'every American', we can be certain that John is subject to the U.S. Constitution. You can begin to see the foundation of the syllogism here ('every American is subject to the Constitution, but John is an American, therefore, John is subject to the Constitution').

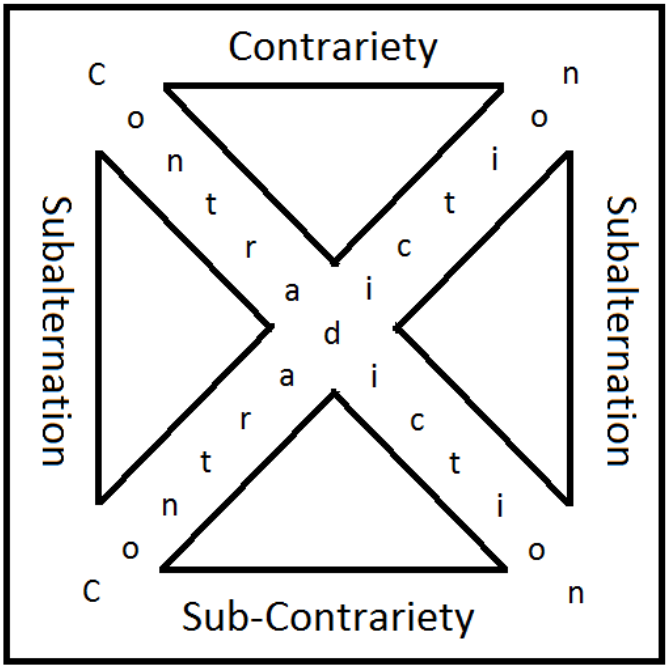
So we have three relations of opposition. And among these three we can find a gradation. The *most* opposed propositions are contradictories—e.g., 'every man is smart' vs. 'some man is not smart'. These are opposed in quantity (universal vs. particular), in form (affirmation vs. negation), and in truth and falsity (one must be true and one must be false). Contradictory propositions totally destroy one another, leaving nothing in common. The other kinds of opposition *do* leave something in common.

The *next* grade of opposition is given to contraries—e.g., 'every man is smart' vs. 'no man is smart'. These are opposed in form (affirmation vs. negation) and in truth (if one is true the other is false), but not in quantity (both are universal) and not in falsity (they can both be false in contingent matter).

The *least* opposition is found in sub-contraries. And this opposition is only in form (affirmation vs. negation) and in falsity (they cannot both be false). In fact, the opposition of sub-contraries is more apparent than real because the subject supposes for different individuals—e.g., some men are smart (referring to group A) and some men are not smart (referring to group B).

Graphically, the relations of contradiction, contrariety, sub-contrariety, and subalternation can be expressed with what tradition has come to call 'the square of opposition'.

A (All men are just) E (No men are just)



I (Some men are just) O (Some men are not just)

As you can see, each of the four propositions (i.e., A, E, I, O) are placed at different corners. The A proposition and the O proposition, the E proposition and the I proposition are the furthest apart because they are contradictories with the greatest degree of opposition. The A proposition and the I proposition, as well as the E proposition and O proposition are related as higher to lower because the universal propositions are related as superiors to the particular propositions (i.e., they have greater extension than the particular propositions).

We may also add a truth table to help see the relation of truth and falsity between the propositions.

Truth Table for Opposed Propositions								
A (All men are just)	T	F	?	F	F	?	F	T
E (No men are just)	F	T	F	?	?	F	T	F
I (Some men are just)	T	F	T	?	?	T	F	T

O (Some men are not just)	F	T	?	T	T	?	T	F

The highlighted square in each column indicate the truth being assumed. From the knowledge of this proposition's truth we can tell which other propositions in the column we can be sure of. So in the first column we assume for the sake of argument that the proposition 'all men are just' is true. From this, we can be certain that it is false to say 'no men are just', and if all men are just it must be true to say 'some men are just', and, again, if all men are just is must be false to say 'some men are not just'.

And if we know that it is false that all men are just (fifth column), we know that its contrary must be true (i.e., some men are not just), but we can't be sure about the others. If it is false that *all* men are just, it *might* be true that all men are not just, and it *might* be true that *some* men are just; from the truth of the first proposition we cannot be certain about these other two.

The square of opposition and the truth table are tools to help you understand the relationship between opposed propositions—they are not intended to be substitutes for an *understanding* of opposition. So, don't just memorize the truth table, try to understand the relationship between the propositions.

Exercises: Indicate what kind of opposition there is between the following propositions:

1. **Every rich man is proud / no rich man is proud – Contrary**
2. **No philosopher is mistaken / some philosophers are not mistake – subalternate**
3. **Some soldiers are cowards/no soldier is a coward – contradictory**
4. **Some birds have wings/some birds have not wings – sub-contrary**
5. **Some men are artists/every man is an artist – subalternation**

Give the contradictory, contrary/subcontrary, and subalternating/subalternated for each of the following propositions:

1. **Every truth is not good to say – some truth is good to say, every truth is good to day, some truth is not good to say**
2. **Some truth is necessary – no truth is necessary, some truth is not necessary, every truth is necessary**
3. **No bird is long-legged – some bird is long-legged, every bird is long-legged, some bird is not long-legged**
4. **Some philosophers are not virtuous – every philosopher is virtuous, some philosophers are virtuous, not philosophers is virtuous**
5. **Every parallelogram which has a right angle is a rectangle – some parallelogram which has a right angle is not a rectangle – no parallelogram which has a right angle is a triangle, some parallelogram which has a right angle is a rectangle**
6. **Some quadrilaterals are square – no quadrilaterals are square, some quadrilaterals are not square, every quadrilateral is square**
7. **Every acid contains hydrogen – some acid does not contain hydrogen, no acid contains hydrogen, some acid contains hydrogen**
8. **Some acid contains oxygen – no acid contains oxygen, some acid does not contain oxygen, all acid contains oxygen**

9. Some humanists do not know Greek – every humanist knows Greek, some humanists know Greek, no humanist knows Greek
10. No angle is more than two right angles – some angle is more than two right angles, every angle is more than two right angles, some angle is not more than two right angles

Fill in the blanks with true, false, or unknown:

1. If A is true, O is F, E is F, I is T
2. If A is false, O is T, E is ?, I is ?
3. If E is true, I is F, A is F, O is T
4. If E is false, I is T, A is ?, O is ?
5. If I is true, E is F, A is ?, O is ?
6. If I is false, E is T, A is F, O is T
7. If O is true, A is F, E is ?, I is ?
8. If O is false, A is T, E is F, I is T

Assume that the first proposition in each set is true, and, using it as a norm, indicate if the remaining propositions are true, false, or unknown. (N.B., there are some trick questions in here! Remember, strictly speaking, opposition must be affirmation/negation of the same predicate of the same subject)

1. ALL STUDENTS LIKE TO HAVE RECREATION
    a. No students like to have recreation. F
    b. Some students like to have recreation. T
    c. Some students do not like to have recreation. F
    d. All who like to have recreation are students. Not a case of opposition
2. SOME ATHLETES LIKE TO GO TO BED EARLY
    a. All athletes like to go to bed early. ?
    b. Some who like to go to bed early are athletes. Not a case of opposition
    c. Some athletes do not like to go to bed early. ?
    d. Those who are not athletes like to go to bed early. Not a case of opposition
    e. No athletes like to go to bed early. F
3. NO ONE LIKES TO BE TALKED ABOUT BEHIND HIS BACK
    a. Some people do not like to be talked about behind their backs. T
    b. Everyone likes to be talked about behind his back. F
    c. Some people like to be talked about behind their backs. F
    d. Everyone dislikes to be talked about behind his back. Not a case of opposition
    e. A few people like to be talked about behind their backs. F
4. SOME HOCKEY PLAYERS ARE NOT FAST IN HOT WEATHER
    a. Some who are not hockey players are fast in hot weather. Not a case of opposition
    b. Some who are not fast in hot weather are hockey players. Not a case of opposition
    c. No hockey players are fast in hot weather. ?
    d. All hockey players are fast in hot weather. F
    e. Some hockey players are fast in hot weather. ?
5. SOME SPECIALISTS ARE SURGEONS
    a. Some specialists are not surgeons. ?
    b. Some non-specialists are surgeons. Not a case of opposition
    c. Some surgeons are not specialists. Not a case of opposition
    d. No specialists are surgeons. F
    e. Some who are not specialists are surgeons. Not a case of opposition

Equipollence

Broadly speaking, equipollence means the identity of two propositions—when two different propositions mean exactly the same thing: 'every man is an animal' means the same thing as 'every man is not non-animal'. Strictly speaking, equipollence is of two types, *identical or logical equipollence* and *opposed or linguistic equipollence*. The first means the equality of two propositions one of which is affirmative, the other is negative. So, 'every man is an animal' is equipollent to 'every man is not non-animal'.

Linguistic equipollence is the ability for one proposition to be made equal in meaning to an opposed proposition by the addition of a negative particle such as 'not'. For example, 'every man is white' and 'some man is not white' are contradictory opposites. They in no way mean the same thing. Nevertheless, they can be *made* equivalent by negating the universal supposition of the first proposition's subject: '*not* every man is white' means the same as 'some man is not white'. Generally, when traditional logicians speak of equipollence, they mean this ability to be *made* equal. We will look at both kinds of equipollence.

Logical Equipollence

Logical equipollence is the identity in meaning of two propositions one of which is affirmative the other is negative. The process of turning a proposition into its logical equipollent is called 'obversion' by some logicians. This is the ability for an affirmative proposition to be made negative and for a negative proposition to be made affirmative *without changing the truth of the proposition*.

Often, when we change a proposition from affirmative to negative or vice versa (we'll refer to this change from now on as a change in formal quality, or more simply a change in quality), we risk changing the truth of the proposition. So, from 'every man is an animal' to 'no man is an animal'. These cannot both be true because they are contraries.

Yet, what is signified by an affirmative can also be signified by a negative. The affirmative proposition 'every man is an animal' can also be signified by a negative proposition—namely, 'every man is not non-animal'. We can do this because, if you will recall, 'non-animal' is the contradiction of the concept 'animal' and concepts opposed by contradiction cannot exist together in the same subject, in the same way, at the same time. So, if one thing can be predicated of a subject, its contradictory cannot. Hence, from the truth of one predication which affirms some predicate of a subject, we can be sure of the truth of another proposition which *denies* the *contradiction* of that first predicate. So from 'every A is B' we can go to 'every A is *not* NON-B', and vice versa—since these mean the exact same thing, if one is true the other is true. Since there is no middle ground between contradictory concepts (as we discussed in the section on Pertinence of Repugnance) if one concept cannot be said of a subject, its contradictory most certainly can.

So, to obvert a proposition, i.e., to give a proposition's equipollent involves two steps:

1. Change the quality of the copula (from affirmative to negative or vice versa)
2. Change the predicate to its contradictory

I should point out that the change in predicate *must* be to the contradictory concept and *not* to the contrary, privation, or relation (cfr. our discussion of opposite concepts to recall what these are). To change it to anything else admits more than the original proposition. Consider this: 'Peter is not high'.

The equipollent of this is 'Peter is non-high'. The equipollent *is not* 'Peter is low'. The original proposition merely removes or negates a location in place. To say 'Peter is low' *gives* a location in place, and therefore it is not identical with the first proposition. Again, while it might be true that 'Peter is not blind', the equivalent of this is not 'Peter is seeing'. The equivalent is 'Peter is non-blind'. To say 'Peter is not blind' is merely to negate that Peter has a privation; while to say 'Peter is seeing' is to grant him a positive quality. So, we couldn't say 'a stone is not blind' and then conclude that 'a stone is seeing'—no, we conclude 'a stone is non-blind'. It may be a matter of fact, that if a person is not blind they must be seeing, but this is known for other reasons that what is given in the original proposition. Take another example: '12 is not odd'. The equivalent to this is *not* '12 is even'; the equivalent is '12 is non-odd'. It may be the case that 12 is even, but this is not gathered from the original proposition; it is gathered from *another* proposition (namely, 'every number is either odd or even') and then discovered by a syllogism (i.e., if a number is not odd, then it is even; but 12 is not odd; therefore, it is even).

I also point out that the passage from a proposition to its equipollent (as well as the passage from a proposition to its converse, as we'll examine below) is not reasoning. Reasoning leads us to new truth, but these new propositions express the exact same thing, just in a different way.

Linguistic Equipollence

This is property of making two opposed propositions to be equal by adding a negative particle to the same subject and same predicate. Now, this kind of equipollence is primarily concerned with language and not with thought. For example, in English, when I place 'not' at the beginning of 'not every man is just' it has the grammatical function of negating 'just' of some men in the extension of 'every man'. But not every language allows us to equalize two propositions simply by adding negative particle. Opposed equipollence is the property that some languages have to express opposite propositions simply by adding a word equivalent to 'not'.

So the rules given for opposed equipollence pertain to English, and especially to Latin, but not to every language. The rules are:

1. To turn a proposition into its *contradictory*, place a negative particle before it: 'every man is just' can be turned into 'some man is not just' by saying 'not every man is just'. The sense in English (and in Latin) given to this proposition is that some men are just and some men are not just. 'Not every man is just' has the same sense in English as 'every man, with the exception of some, is just', and this has the same sense as 'some men among all men are not just', or in other words, 'some men are not just'.
2. To turn a proposition into its *contrary*, place the negative term after the subject and before the predicate: 'every man is just' becomes equal to 'no man is just' by saying 'every man is not just'; or 'every man runs' becomes equal to 'no man runs' by saying 'every man does not run'.
3. To turn a proposition into its subalternation, place the negative term before and after the subject: 'every man is just' becomes equal to 'some man is just' by saying 'not every man is not just'. And in Latin, 'some man is just' is turned into 'every man is just' by saying 'not some man is not just'; which is scarcely intelligible in English.

As a bit of trivia, the Latins used a great many rhymes and verses to help remember logical and grammatical rules such as those belonging to equipollence. The one for equipollence was this:

Prae *contra****dic****. Post* ***con****tra. Prae* ***post****que sub****alt****er.*

Meaning the negative particle comes *before* (*prae*) the subject in the case of contradictories, *after (post)* in the case of contraries, *before and after (prae postque)* in the case of subalternation. The underlined syllables are accented to make this into a rhythm.

The English and Latin languages have other expressions that equalize opposites with the word 'not', such as these expressions dealing with time:

- A is not sometimes B = A is never B = No A is B
- A is not always B = A is sometimes not B = Some A is not B
- A is not never B = A is sometimes B = Some A is B
- A is not sometimes not B = A is always B = Every A is B
- A is always not B = A is never B = No A is B
- A is never not B = A is always B = Every A is B

These will never cause you difficulty as long as you examine them in terms of predication:

1. is something being *affirmed* of another, or *denied* of another?
2. And of *how many instances* of that other is something being affirmed or denied?

So in the expression 'A is not sometimes B', some instances of B (or rather, some B) is being denied of every A. That is, we're saying it is false that 'some A is B'. But if this is false, its *contradictory* must be true. And the contradictory of 'some A is B' is 'no A is B'.

Conversion

Conversion is the property that a proposition has of being able to invert the subject and predicate without changing the truth of the proposition. For example, these two propositions signify the exact same truth: 'every man is an animal' and 'some animal is a man'. 'Man' and 'animal' have been switched but the meaning of the proposition is the same.

Your first reaction might be to ask if conversion is still nothing more than a grammatical property; aren't we just phrasing the same thing differently? The answer is no. The primary object of thought is different in each case.

To understand this, we have to recall a topic mentioned in passing some time ago: indirect propositions. Indirect propositions are very much misunderstood even by traditional logicians. They think that indirect propositions are simply propositions in which a subject is being used particularly which, if taken universally, would have greater extension than the predicate. For example, 'some animal is man.' Considered absolutely, 'animal' has greater extension than 'man'. Hence, in forming a proposition it would seem to make more sense to put animal as the predicate and man as the subject; so whenever what, considered in itself, has the greater extension is used as the subject, it is called an indirect proposition.

This is incorrect. In a direct proposition, our primary object of thought, the thing being primarily supposed for and to which we are applying some other nature, is taken as the subject: in 'man is an

animal' the thing that I'm talking about is human nature and I'm qualifying human nature—I'm determining and clarifying it—by saying that animality is found within it. This is direct because the object of my predication is fixed before predication takes place. Again, if I say 'Peter is a wise man', the object of my predication is specified before predication takes place—this is the easiest way for judgments to be communicated to others because it determines what is being judged about before the actual judgment takes place.

Now, think of how Shakespeare (or even Yoda) would state the proposition 'Peter is a wise man'. Shakespeare might likely say 'A wise man, is Peter'; or 'a wise man, be he'. In Shakespeare's style, the predication is fixed before the supposit—before we know about what the judgment is being made. This has an oratorical beauty about it, because it builds up a certain suspense before resolving the judgment. But it is more work for the mind. We don't know the subject—we don't know the thing we're talking about—before we talk about it. This is indirect predication. And it can lead to all kinds of confusion. For example, 'a hat has a man' makes no sense if one takes 'hat' to be the logical subject. Rather, some 'man' is who we're referring to as our object of thought and what we're saying about him is that he possesses a hat.

Conversion of propositions *would* be nothing more than grammatical restructuring *if* we were turning a direct proposition into an indirect or vice versa. But that is not what is happening. When I say 'every man is an animal', the object of my thought, the thing being talked about is human nature taken with universal distributive supposition. Grammatically, I can flip this around and make an indirect proposition by saying 'an animal is every man', but logically the subject of my thought about which predication is being made is *still* human nature with universal distributive supposition. However, when I say 'some animal is man', the object of my thought has changed. I'm no longer saying things about men, I'm saying things about animal nature taken with particular supposition; and what I'm saying about these animals is that human nature can be predicated of them.

So, grammatical conversion can be had without logical conversion because grammatical conversion doesn't necessarily change the object of thought. Logical conversion is when the thing which was being said of the object of though *becomes* the object of thought, and when what *was* the object of thought becomes the thing said about another. And even a logically converted proposition can be stated grammatically in a very similar fashion: so 'every man is an animal' is converted to 'some animal is a man' but it can be stated indirectly as 'man is some animal', understood in the Shakespearian sense (or 'man some animal is').

In logical conversion, the logical subject becomes the logical predicate *without changing the truth of the proposition*—that is, both propositions must express the same truth and nothing more. Sometimes a proposition (called the convertend) can be converted into other proposition (called the converse) simply by switching the subject and the predicate and nothing more: 'some doctors are golfers' can be converted into 'some golfers are doctors'; we've done nothing more than switch 'golfers' and 'doctors'. This is called *mutual* (or simple) conversion. But sometimes, we must do more than just switch the terms. Sometimes we must also change the *quantity* of the proposition. 'Every Californian is an American' cannot be changed into 'Every American is a Californian (Heaven forbid)'. 'Every American is a Californian' expresses more than the original propositions—it says too much because American has a greater extension in the second proposition than in the first (i.e., it refers explicitly to more inferiors than it did in the first). To make it a legitimate conversion—i.e., to make it say nothing more than the original proposition—we need to change the quantity of the proposition as well. Instead of 'every American is a Californian' it should be stated '*some* American is a Californian'. The quantity of the

proposition has been changed in order to keep the same truth, and we call this kind of conversion *non-mutual* (or accidental). If any term in an attempted conversion has *greater* extension that it did in the original convertend, then the conversion is illegitimate. So we cannot go from 'some Americans are not Californians' to 'some Californians are not Americans' because 'Americans' has gone from particular supposition to universal supposition (recall, the predicate in a negative proposition is taken *universally* because the subject is completely removed from its extension). There is also a third type of conversion called *contraposition* which is used for propositions that cannot be mutually *or* non-mutually converted.

Mutual Conversion

Mutual conversion is when the subject and predicate of the proposition are interchanged but the proposition retains the same quantity, formal quality (i.e., affirmation of negation), and truth. So, from 'some teachers are doctors', to 'some doctors are teachers'.

Non-Mutual Conversion

This is when the subject and predicate are interchanged and the quantity of the proposition is changed (i.e., from particular to universal, or from universal to particular), but the formal quality remains the same and the truth remains the same. So, from 'every man is an animal', to 'some animal is a man'.

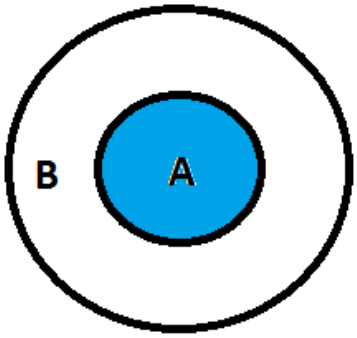
Because mutually converted proposition express the *exact* same thing as their originals, if the original is true or false, so will be the converted, and vice versa. But non-mutually converted propositions express slightly less than the original. They are related to the original as subalternated to subalternating; e.g., the converse of 'every Californian is an American' is 'some American is a Californian'. If the original is true (e.g., every A is B) the converse will be true (e.g., some B is A), but not vice versa. And if the converse is false (e.g., some B is A), the original will be false (e.g., every A is B), but not vice versa.

In order for a conversion to be valid (mutual and non-mutual conversions) two things are necessary.

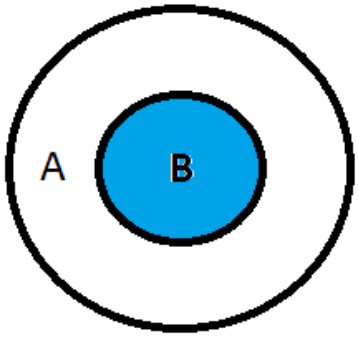
1. The *entirety* of the subject must be converted with the *entirety* of the subject. So, the converse of 'Peter sees a stone' is not 'A stone sees Peter'. Put the original proposition into strictly logical form: 'Peter is something which sees a stone'. This would properly become 'something which sees a stone is Peter'. In the history of math, we find an invalid conversion which gave rise to the 'fourth dimension': mathematicians held that 'every point in space can be assigned an algebraic set' and they concluded 'for every algebraic set there can be assigned a point in space'. In strictly logical form, this should have been 'every point in space is a thing which can be assigned an algebraic set'. And the proper conversion would have been 'some thing which can be assigned an algebraic set is a point in space.'
2. The extensive supposition *must never* be increased. We can't talk about more in the converse than we were talking about in the convertend. We can't say 'some politicians are liars' and then turn this into 'all liars are politicians' because 'liars' in the original was particular (being the predicate) while in the second it is universal; we've gone from talking about some liars to all liars. However, we can go to a *lesser* supposition. It's legitimate to go from 'no dogs are robots' to 'some robots are not dogs', where 'robots' was universal in the convertend and particular in the converse.

So keeping this mind, let's look at which propositions (A, E, I, O) can be converted mutually and/or non-mutually.

We begin with the A proposition, 'every A is B'. Here the predicate is particular because we're dealing with an affirmative proposition (recall our discussion concerning the extension of predicates). If we mutually convert it (i.e., switch the subject and predicate without changing the quantity of the proposition), what happens? Every B is A. But now we're talking about *all* Bs whereas in the original we were only talking about *some* Bs. We've gone from this:

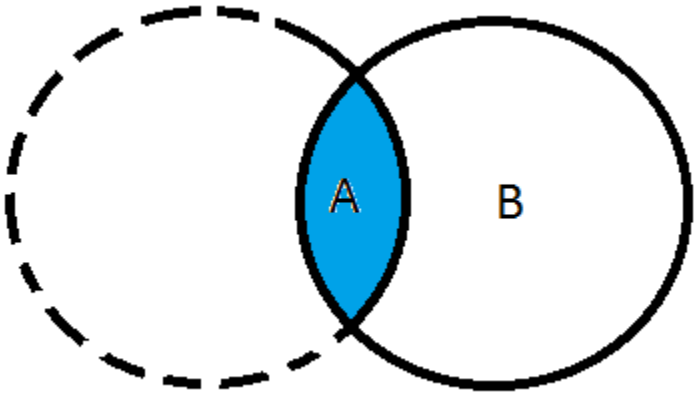


To this:

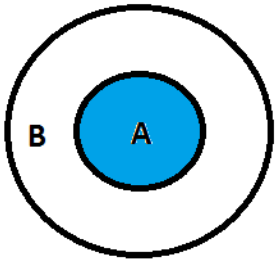


We've increased the extension of B, so the proposition don't mean the same thing. This is invalid.

What about non-mutually converting it (i.e., switching the subject and predicate *and* changing the quantity of the proposition)? We go from 'every A is B' to 'some B is A'. The new proposition means this:



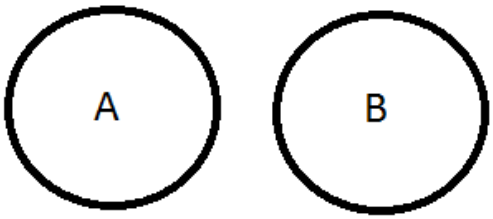
As you can see, a portion of B's extension is A, just as the original proposition:



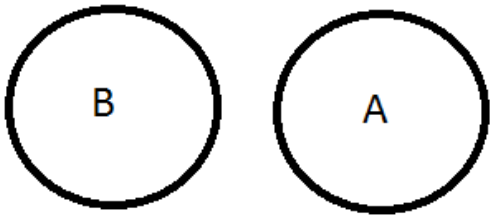
The only difference between the two is that the new proposition doesn't explicitly excludethe *possibility* that some A is not B—hence the dotted line. So it's not quite as definitive as the original proposition which explicitly excludes that possibility (by saying *every* A is within Bs extension). Nevertheless, it is still valid so long as that possibility remains merely a possibility; though it doesn't exclude the possibility, it doesn't affirm it either.

So the A proposition cannot be mutually converted, but it can be non-mutually converted—we cannot go from 'every surgeon is a doctor' to 'every doctor is a surgeon', but we can go to 'some doctor is a surgeon'.

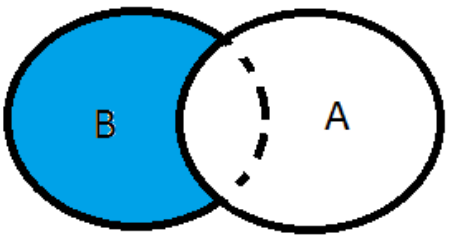
What about the E proposition? Let's take a look: No A is B. Here both terms are universal—A is entirely removed from the extension of B. Thus:



And by mutually converting these we get No B is A. Again, they are both entirely removed from each other:



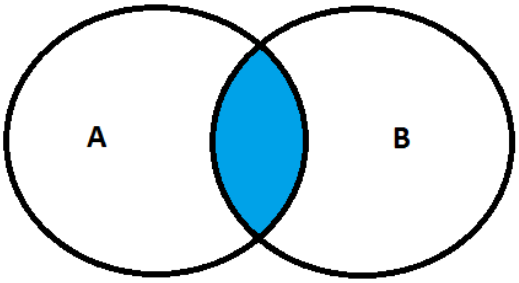
They mean the same thing. Furthermore, since we can go from the truth of the subalternating to the truth of the subalternated, as we learned in the last section, a non-mutual conversion would also be valid for an E proposition: *some* B is not A.



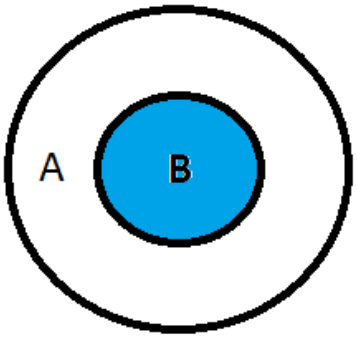
Which, again, does not *explicitly* remove all B from A, but certainly allows for that removal (it does not say 'some B *is* A').

So the E proposition can be converted both mutually and non-mutually. 'No man is a stone' can be converted with 'no stone is a man' and 'some stone is not a man'.

What about the I proposition? Some A is B. Both A and B are particular here. So we can switch these around and they maintain their extension: some B is A. Both propositions mean this:



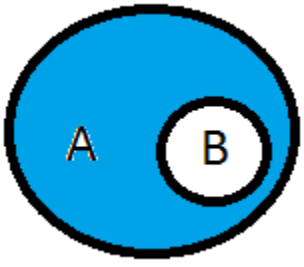
However, we cannot non-mutually convert these (i.e., change the quantity of the proposition as well as interchanging the subject and predicate) because that would be invalid subalternation: we'd go from the subalternate to the subalternating, from the particular to the universal. Instead of 'some B is A' we would get '*every* B is A':



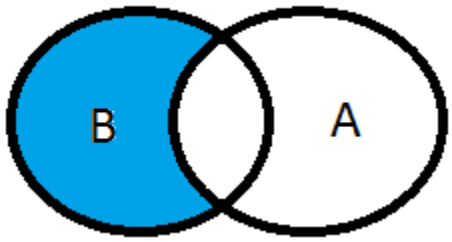
Suddenly, we're not talking about a portion of B's extension, but *all* of its extension. Invalid.

So the I proposition can be converted mutually, but not non-mutually.

And the O proposition? Some A is not B. B is universal here because it is the predicate of a negative proposition; a portion of A is being removed from the entire extension of B. If we mutually convert it, B becomes particular (which is fine), but A goes from being particular to universal. Now a portion of B is being removed from the entire extension of A. The original proposition could have meant this:

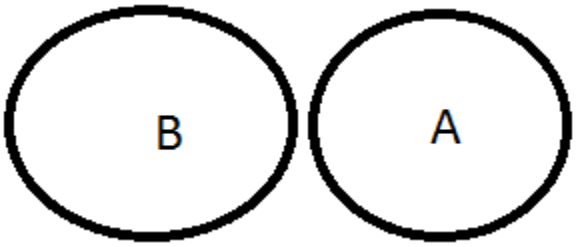


Even though some A is not B, there's still the possibility that all of B was contained in A. But the new proposition excludes the possibility that was in the original:



Hence, the converse says too much. We've gone from 'some doctors are not surgeons' to 'some surgeons are not doctors'.

And the O cannot be non-mutually converted because that would be to affirm the subalternating without being able to affirm the subalternated: to say 'no surgeon is a doctor' without being able to say 'some surgeon is not a doctor'. The new proposition would look like this:



Here is a chart to sum up our findings. If a term goes from greater to lesser supposition in its conversion, I've colored it green because such a change is valid. If a term goes from lesser to greater supposition, I've colored it red because such a change is invalid. If the supposition has remained the same, I left it black.

(A) Every A is B	Mutual	Every B is A
	Non-mutual	Some B is A
(E) No A is B	Mutual	No B is A
	Non-mutual	Some B is not A
(I) Some A is B	Mutual	Some B is A
	Non-mutual	Every B is A
(O) Some A is not B	Mutual	Some B is not A
	Non-mutual	No B is A

So the A proposition and the O proposition cannot be mutually converted. Fortunately, logicians came up with a work around. They discovered a way to interchange the subject and predicate while keeping the quantity the same. And this process, which involves *both* obversion and conversion, is called *contraposition*.

Contraposition

Contraposition is the interchange, not of the subjects and predicate precisely, but of the contradictories of the subject and predicate without changing the formal quality of the proposition (i.e., without going from affirmative to negative or vice versa). Though the A and O cannot be mutually converted, they can be obverted—we can give their equipollents which are identical in meaning to the originals. Now, the equipollent of an A proposition is an E proposition, and the equipollent of an O proposition is an I proposition, as we've seen. And the E and O propositions *can* be mutually converted. For example, 'every man is an animal' is an A proposition and cannot be mutually converted. But its equipollent is the E proposition 'every man is not non-animal'. And the E can be mutually converted: 'every non-animal is not man'. This new conversion of the equipollent of the original can again be obverted to give us the same quality (i.e., affirmation or negation) that we started out with: 'every non-animal is non-man'. This final proposition, 'every non-animal is non-man' is the contraposit of 'every man is an animal.'

So there are three steps in contraposition:

1. Obvert the original proposition: every A is B→every A is not non-B
2. Mutually convert the obverted proposition: every A is not non-B→every non-B is not A
3. Obvert that conversion: every non-B is not A→every non-B is non-A

To take an O proposition as an example: 'some animals are not rational'

1. Some animals are non-rational (obversion)
2. Some non rational things are animals (conversion)
3. Some non rational things are not non-animals (obversion)

Strictly speaking this is not a conversion in the same way that mutual and non-mutual conversion are. In the other types of conversions, what was being thought about becomes what is said of another. In contraposition, none of the objects of thought are the same; the original subject and predicate are replaced with concepts of their contradictories.

ADDENDUM: Singular Propositions

So far, we've been talking about the relationship between universal affirmatives/negatives and particular affirmatives/negatives. It would behoove us to say a few words about singular propositions; how they are opposed, how they are equipollated, and how they are converted (N.B. propositions whose subjects have material, or simple supposition are equivalent to singulars).

1. Opposition of Singulars
    a. Contradiction: the proposition which purely and simply denies a singular is one which has the same predicate and subject but different formal quality; it is when a singular proposition goes form affirmation to negation or vice versa. 'Peter is just' and 'Peter is not just' are contradictories.

b. Contrariety: singular propositions do not have contraries because contraries can be false at the same time, whereas if it is false that Peter is just, it cannot also be false that Peter is not just.
c. Sub-contrariety: again, singular proposition do not have sub-contraries because sub-contraries can be true together, and this only because the predicate can apply to different subjects: in 'some man is just' and 'some man is not just' there can be simultaneous truth only because 'some man' supposes for a different person or group each time. But in 'Peter is just' and 'Peter is not just', the subject supposes for the same individual each time—the same predicate cannot both exist and not exist in the same subject at the same time in the same way.
d. Sub-Alternation: what was said of the relationship between the universal and particular holds true for the universal and singular. If it is true that every man is an animal, it will be true that Peter is an animal. However, it is not the case the 'Peter being such-and-such' means 'every man is such-and-such'.
e. Mutual Conversion: singular affirmatives can be mutually converted *only* if the predicate is indicated as a singular concept: e.g., 'Peter is this man' can go to 'this man is Peter'. In every other instance the quantity of the proposition will change, and so can only be mutually converted: e.g., 'Peter is not stone' is a singular proposition, 'stone is not Peter' is a universal proposition.
f. Non-Mutual Conversion: singular affirmatives can be converted into particular affirmatives (e.g., Peter is a philosopher = some philosopher is Peter, where 'some philosopher' has disjunctive supposition). Singular negatives can be converted into universal negatives (e.g., Peter is not a philosopher = No philosopher is Peter).
g. Contraposition: this is valid for singulars, however, instead of *mutual* conversion as the second step, this will usually be non-mutual, because the contradiction of a finite singular predicate (e.g., man) will always be an infinite concept (e.g., non-man) and therefore not singular; this means the converted proposition will not be singular. Contrapositing a singular is of debatable value.

We can sum up the relation of truth and falsity between the propositions we've spoken of as follows:

Opposition							
Contradiction	T	←→	F				
Contrariety	T	→	F		F	→	?
Subcontrariety	T	→	?		F	→	T
Subalternation							
Subalternating to Subalternated	T	→	T		F	→	?
Subalternated to Subalternating	T	→	?		F	→	F
Equipollence							
	T	←→	T		F	←→	F

Conversion							
Mutual	T	←→	T		F	←→	F
Non-Mutual	T	→	T		F	→	?
	?	←	T		F	←	F
Contraposition	T	←→	T		F	←→	F

An excellent exercise is to take a proposition, give all the possible relations to it (i.e., opposition, equipollence, conversion), assume the truth or falsity of the original, and see if you can determine the truth or falsity of the related propositions.

For example, start with the proposition 'some politicians are socialist'.

1. Contradictory: no politicians are socialist
2. Subcontrary: some politicians are not socialist
3. Subalternate: every politician is socialist
4. Equipollent: some politicians are not non-socialist
5. Converse: some socialists are politicians

Now, assume the truth or falsity of the original and see what the others would be. Let's assume that the original was true. It follows that:

1. F
2. ?
3. ?
4. T
5. T

Now, assume that the original was false. It follows that:

1. T
2. T
3. F
4. F
5. F

EXERCISES:

1. **Convert and obvert the following propositions:**
    a. **All homeschoolers are honor students –**
        i. **Some honor students are homeschoolers,**
        ii. **all homeschoolers are not non-honor students (things which aren't honor students)**
    b. **No ministers are athletes –**
        i. **No athletes are ministers,**

ii. All ministers are non-athletes (people who aren't athletes)

c. Some pitchers are captains –
   i. Some captains are pitchers,
   ii. some pitchers are not non-captains.

d. Some quarterbacks are not artists –
   i. conversion not possible, contraposition is some non-artists are not non-quarterbacks (or some things which aren't artists are not things which aren't quarterbacks)
   ii. obversion is some quarterbacks are things which aren't artists (non-artists),

e. Every block is a square –
   i. some square is a block,
   ii. no block is non-square (a thing which is not a square)

f. Not one room is empty – (i.e., no room is empty)
   i. no empty thing is a room,
   ii. every room is non-empty (a thing which is not empty)

g. Several winners are amateurs – (i.e., some winners are amateurs)
   i. some amateurs are winners,
   ii. some winners are not non-amateurs (things which aren't amateurs)

h. A few players are fast – (i.e., some players are fast)
   i. some fast things are players,
   ii. some players are not non-fast (things which aren't fast)

i. No jumpers are runners –
   i. no runners are jumpers,
   ii. every jumper is a non-runner (a thing which does not run)

j. All dogs are lazy –
   i. some lazy thing is a dog,
   ii. all dogs are not not lazy (things which aren't lazy)

2. For the following propositions, 1) restate the proposition in strictly logical form (if necessary); 2) determine the extension of the subject and predicate; 3) classify it according to quantity and quality; 4) formulate the several propositions related to it by way of opposition, sublaternation, conversion, obversion, and contraposition; and 5) suppose the proposition as true (then as false) and indicate the corresponding truth of the relation propositions (true, false, or unknown).

   a. All mothers love their children.
      i. Strictly logical: all mothers are things which love their children.
      ii. Subject is universal, predicate is particular.
      iii. A proposition (universal affirmative)
      iv. Contrad: some mother do not love their children, contrary: no mothers lover their children, subalternate: some mothers love their children, conversion: some things which love their children are mothers, obversion: all mothers are not things which don't love their children, contraposition: all things which don't lover their children are non-mothers
      v. If true/false:
         1. Contradictory=false/true
         2. Contrary=false/?
         3. Subalternate=true/?

   b. Some liquids are more dense than water.

i. --
ii. Subject is particular, predicate is particular
iii. I proposition
iv. Contrad: no liquids are more dense than water, sub-contrary: some liquids are not more dense than water, subalternate: all liquids are more dense than water, conversion: some things which are more dense than water are liquids, obversion: some liquids are not things which aren't more dense than water
v. If true/false:
    1. Contradictory=false/true
    2. Sub-contrary=?/true
    3. Subalternate = ?/false

c. **Every prudent athletes observes the rules of good health.**
    i. Every prudent athlete is one who observes the rules of good health
    ii. Subject is universal, predicate particular
    iii. A proposition
    iv. Contrad: some prudent athlete is not one who observes the rules of good health, contrary: no prudent athlete is one who observes the rules of good health, subalternate: some prudent athlete is one who observes the rules of good health, conversion, someone who observes the rules of good health is a prudent athlete, obversion: no prudent athlete is someone who doesn't observe the rules of good health, Everyone who doesn't observe the rules of good health is one who is not a prudent athlete.
    v. If true/false:
        1. Contradictory=false/true
        2. Contrary=false/?
        3. Subalternate=true/?

d. **The fireman is an important man in the community.** (N.B. 'The fireman' does not refer to any particular fireman, but to the nature of 'fireman' itself being an important one for the community. It is taken with *simple supposition*—see footnote 111—and therefore has the force of a singular proposition—see the addendum on singular propositions several pages back.)
    i. ---
    ii. Subject is singular (the nature of fireman unified by the mind, see footnote 111), the predicate is particular.
    iii. A1 (singular affirmative) proposition.
    iv. Contradiction: The fireman is not an important man in the community, singular propositions do not admit of contraries or sub-contraries, nor is there properly a subalternate because 'fireman', having simple supposition, is abstracted from all extension (e.g., 'this man is just' places the individual under 'some man' and in turn under 'all men'; 'the fireman' refers to the common nature of firemen but considered as abstracted from any particular one); conversion=some important man in the community is the fireman, obversion: the fireman is not someone who isn't an important man in the community.
    v. If true/false:
        1. Contradictory=false/true
        2. Contrary=NA
        3. Sub-contrary=NA

4. Subalternate=NA

e. Man is sentient
   i. All men are sentient
   ii. Subject is universal, predicate is particular
   iii. A
   iv. Contradiction: some man is not sentient, contrary: no man is sentient, subalternate: some man is sentient. Conversion: some sentient thing is a man, obversion: no men are non-sentient, contraposition: all non-sentient things are non-men.
   v. If true/false:
      1. Contradictory=false/true
      2. Contrary=false/?
      3. Subalternate=true/?

f. Everything worth doing is worth doing well
   i. ---
   ii. Subject is universal, predicate is particular
   iii. A
   iv. Contradiction: some things worth doing are not worth doing well, contrary: no thing worth doing is worth doing well, subalternate: some thing worth doing is worth doing well. Conversion: some thing worth doing well is worth doing. Obversion: Nothing worth doing is something not worth doing well, contraposition: everything not worth doing well is something not worth doing.
   v. If true/false:
      1. Contradictory=false/true
      2. Contrary=false/?
      3. Subalternate=true/?

g. Not every vital principle is an immortal soul.
   i. Some vital principle is not an immortal soul.
   ii. Subject is particular, predicate is universal
   iii. O
   iv. Contradiction: every vital principle is an immortal soul, sub-contrary: some vital principle is an immortal soul, subalternate: every vital principle if not an immortal soul. No conversion possible. Obversion: some vital principle is some thing which isn't an immortal soul. Contraposition: some thing which isn't an immortal soul is not something which isn't a vital principle.
   v. If true/false:
      1. Contradictory=false/true
      2. Sub-contrary = ?/true
      3. Subalternate = ?/false

h. Birds fly.
   i. It might mean 'some birds' or 'all birds'; we'll take it to mean 'some birds are things which fly'
   ii. Subject and predicate are particular
   iii. I proposition
   iv. Contrad.: no birds are things which fly, sub-contrary: some birds are not things which fly, subalternate: all birds are things which fly. Conversion: some things which fly are birds, Obversion: some birds are not things which do not fly.
   v. If true/false:

1. Contradictory=false/true
2. Sub-contrary=?/true
3. Subalternate = ?/false

i. **Some polygon is equiangular**
   i. ---
   ii. Subject and predicate are particular
   iii. I proposition
   iv. Contrad: no polygon is equiangular, sub-contrary: some polygon is not equiangular, subalternation: every polygon is equiangular. Conversion: some equiangular things are polygons. Obversion: some polygon is not non-equiangular.
   v. If true/false:
      1. Contradictory=false/true
      2. Sub-contrary=?/true
      3. Subalternate = ?/false

j. **No polygon is a circle**
   i. ---
   ii. Subject and predicate are universal
   iii. E
   iv. Contrad: some polygon is a circle, contrary: every polygon is a circle, subalternation: some polygon is not a circle. Conversion: no circle is a polygon, obversion: every polygon is non-circle (something which is not a circle).
   v. If true/false:
      1. Contradictory=false/true
      2. Contrary=false/?
      3. Subalternate=true/?

k. **No king who does not respect his obligations to his people is worthy of the crown**
   i. ---
   ii. Subject and predicate are universal
   iii. E
   iv. Contrad: some king who does not respect his obligations to his people is worthy of the crown, contrary: every king who does not…is worthy of the crown, subalternate: some king who does not…is not worthy of the crown. Conversion: no one worthy of the crown is a king who does not…, obversion: every king who does not…is not someone worthy of the crown.
   v. If true/false:
      1. Contradictory=false/true
      2. Contrary=false/?
      3. Subalternate=true/?

l. **Some men are just**
   i. ---
   ii. Subject and predicate are particular
   iii. I
   iv. Contrad: every man is not just, sub-contrary: some men are not just, subalternate: every man is just. Conversion: some just things are men, obversion: some men are not non-just.
   v. If true/false:

1. Contradictory=false/true
2. Sub-contrary=?/true
3. Subalternate = ?/false

3. Indicate the truth value of the second proposition in the light of the truth value of the first (true, false, or unknown).
   a. Some A is B (T) Some B is A _T_
   b. No A is non-B (F) Some non-B is not A _?_
   c. This A is B (T); This A is not B _F_
   d. Not every non-A is B (F); this A is not B _?_
   e. This non-A is B (T); this non-A is not non-B _T_
4. Criticize the following:
   a. Since every law is reasonable, it follows that it is true that some law is reasonable, that every nonreasonable thing is something which is not a law, and that no law is something which is not reasonable; and it follows that it is false that some law is not reasonable, and that everything reasonable is a law.
      i. All follow except the last proposition. To go from 'every law is reasonable' to 'every reasonable thing is law' is an invalid mutual conversion of an A proposition.
   b. Since it is true that every teacher is not a genius, it is true that some teacher is a genius, and false that no teacher is a genius.
      i. In English, to say every teacher is not a genius may mean NO teacher is a genius (then it is an E proposition) or NOT every teacher is a genius which has the force of SOME teacher is not a genius (then is it an O proposition).
      ii. If considered as an E proposition, it would be FALSE that some teacher is a genius, and redundant that no teacher is a genius
      iii. If considered as an O proposition (some teacher is not a genius), it is UNKNOWN if some teacher IS a genius, and UNKNOWN if no teacher is a genius.
   c. The following propositions can all be true together but they cannot all be false together: some birds are doves; some birds are not doves; every bird is a dove; every dove is not a bird.
      i. These propositions CANNOT be true together: some birds are not doves and every bird is a dove are contradictories. Furthermore, if it is true that every dove is not a bird (E proposition) its mutual conversion must be true, no bird is a dove and this is the contradiction of some birds are doves.
      ii. I grant that they cannot all be false together. The first two are sub-contraries and these cannot be false at the same time. Neither can the contradictory propositions.
   d. It is not true that all Hibernians are not drinkers, because it is certainly true that several are.
      i. This is correct. 'No Hibernians are drinkers' and 'some Hibernians are drinkers' are contradictory, and contradictories cannot be true together.
   e. Since it is true that some logic teachers are not idiots, it follows that some are idiots. But if some are idiots, it must be false that none of them are idiots. Hence, we can establish the fact that all logic teachers are idiots from the fact that some logic teachers are not idiots.
      i. It does not follow that if some are idiots, then some are not idiots because one sub-contrary can be true while the other is false.

ii. **It does follow that the truth of 'some logic teachers are idiots' rules out the truth of 'no logic teachers are idiots' because they are contradictories.**
iii. **Far from establishing 'all logic teachers are idiots', the proposition 'some logic teachers are not idiots' rules out its truth because they are contradictories.**

f. **Some husbands have wives, if all wives have husbands.**
   i. **This does not follow. It would appear to be a valid conversion: all A is B→some B is A. However, the predicate in the original is not the same as the subject in the converted. In strictly logical form, 'all wives have husbands' means 'all wives are THINGS WHICH HAVE HUSBANDS'. The apparent conversion in strictly logical form is this 'some husbands are THINGS WHICH HAVE WIVES'. The valid conversion would be this: 'SOME THINGS WHICH HAVE HUSBANDS are wives'.**

Reasoning

In judgment the intellect grasps truth. Whereas in simple apprehension we merely conceive the nature or quiddity of a thing, in judgment we declare something about this quiddity—we say that it has such-and-such a property or it has this-or-that quality or even something as simple as 'it exists'. In judgment we declare that 'this is the way things are' and we have truth insofar as our judgment really does mirror reality.

But the intellect cannot grasp everything there is to know about reality at a single glance. There is no one judgment that sums up all we can know. Instead we proceed slowly and often with great difficulty from one truth to another. And though it is true that some of our judgments are immediate (as we discussed when treating of judgments' origins), there are still many things which are neither factually nor self-evident. So, assenting to these judgments requires a motive other than just knowing what the terms mean. Making evident propositions which are not self-evident or factually evident is done by reasoning. Though these propositions are not immediately clear to us, they become clear through the help of other propositions which *are* immediately evident. We combine previous judgments that we know to be true, and from their combination the mind moves to knowledge of a new proposition which becomes evident in the light of the others. Reasoning is *the act of the intellect by which it acquires knowledge of a new truth by means of truths already known.* It is the process of moving to a new judicative proposition contained potentially or virtually in previous judicative propositions.

Take this proposition: *every physical body is corruptible*. This proposition is in no way self-evident. In fact, some scientists even deny it. But we can *make* it evident. We can take previously known and better known propositions like these: 'to be corruptible is to be capable of decomposition', and 'everything which is composed can be decomposed' and 'all bodies are composed of parts'. Because all bodies are composed, all bodies are capable of being decomposed, and the ability to be decomposed is precisely what it means to be corruptible.

So we say that reasoning is an *act of the intellect*. This is what it has in common with simple apprehension and judgment. It is a step that the intellect takes to perfect itself. Since the natural function of the intellect is to know truth, the intellect becomes more naturally perfect by acquiring more truth. Reasoning is one of the steps along that path.

And we say that it acquires truth *by means of truths already known*. While some truths—i.e., immediate propositions—can be known independently of others, reason proceeds by coordinating and subordinating truths. This is how it differs from judgment. When the intellect places several known truths together and compares them, it is moved at the very same instant—the exact moment when it sees the relationship between these truths—to formulate a new judicative proposition. Reasoning consists precisely in this passage, in this 'discursive movement' as it is called, in this instantaneous passage from the recognition of several old truths, to the recognition of a new truth.

It isn't sufficient that one proposition merely occur to us *after* another proposition. This is simply succession, not reasoning. Nor is it sufficient that we recognize that a proposition can be stated in several ways as in conversion and equipollence. This is not to proceed to a new truth, but merely to restate an old truth in a different light. Reasoning happens when the old propositions *cause* us to assent to a new proposition, a new truth that we didn't know before.

Let's take a concrete example. Here's one from a very disturbing philosopher by the name of Leibnitz.

"Since happiness consists in peace of mind, and since durable peace of mind depends on the confidence we have in the future, and since that confidence is based on the science we should have of the nature of God and the soul, it follows that that science is necessary for true happiness."

Leibnitz is saying something to this effect:

(A: Everything necessary for peace of mind) is (B: necessary for true happiness).
But (C: the science of God and soul) is (A: something necessary for peace of mind).
Therefore, (C: the science of God and soul) is (B: necessary for true happiness).

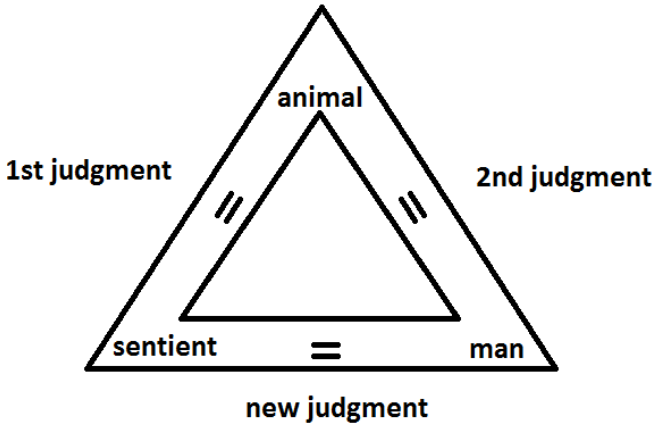
We can substitute letters for the terms in the propositions and we would get this:

A is B
C is A
Therefore, C is B

Leibnitz is uniting 'science of God and soul' with the concept of 'something which is necessary for true happiness' by means of a third term 'something necessary for peace of mind'. This is reasoning. This is logical discourse. It happens when we perceive that two concept known to be equal to the same thing, are recognized to be equal to each other. Take this simple example:

Every animal is sentient.
<u>But man is an animal.</u>
Therefore, man is sentient.

The first two judgments are called the premises because they are set forth (from the latin *praemittere*). These are judgments which have already been made by the mind. The third judgment is called the conclusion or consequent because it is a judgment that the mind is *forced* to make as a consequence of comparing its previous judgments. Reasoning consists precisely in the previous judgments causing the mind to make the third judgment. And the mind is forced in this way because it perceives that the two concepts joined in the conclusion (e.g., the concepts of 'man' and 'sentient') are each equal to a third concept (e.g., animal nature), and so equal to each other. Thus:



So reasoning is analogous to motion. It is moving to some new truth by way of old truth. And strictly speaking the premises, the previously made judgments, are the *cause* of the new judgment; the new

judgment is the effect of comparing the previously known truths. The property that judgments have of being able to cause a conclusion is known as inference. When judgments are such that their combination causes a new judgment, they are said to have valid inference. When a new judgment is not really and truly caused by previous judgments (though it may appear to be) we have invalid inference.

Furthermore, the conclusion cannot be caused by previous judgments if we haven't already made those judgments. That is, the premises must be *foreknown*. Only then does the mind see the new truth as being necessarily accepted. This is why, even though we can explain a perfectly valid argument to people, they do not accept the conclusion: they are not sufficiently convinced of the premises. Finally, if any mediate judgment is to be certain, it must ultimately rest on immediate judgments. This is because a mediate judgment is known to be true only in the light of foreknown judgments. And if these judgments are themselves mediate, then they are known to be true only in the light of other previously known judgments. If we don't come to a stopping point, to judgments which are not made evident by previous judgments but are immediately evident, then no judgment will ever be certainly true. We will see that, in the end, all reasoning will rest on immediate judgments.

Now, to be clear, reasoning consists precisely in the perception that the new proposition follows from the previously known propositions. Just like the psychological act of judgment, reasoning happens in an instant—in the exact moment that the new proposition is perceived to be a consequent or to follow from the other propositions. And just as the act of judgment (which is simple) is *signified* by the proposition (which is complex, being composed of terms), so the act of reasoning (which is simple) is *signified* by something complex. What signifies the act of reasoning is called the argument or syllogism.

There are three general kinds of reasoning, depending on whether we go from

1) universal judgments to a universal, particular, or singular judgment (this is called deduction); or
2) from singular judgments to a universal judgment (this is called induction); or
3) from singular judgments to a singular judgments (this is called exposition).

Hence, there are three basic kinds of syllogisms:

1) the deductive syllogism (e.g., every animal is a substance, but every man is an animal, therefore, every man is a substance);
2) the inductive syllogism (e.g., body A is heavy, and body B, and body C…, therefore, all bodies are heavy);
3) the expository syllogism (e.g., Peter is the president, but Peter is a teacher, therefore, a teacher is the president)

We will look at each of these in turn, but there are other clarifications which need to be made first; beginning with the nature of reason's sign, the argument.

The Sign of Reasoning: The Argument or Syllogism

We will discuss the notion of argumentation first. Then we will examine the elements or parts of an argument. Then we will list the general rules which apply to every argument. Then we will divide argumentation into its various kinds and examine them one by one.

Notion of Argumentation

Argument is oration signifying the sequence or inference of one truth from other truths. It is oration, and in this it agrees with the proposition. But unlike the proposition it doesn't simply state several truths, rather it indicates that knowledge of one proposition is caused by a knowledge of other propositions; that, given the truth of some propositions, another must be accepted as true. A compound proposition might say 'man is an animal and animal is sentient and man is sentient' but the argument contains some syncategorematic term (e.g., therefore, since, because, etc.) which signifies *inference* or the passage of the mind from a knowledge of some truths to a knowledge of a new truth.

The Elements of Argumentation

Take a look at the most common type of syllogism:

Every A is B
But every B is C
Therefore, every A is C

We can distinguish two things here: the *matter* out of which the syllogism is made, and the *form* given to this matter.

The Matter of the Syllogism

The matter is the terms and propositions out of which the syllogism is constructed: e.g., A, B, and C. And this matter is of two kinds: proximate and remote. The human body is composed of organs, but these organs are in turn composed of cells. The organs of the body would be called *proximate* in relation to the whole body, whereas the cells would be called *remote*, because they are farther removed from building up the human body; i.e., before they can build a human body, they must first be united into organs. The proximate matter of the syllogism is the propositions. The remote matter is the terms out of which the propositions are made; these are called *syllogistic terms* if you recall one of our last divisions of the term, many pages ago.

The Form of the Syllogism

The form is the way that the propositions and terms are arranged in order to give us a valid inference; in order that the conclusion truly be caused by the previously known propositions.

The propositions of every syllogism are arranged into two parts: antecedent and consequent. The antecedent is the part of a syllogism containing the previously known truths (called the premises) while the consequent contains the proposition caused as a conclusion to the joining or separating of the previously known propositions (the relation of causality between the antecedent and consequent is

called the *consequence;* this is similar to our discussion of conditional propositions). Strictly speaking, the antecedent is the *cause* of the consequent. For example:

- Antecedent:
  - Every A is B
  - Every B is C
- Consequent:
  - Every A is C

consequence

A consideration of the best sort of matter to use for constructing the best *kind* of syllogism, the most perfect process of reasoning, will be considered in Material Logic. We're interested merely in how to construct a syllogism at all; how to arrange that matter (whatever is happens to be) into antecedent and consequent in order to get a proper inference. In other words, we are interest in *validity* and not *truth*.

A valid argument is one in which the conclusion follows from the premises; the inference really does exist because the antecedent is so arranged that it cannot be true while the consequent is false. Take a look at this:

Every stone is rational.
But every bulldog is a stone.
Therefore, every bulldog is rational.

None of these propositions are true, yet the conclusion really does follow from them. If in fact stones were rational and bulldogs were stone, it really would be true that bulldogs are rational. Given the arrangement of the antecedent, the consequent is necessarily caused. This is precisely what we mean by validity.

Now, consider this:

Every man is rational,
But no man is stone,
Therefore, no stone is rational.

Each proposition is true, but the conclusion doesn't follow from the premises. The form is not valid. But this isn't to say that the truth and validity have nothing to do with each other. If that was the case, there would be no point to Formal Logic. No, truth and validity in a syllogism are intimately bound. If you are certain that the antecedent is true and if you know that it really is an antecedent—i.e., that is really is causing the conclusion—you will know with absolute certainty that the conclusion is true.

I should point out that in an invalid argument, there is not (properly speaking) a real antecedent. To speak of an antecedent in an invalid argument is to speak equivocally. Antecedent means the cause of the conclusion. If the premises do not really cause knowledge of the conclusion (i.e., if they are invalid) then they aren't really an antecedent because no reasoning is taking place. An invalid argument—three propositions that *look* like a syllogism but are really defective and do not cause new knowledge—are called fallacies or sophisms. We'll examine these at the end. So, an antecedent which is not really related as *cause* to the consequent as *effect* is not really an antecedent accept in an analogous sense. Nevertheless, we will occasionally speak of invalid 'syllogisms' and their 'antecedents/consequents'.

The General Laws of Argumentation

Given what we've said about the antecedent and consequent, we can lay down the following rules which apply to every syllogism. Here I am using 'antecedent' and 'consequent' in their strict meanings; i.e., propositions which have a valid connection and really infer one another, so that the conclusion really does follow from the premises. Let's use the following syllogism as the example:

Every A is B
But every B is C
Therefore, every A is C.

1) It is impossible that a *false* consequent follow from a *true* antecedent (again assuming that the syllogism is valid as it is in the example). This is because consequent is potentially contained in the antecedent and follows form it. If what is contained in the antecedent is false, then the antecedent is true and false at the same time. This is a contradiction. So, if 'A is B' is true, and if 'B is C' is true, then it is impossible for 'A is C' to be false.
2) Therefore, given a true antecedent, there must be a true consequent, and given a false consequent it must be due to a false antecedent. This follows from the first law. If there was a true antecedent but a false consequent, the antecedent would both be true and false; and if there was a false consequent there couldn't be a true antecedent without, again, it being both true and false. So, if 'A is B, B is C' are true, it must be true that 'A is C'; and if 'A is C' is false, it must be that case that either 'A is B' or 'B is C' is false. However…
3) It is possible that a true consequent follow from a false antecedent. Such a consequent can follow because the form is valid, even if the matter is not true. For example, say that our A,B,C syllogism was replaced with this, 'every man is a stone, but every stone is living, therefore, every man is living'. The conclusion is true and it validly follows, but the antecedent is false. Symbolic Logic falls prey to this scenario quite often.
4) If the antecedent is possible (i.e., necessary or contingent), then the conclusion must be possible (i.e., *not* an impossible proposition); but if the consequent is impossible (e.g., man is a stone), at least one of the premises in the antecedent must be impossible. This follows from the second law. Each proposition in the antecedent can't join together something possible and yet the conclusion is impossible. So if you know that the conclusion is impossible, then one of the premises must also be impossible.
5) If the antecedent contains only necessary propositions, the consequent must be necessary, and if the consequent is a contingent proposition, the antecedent must contain a contingent proposition. Since the conclusion follows from the premises, if the premises must always be true, the conclusion must always follow. So, if 'A is B' is always true and cannot *not* be true, and if 'B is C' is necessarily true, then 'A is C' must always necessarily follow. However, not every necessary conclusion is caused by necessary premises: 'whatever laughs is rational; but man laughs; therefore, man is rational.' 'Man is rational' is a necessary proposition, but the fact that man laughs is contingent. Man might laugh, then again he might not. What is *necessary (*but not contained in the syllogism) is that the ability to laugh is caused by rationality.
6) What is compatible with the truth of the consequent must be compatible with the truth of the antecedent. So if the proposition 'X is Y' is compatible with the conclusion 'A is C', it cannot be opposed to the propositions 'A is B' and 'B is C'.

7) What is repugnant to the truth of the consequent must be repugnant to the truth of the antecedent. If the proposition 'X is Y' is opposed to the truth of the conclusion 'A is C', it cannot be compatible with the propositions 'A is B' and 'B is C'.

The Division of Argumentation

There are essentially three kinds of argument which correspond to the three kinds of reasoning: deductive, inductive, and expository. But before talking about these three species of argumentation, there are a few other distinctions that need to be made.

First, there is a distinction between good argument and bad argument. Bad argument is only called 'argument' in an analogous sense. What makes it bad is precisely because it *doesn't* signify a genuine process of reasoning. Instead, it *looks* like a real argument. These bad forms of argument are had when the rules for reasoning, the rules for rational discourse, are violated. So before we can enumerate the violations of the rules, we need to first know the rules themselves. Hence, we talk about good syllogisms first, then toward the end of the course we'll talk about bad syllogism (which are also called fallacies or sophisms).

Good Argument

Arguments can be completely stated so that all their elements, the entire antecedent and consequent, are stated, or they can be abbreviated, not clearly giving each part. Hence, argumentation is divided into complete and incomplete.

Incomplete Argumentation (The Enthymeme)

The most basic kind of argument is one that we've given many times before:

Every A is B.
But every C is A
Therefore, every C is B.

Very clear and concise. Discourses like this one are so prevalent in our thought that they often pass unnoticed. But when we communicate our reasoning processes to others, we don't normally state things in this syllogistic pattern. Usually we leave part of the antecedent out. And sometimes we even leave the conclusion out, hoping that the hearer will fill in the gaps. For example, when we're talking politics we might say:

"We shouldn't pass this law; it will destroy the economy."

This is a syllogism. But it's not stated completely. The speaker has left part of the antecedent out. The conclusion is 'we should not pass this law' and one of the premises is 'this law will destroy the economy'. So the argument as given is simply this:

This law will destroy the economy.
Therefore, we should not pass this law.

One premise is missing. We call this kind of argument an *enthymeme* or an abbreviated/truncated syllogism. And this is the most frequent kind of argument that you will encounter when dealing with others. It's boring and often tedious to state everything according to syllogistic patterns so people just don't do it. But that's not to say the complete syllogism isn't there implicitly. In fact, it *must* be there if any reasoning has truly taken place. So it will be up to you to find the missing parts. In the above example this missing part is:

We should not pass a law which will destroy the economy.
But this law will destroy the economy.
Therefore, we should not pass this law.

Truncated syllogisms are a bit like the imperfect proposition. Imperfect judgments leave the mind in suspense because they haven't given every element necessary to communicate that act of judgment. Nevertheless, if it is truly meant to signify a real act of judgment, the other elements have to be there implicitly. So when someone asks, "who left the milk out?" and you respond "John", what you mean is the judgment 'John is the persons who left the milk out.' The abbreviated syllogism likewise contains all the parts implicitly. And every specific kind of syllogism can be abbreviated. In the exercises that I give for each kind of argument, you will find a few truncated syllogisms, and you will have to find the missing parts.

Complete Argumentation

Complete argumentation, just like the perfect proposition, can be simple and containing only the necessary parts to signify its act, or it can be compound and string together several of those acts. So a compound judgment would be something like:

Man is an animal AND he is rational.

A compound argument would look like this:

Every man is an animal.
And every animal is living.
And every living thing must be nourished.
And everything which must be nourished requires food.
Therefore, man requires food.

This is one type of compound syllogism called a *sorite*. There are several other kinds of compounds as well, but, of course, before we can learn about the composite, we must learn about the simple syllogisms out of which they are composed. So our examination of complete argumentation will look at simple arguments first, then compound arguments.

Simple Argumentation

Good, complete, and simple argumentation is of three kinds, as I've already pointed out. Sometimes our antecedent begins with universal knowledge and works its way down to singular knowledge, or at least less universal knowledge. For example:

Every man is an animal.

But Peter is a man.
Therefore, Peter is an animal.

The conclusion is singular. And we joined 'animal' to 'Peter' by means of a universal proposition 'every man is an animal'. The movement of descent, from universal knowledge to a particular conclusion, is called deduction.

On the other hand, sometimes instead of going down—from universal to singular—we go up—from singular to universal. For example:

Metal A conducts electricity, metal B conducts electricity, metal C, D,…Z all conduct electricity.
Therefore, all metal conducts electricity.

This movement of ascent from singular knowledge to a universal conclusion is what we call induction. Most modern science relies very heavily on induction as opposed to deduction (much to its disadvantage). We'll examine induction briefly in Formal Logic and much more fully in Material Logic. At that point, we'll see that induction doesn't normally give us more than *probable* knowledge; i.e., its conclusions usually aren't certain, so it pertains to Dialectics instead of Demonstration. We'll also examine the laws of induction that modern science uses, and we'll see that these laws are incomplete and faulty.

Exposition is the movement of reasoning from singular thing to singular thing: Peter is a doctor. But Peter is my teacher. Therefore, my teacher is a doctor.

Let's start with deduction, then we'll treat induction and exposition.

Deduction

Deduction is essentially divided into two type depending on whether reason proceeds according to the nature of the term used in the syllogism (i.e., the connection between the terms themselves) or the mere hypothetical relationship between entire propositions. So we have *categorical deduction* and *hypothetical deduction*. The distinction is akin to that between the categorical proposition and the hypothetical proposition. You'll understand the difference a little better by the end, so for now let's just move right into a discussion of the categorical.

The Categorical Syllogism

So an argument gives an antecedent made up of related and coordinated propositions, and these infer a new proposition which we call a consequent. When the antecedent is more universal than the consequent, when its propositions are more universal than the conclusion, we have deduction. And when this deduction proceeds by uniting two terms to a common third term, we have the categorical syllogism.

The categorical syllogism is the most basic and universal type of syllogism. In fact, nearly of our examples up until now have been of the categorical syllogism, because it is so easily recognizable.

Consider this: every man is morally responsible for his actions. Why is it that the subject (man) and the predicate (something morally responsible for its actions) are joined? This isn't self-evident, but has to be *made* evident. We do this by discovering a common linkage between human nature and moral responsibility—something like 'free to voluntarily perform or omit an action'. This 'free will', this ability to choose to do something or not is the foundation for being responsible, *and* it happens to be a characteristic of man. So we can join man and moral responsibility with the help of this third term:

Whatever is free to voluntarily perform or omit an action is morally responsible for its actions.
But man is free to voluntarily perform or omit an action.
Therefore, man is morally responsible for his actions.

By showing that two terms are connected to each other in light of their connection to a common third term, a new proposition has been forced upon us.

On the other hand, if only one of those two terms was connected with the third, and the other term was *not* connected with it, then we are forced to drive a wedge between them. So if we are wondering 'whether a brute animal is morally responsible' we will discover a third term which is a cause of moral responsibility—namely, being free to act or not act—and see that this cause of moral responsibility is *not* found in brute animals:

Whatever is free to voluntarily perform or omit an action is morally responsible for its actions.
But brute animals are not free to voluntarily perform or omit an action (because their activity is determined by nature and instinct).
Therefore, brute animals are not morally responsible.

In this case, a third term has led to a conclusion not because it is common to the two terms in the conclusion, but precisely because it is *not* common to them. The essence of categorical reasoning

consists in this third term; in virtue of it, the predicate of the conclusion is seen to relate to the subject in light of the way each is related to something else.

Let's examine the nature and elements of the categorical a little closer. Then we'll examine the ultimate principles the ground the whole process of categorical syllogizing. From these principles we'll be able to deduce the most general rules of the categorical. Finally, we'll divide the categorical into its various kinds; a division that we get by examining just how the terms and propositions are arranged within the categorical syllogism.

The Nature and Elements of the Categorical Syllogism

The categorical syllogism is defined as *an argumentation in which, from an antecedent that unites two terms to a third term, there isinferred a consequent that unites these two terms to each other*.

So in the antecedent:

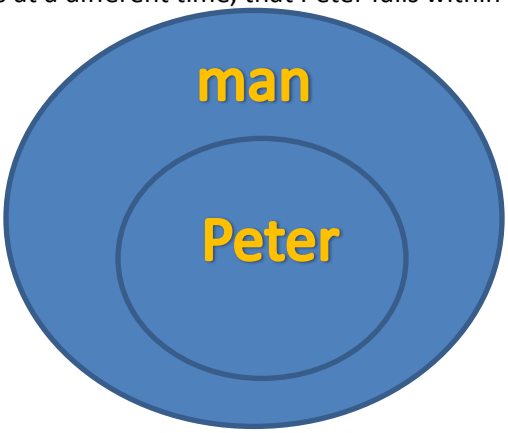
Every man is mortal.
Peter is a man.

Mortal is being identified as an element in the comprehension of man, and Peter is being identified as something with in the extension of man. So man is standing as the bridge or the concept *through which* Peter can be in some way related to mortal. Hence the conclusion:

Peter is mortal.

The antecedent contains previous knowledge; judgments that we've already made at some time or another. So we have one judgment, one premise, that looks like this:

I've judged, at some point, that man falls within the extension of mortal things. I've also judged, perhaps at a different time, that Peter falls within the extension of man:



Now, by holding these two judgments before the mind at the same time, a new truth becomes evident to me: the truth that Peter is likewise numbered among mortal things:

So it's clear that the categorical syllogism is made up of three terms (e.g., mortal, man, Peter). And these three terms arranged differently in three different propositions. As I pointed out in the last section, the propositions are called the proximate matter (because the syllogism is made out of these immediately), while the terms are the remote matter (because they have to be arranged in propositions before they can be arranged in a syllogism.

The remote matter, the terms, we give special names depending on the function that they serve in the argument. The most important term is called the middle term. That's the third term which unites the other two; its only through it that the others are seen to be related to each other—related either by identity or diversity, by affirmation or denial.

The term which becomes the *predicate* of the conclusion is called the *major term*. It's called the major term because the predicate normally has greater extension that the subject (at least in an affirmative propositions).

The term which becomes the *subject* of the conclusion is called the *minor term*. Again, it's called the minor term because the subject of the proposition usually has a smaller extension than the predicate.

The relationship between the extension of the major, minor, and middle will becomes very important down below. As in the example above, the most perfect middle term will be one which is every way middle: i.e., a greater extension than the minor term but a smaller extension than the major term.

Using symbols, we can outline the syllogism above:

M is T
t is M
.: t is T

The middle term is symbolized by the letter 'M', the major term by a capital 'T', and the minor term by a lower-case 't'. The syncategorematic sign of *inference* is a grouping of three dots (.:).

And besides the remote matter, the proximate matter, too, is given a special names because of the role it serves. The proposition in the antecedent which contains the major term is called the major propositions. The proposition in the antecedent which contains the minor term is called the minor proposition, appropriately enough. So:

M is T (major proposition)
t is M (minor proposition)
.: t is T (conclusion)

The major term and minor term are also sometimes called the *extremes* of the proposition because they are on the very edge of the proposition, while the middle term unites these two farthest points.

Minor Extreme < Middle Term < Major Extreme

All of these points, though, concern the *matter* of the syllogism, remote and proximate. But not any arrangement of the matter will be sufficient to yield a valid conclusion. We have to know about the proper coordination of the remote and proximate material such as a conclusion will legitimately follow. The disposition of the matter is called the *form* of the syllogism. And the remote matter and the proximate matter each can arranged or ordered in several different ways. Hence, there is a form affectin the arrangement of the terms themselves (and we call this *figure)* and there is a form affecting the arrangement of the entire propositions (and we call this *mood*). To give you an example, when the middle term is used as predicate in both propositions of the antecedent, we call it a second figure syllogism:
T is M
t is M
.: t is T

And we get the mood from the quantity and quality of the entire propositions. So if both propositions in the antecedent are A propositions and the conclusion is an A proposition, we're said to have an AAA mood. As here:

Every animal is an organism. (A)
But every ma is an animal. (A)
Therefore, every man is an organism. (A)

We'll discuss the figures and moods separately down below. Each one will have its own special rules.

When we speak, we don't often put arguments into this strictly logical form just as we don't normally put propositions into the subject-copula-predicate relationship. Nevertheless, the form is always implied and so we can rephrase an argument given to us. We can put it into this strictly logical, antecedent-consequent, major-minor-middle relationship. Doing this is the easiest way to see if an argument is valid and even what really is being argued.

The Supreme Principles of the Categorical Syllogism

The categorical syllogism works by uniting two things to a third thing, as in the example above, or by uniting one thing to a third thing while denying another thing of that third. So:

All animals are organisms
But no stone is an organism.
Therefore, no stone is an animal.

This comparison by means of a third is the very essence of categorical reasoning; that comparison is precisely what reasoning is. Hence, any mind that reasons must inherently accept two principles. And these two principles are called *convenience* and *discrepancy*. They are also called the principles of *agreement* and *disagreement*, or as we'll call them, the principles of *triple identity* and the *separating third*.

Triple identity can be stated as follows: *two things identical with the same third thing are identical with each other*.

The separating third can be expressed: *two things one of which is identical, the other not identical with the same third thing, are not identical with each other.*

Since reason works by making this comparison, no one can reason without these principles and everyone who reasons is employing them. Even those who *say* that they deny these must use them to defend *why* they deny them. These principles are self-evident *quoad omnes*, to everyone, and they are directly founded on the principle of non-contradiction: it is impossible that the same thing be and not be simultaneously. If two things are equal to the same third thing but not equal to each other, then they are both equal to that third and not equal to it at the same time.

But these principles cannot be applied to the categorical without the help of two others. You see, its easy to see that two singular things equal to the same third singular thing are equal to each other: e.g., Peter is this man, but this man is the one standing next to me, therefore, Peter is the one standing next to me. But this is an expository syllogism (which we'll examine later), not a categorical. In the

categorical, one term is identified with a universal, and then in light of this it is identified with something contained in the extension of the universal: e.g., All animals are organisms, but Peter is an animal, Therefore, Peter is an organism. Strictly speaking, we're talking about a *whole* in one proposition (i.e., all animals) and a *part* in another proposition (i.e., *one* animal named Peter). How do we know that 'Peter' and 'organism' are being compared to the same third thing? How can we talk about a whole and a part while claiming that we're talking about the same reality?

The answer is the addition of two more self-evident principles: *dictum de omni* and *dictum de nullo*, or roughly translated, the principle of 'what is said of all' and 'what is said of none'.

The dictum de omni can be formulated thus: *everything which is affirmed universally and distributively of a subject is affirmed of all its inferiors*.

The dictum de nullo would be: *everything which is denied universally and distributively of a subject is denied of all its inferiors*.[123]

In other words, whatever is said of a logical whole—a quiddity and its comprehensive notes—must be said of the logical parts—all the extensive inferiors which *have* that quiddity and its comprehensive notes. Again, consider the following:

All animals are organisms.
But Peter is an animal.
Therefore, Peter is an organism.

'All animals' is a logical whole—not a physical whole which is the *sum* of its parts, as we discussed way back in the section on comprehension and extension. Animal is not made up of this animal and that animal and those animals; it's a unified formal quiddity which *can* extend to an indefinite number of inferiors. And when a predicate is affirmed of this logical whole, it must capable of extending to those inferiors as well because the logical whole—animal nature—doesn't exist by itself, but only in those subjects which *have* that nature. So the comprehensive notes of 'organism' are being affirmed of all those subjects who possess animal nature. Peter happens to be one of those subjects. Because of the dictum de omni The comprehension of Peter is seen to be in the same subject as the comprehension of animal. Likewise the comprehension of organism is seen to be in the same subject as the comprehension of animal. And according to triple identity, if they are identical with the same subject, they are identical with each other.

The General Laws of the Categorical Syllogism

The laws that apply to every categorical syllogism (in whatever figure or mood) are derived immediately from the principles of the syllogism. They follow from the nature of the categorical; i.e., from the fact that it identifies or separates two things by means of a third. Hence, a violation of these rules would be a violation of the very essence of reasoning; that is, reasoning would not really be taking place. Now, an invalid syllogism, an erroneous process of 'reasoning', can violate a number of these rules. However, the violation of just one is sufficient to destroy the entire syllogism. One way or another, a violation of these rules will violate ultimately be a violation of triple identity and the separating third.

[123] In I Post. Anal., l. 9.

There are generally speaking eight laws given. However, the traditional eighth law (i.e., the conclusion always follows the weaker part) is really two laws in one (i.e., first, if there is a negative in the antecedent the consequent must be negative, and second, if there is a particular proposition in the antecedent, the consequent must be particular). And the first of those two laws will help us to understand better what is traditionally numbered as the seventh law. So I split up the traditional eighth law and give its first part as number seven and its second part as number eight, moving the traditional seventh law to number nine.

Four of these laws concern the *remote matter* of the syllogism, while the other four (or five, in our division) concern the *proximate matter* of the syllogism. The traditional eight laws are as follows:

Concerning the remote matter:

1. There must be only three terms
2. No term can have a greater extension in the conclusion than it did in the antecedent
3. The middle term may not enter the conclusion
4. The middle term must be universal at least once

Concerning the proximate matter:

5. If both premises in the antecedent are negative, no conclusion can be inferred
6. If both premises are affirmative, the conclusion cannot be negative
7. If both premises are particular, no conclusion can be inferred
8. The conclusion always follows the weaker part (negative being 'weaker' than affirmative, and particular being 'weaker' than universal)

We will number the laws as follows:

Concerning the remote matter:

1. There must be only three terms
2. No term can have a greater extension in the conclusion than it did in the antecedent
3. The middle term may not enter the conclusion
4. The middle term must be universal at least once

Concerning the proximate matter:

5. If both premises are negative, no conclusion can be inferred
6. If both premises are affirmative, the conclusion cannot be negative
7. If one premise is negative, the conclusion must be negative
8. If one premise is particular, the conclusion must be particular
9. If both premises are particular, no conclusion can be inferred

Numbering them this way has another advantage. As we'll see laws one through seven are derived immediately from the principles of triple identity and the separating third. The eighth and ninth, though, are derived not immediately from those principles, but from the other laws; so one who violates the eighth or ninth law is first in violation of one of the previous seven laws and, in turn, is violating the fundamental principles.

Let's take them one at a time:

Laws of the Remote Matter

The First Law: There must be only three terms

This follows from the very essence of reasoning and triple identity. Two terms would be too few and four terms would entirely superfluous. In fact, four terms would render reasoning impossible, because the two terms joined in the conclusion, would have been united to different things in the antecedent. But if the aren't united to the same third thing, there is no comparison taking place. And since reason consists in this comparison, reasoning would not take place. So I can't argue:

All gasoline is liquid
All kerosene is inflammable
Therefore, all gasoline is inflammable

There are four terms here: gasoline, liquid, kerosene, and inflammable. Consequently, there is no comparison being made.

Now, four terms can be introduced into the syllogism in less obvious ways as well. By equivocation, for instance:

Whatever is canned is well-preserved.
But Nancy Pelosi will be canned in the next election.
Therefore, Nancy Pelosi will be well-preserved.

Canned is obviously being taken with two different significations, and hence a fourth concept has been introduced. Even a change in supposition can lead to an extra term:

Animal is a genus.
But Peter is an animal.
Therefore, Peter is a genus.

We've gone from logical supposition to real supposition and, consequently, two different concepts are being referred to.

A violation of this first rule is sometimes called the fallacy of the fourth term, or the fallacy of faulty construction.

The Second Law: No term can have a greater extension in the conclusion than it did in the antecedent

This means that if a term is particular in the premises, it can't wind up being universal in the conclusion. Nothing is in the conclusion that wasn't at least implicitly contained in the premises; but if a term suddenly becomes universal in the conclusion, then we're saying more than was in the antecedent. Take the following:

Every man is an animal.
But no horse is a man.
Therefore, no horse is an animal.

The first two propositions are true, yet the conclusion is false. But since in a valid syllogism, a false conclusion cannot follow from a true antecedent, this syllogism must be invalid. Its invalid because

animal was particular in the first proposition (because it was the predicate of an affirmative) but universal in the conclusion (because it is the predicate of a negative proposition).

So really, when this rule is violated, what's being affirmed or denied of the subject in the conclusion isn't the exact thing that was related to the third term in the premises. Hence, the conclusion has greater supposition in the conclusion and so is really a kind of fourth term. So it not only violated the essence of reasoning in that all reasoned conclusion must be potentially contained in the premises, but it also violates the first law which is directly founded on the principle of triple identity.

A violation of this law is often called the fallacy of the illicit minor/major term, depending on whether it is the minor or major that receives too great extension. Consider the following examples:

Every senator is duly elected.
But some congressmen are not senators.
Therefore, some congressman are not duly elected. (Illicit major term)

No rectangle has curves.
But every rectangle has edges.
Therefore, nothing with sides has edges. (illicit minor term)

Some laws are easily obeyed.
But no unreasonable command is a law.
Therefore, some unreasonable command is not easily obeyed. (Illicit major term)

The Third Law: The middle term may not enter the conclusion

This, again, follows immediately from the nature of triple identity. The middle term is what serves to unite the major and minor. To have it enter into the conclusion is only possible if it wasn't uniting two other terms; but if it isn't uniting two other terms, then there is no reasoning. So we can't argue:

Man is an animal.
But all animals are sentient.
Therefore, some animal is man.

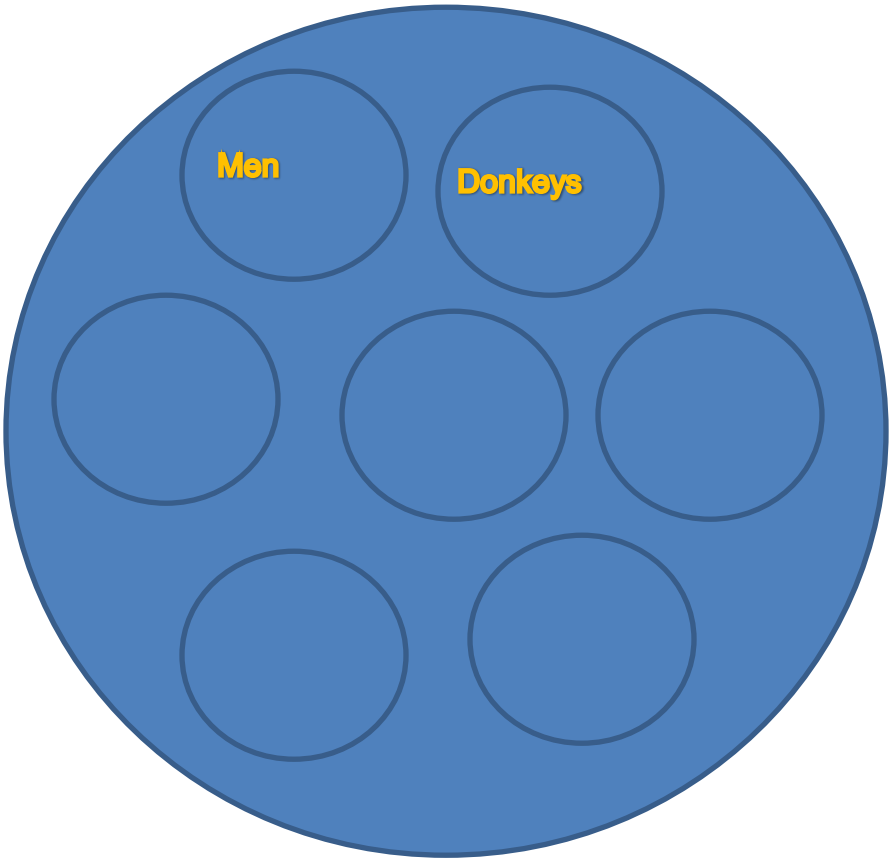
The conclusion isn't really a conclusion.

The Fourth Law: The middle term must be universal at least once

Again, this follows from triple identity immediately. If the middle term is particular each time, then we might be talking about two different portions of its extension and thereby introducing a fourth term. The middle term operates as a middle term only insofar as it provides common ground for the major and minor. But look at the following syllogism:

All men are animals.
But all donkeys are animals.
Therefore, all men are donkeys.

'Animals' is the middle term, but it's particular in each case; 'man' is identified only with a portion of 'animals' and likewise 'donkeys' is identified only with a part. The problem is that 'man' and 'donkeys' are identified with *different* parts. Take a look:



Both men and donkeys are within the extension of animal, but they are different portions of that extension. Hence, 'animals' here serves no common ground for equating men and donkeys. Each time animal is used it supposes for different inferiors, and therefore we have four terms in the syllogism.

A violation of this law is often called the fallacy of the unextended middle.

Here are some samples:

Some men are smart.
Some men are blind.
Some smart people are blind.

Not every substance is quantified.
But every body is a substance.
Therefore, not every body is quantified.

Some men are Americans.
But some men are distributists.

Therefore, some Americans are distributists.

Every A is non-B.
But some C is non-B.
Therefore, some C is A.

Laws of the Proximate Matter

The Fifth Law: If both premises in the antecedent are negative, no conclusion can be inferred

This follows immediately from the principle of the separating third. If one thing is seen to be equal to another while a second is not equal to it, those two things are not equal to each other. But if neither is equal the third thing, nothing is said about their relation to each other. For example, man is an animal. But this can't be gathered from knowing that man is not a stone and animal is not a stone. Plenty of things are not stones but they aren't man. We can't conclude that uranium is the same thing as McDonald's food just because neither is good for your health. Rather no conclusion at all is produced in these cases, because no common ground for comparison has been given. Examples:

No stone is an animal.
But no man is a stone.
Therefore no man is an animal.

Scholastic doctrine does not hold that the state is an end unto itself.
But libertarian doctrine does not hold that the state is an end unto itself.
Therefore, scholastic doctrine is libertarian doctrine.

No A is B.
But not every C is A.
Therefore, some C is B.

Be careful when accusing an argument of the fallacy of double negatives, though. Sometimes the negation might not be attached to the copula, but to the terms themselves. For example,

What has no parts cannot perish by the dissolution of parts.
But the human soul has no parts.
Therefore, the human soul cannot perish by the dissolution of its parts.

Here the minor, the human soul has no parts, is really an affirmative proposition, just not stated in strictly logical form. The minor is really, 'the human soul is a thing which has no parts.'

A violation of this rule is called the fallacy of the double negative.

The Sixth Law: If both premises are affirmative, the conclusion cannot be negative

If both premises are affirmative it means that each term has being identified among themselves. Hence, it would be a contradiction of triple identity to get down to the conclusion and discover that what was identical in the premises is suddenly different. It would be patently absurd to argue that:

All socialists are communists.
But all communists are collectivists.
Therefore, no socialists are collectivists.

This is a blatant contradiction and violation of triple identity. It's called the fallacy of the illicit negative.

The Seventh Law: If one premise is negative, the conclusion must be negative

This follows immediately from the principle of the separating third. A term identical to one thing diverse to another means a diversity between those to things. If those to things were really identical, than the first term couldn't be equal to one but not equal to the other. This is fairly apparent when put into a syllogism, so there isn't much that needs to be explained:

All men are organisms.
But no organisms are immaterial.
Therefore, all men are immaterial.

An easily identifiable contradiction. This is called the fallacy of the illicit affirmative.

The Eighth Law: If one premise is particular (while the other is universal), the conclusion must be particular

There are two possibilities. Either both premises are affirmative (i.e., an A proposition and an I proposition). Or one premises is affirmative and the other is negative (i.e., an A and an O, or an E and an I). There's no third possibility where both are negative because the fifth law rules that out. Now, both of these possibilities will validly yield only a particular conclusion.

1. If both premises are affirmative (i.e., A and I), there will only be one possible middle term. This is because the subject AND the predicate in the I proposition are particular. In an A proposition, the predicate is particular (because the proposition is affirmative) but the subject is universal. So, since the middle term must be universal at least one, the subject of the A proposition is the only possible middle term. This means that the other *particular* terms which are left will supply the major and minor terms which will be united in the conclusion. And so unless we're willing to violate the second law and give them greater extension in the conclusion than in the premises, the conclusion must be particular.
2. If one premise is affirmative and the other negative (i.e., an A/O combination or an E/I combination), first of all, the conclusion will be negative as the seventh law points out. Secondly, since the middle term must be universal at least once (4^{th} law) there will be two possibilities for the middle term because there will be two universal concepts. The subject of the universal proposition will be universal (i.e., the subject of the A or E proposition); and the predicate of the negative proposition will be universal (i.e., the predicate of the E or O proposition). So one of these will be the middle term. Now, because the conclusion will be negative (7^{th} law), the major term (which is the predicate of the conclusion) will have to be the *other* universal term. Otherwise, one of the particular terms would become the major and go to a greater extension and violate the second law. So two terms are used up at this point—the two universal terms have become the middle and major. This means that the remaining particular term must become the subject of the conclusion. And if the subject of the conclusion is particular, the conclusion itself must be a particular proposition—namely an O proposition.

So in either case, the conclusion must be particular. A violation of this rule is called the fallacy of the illicit universal.

The Ninth Law: If both premises are particular, no conclusion can be inferred

We have three choices if both premises are particular. They can both be I propositions, or they can both be O propositions, or one can be an I and one can be an O.

1. But if they are both O propositions, it means we have to negative propositions in the antecedent. And according to rule number five nothing follows from two negatives. Hence in this option, there is no conclusion inferred.

2. If both propositions are I propositions, take a look at what happens: some priests are teachers, but some teachers are women, therefore some priests are women. The middle term is not universal. The subjects are both particular (because they are particular propositions) and the predicates are particular (because they are affirmative propositions). Hence, having two I propositions violates the fourth law which states that the middle term must be universal at least once.

3. If one premise is an I and the other is an O, let's see what happens. Some mothers are teachers, but some women are not mothers. That's our antecedent. Now, the middle term must be universal at least once, as the fourth law states. Are there any universal terms in here? Only one, 'mothers', because it is the predicate of a negative. Accordingly this is the only possible middle term. Which means that 'some mothers' and 'some women' will be our major and minor terms. Now, because we have an O proposition here, the conclusion must be negative as the seventh rule points out. But if the conclusion is *negative* it means the predicate of the conclusion will be universal (since all predicates of negatives are universal). But that means that either 'some mothers' or 'some women' will become universal in the conclusion when it was only particular in the premises. Thus, it would violate the second rule.

So in no event is a valid conclusion inferred. The fallacy committed when violating this rule is called simply a *non sequitur*, meaning 'it does not follow'.

Exercises: Indicate the errors of the following arguments:

1) Some of Shakespeare's plays are not masterpieces
Some of Shakespeare's plays are famous
Some famous plays are not masterpieces
Violation of rule #4 and rule #9

2) Some weeds are poisonous
No snake is a weed.
No snake is poisonous
Violation of rule #2 re: poisonous

3) All tulips are organisms
All tulips are red
All red things are organisms
Violation of rule#2 re: red things

4) All teenagers are in their formative years

World-government is in its formative years
World-government is a teenager
Violation of rule #4

5) **No snakes are bipeds**
Non-biped animals have four or more legs
Some snakes have four or more legs
Violation of rule #1 and rule #7

6) **Some men are easy to get along with**
Everyone on the team is a man
Some on the team are easy to get along with
Violation of rule #4

7) **Some weeds are graceful**
All children are graceful
Some children are weeds
Violation of rule #4

8) **Every communist denies the right to private property**
No Communist is a good Catholic
No good Catholic denies the right to private property
Violation of rule #2 re: one who denies the right to private property

9) **All circles are figures**
All circles are round
All round things are figures
Violation of rule #2 re: round things

10) **Some books are a source of amusement**
All logic manuals are books
All logic manuals are a source of amusement
Violation of rule #4 and rule #8

11) **Machines use inexpensive parts**
No nuts or bolts are expensive
No nuts or bolts are used in machines
Violation of rule #1 re: expensive/inexpensive and machines/things which are used in machines

12) **All birds are sentient**
Every man is sentient
Every man is a bird
Violation of rule #4

13) **All witty persons are intelligent**
Some white men are not witty persons
Some white men are not intelligent
Violation of rule #2 re: intelligent

14) **Some wild fruits are poisonous**
No snake is a wild fruit
No snake is poisonous
Violation of rule #2 re: poisonous and rule #8

Division of the Categorical Syllogism

Both the remote matter of the syllogism (i.e., the syllogistic terms) and the proximate matter (i.e., the premises and conclusion) admit of various arrangements which give us specifically distinct kinds of

arguments. We'll first look at the different kinds of arguments we get depending on the arrangement of the remote matter, then we'll look at the various arguments we can have by changing around the proximate matter.

Division According to the Form of the Remote Matter

Notion of the Figures

I've already mentioned the division according to remote matter. It's called the *figure* of the syllogism. We have different figures depending on the logical relationship that the middle term has in comparison to the major and minor. For example, when I say:

All doctors are educated
But no infants are educated
Therefore, no infants are doctors

The middle term 'educated' is related as predicate in both premises. Whereas when I say:

All substances have stable properties
But everything with stable properties is an ordered whole
Therefore, all substances are ordered wholes

The middle term is the predicate in the first premise (which is the minor premise because it contains the minor term) and subject in the second proposition.

Depedning on the location of the middle term, we call a syllogism a certain figure—the first example will be called the third figure, and the second will be called the first figure. So we define figure as *the disposition of the major, minor, and middle terms as subject and predicate such as can infer the conclusion.*

Number of the Figures

Many logicians believe there are four figures of the categorical syllogism. This is wrong. There are only three figures because there are only three possible ways to relate the middle to the major and minor. The major term is more extended than the minor (because it becomes the predicate in the conclusion). The middle term, then, can either be:

1. more extended than the minor and less extended than the major: **minor < middle < major**
2. more extended than both the major and minor: **minor < major < middle**
3. less extended than both the major and minor: **middle < minor < major**

It's impossible that it be more extended than the major and less extended than the minor because this would demand four terms: **middle < minor < major < middle**.

So these three relationships can be expressed according to three different categorical syllogisms.

First Figure, in which the middle term is the subject of the major premise and the predicate of the minor premise:

M T

t M
t T

Second Figure, in which the middle term is the predicate of both premises:

T M
t M
t T

Third Figure, in which the middle term is the subject of both premises:

M T
M t
t T

Scholastics remember these figures with a little rhyme: sub prae prima, sed altera bis prae, tertia bis sub—which means roughly 'subject and predicate in the first, but twice the predicate in the second, twice the subject in the third'.

Notice something about the above figures though. In the first figure, the major term, the term which will be the predicate in the conclusion, is a predicate in the premises. And the minor term, the term which will be the subject in the conclusion, is a subject in the premises.

But in the second and third figures, the major and minor terms don't both exercise the same role—i.e., subject or predicate—in the antecedent as they will in the consequent. In the second figure, the term which will become the predicate of the conclusion (i.e., the major term) is actually being used as a subject in the antecedent. Likewise, in the third figure, the term which will become the subject in the conclusion (i.e., the minor term) is used as a predicate in the premises.

When the subject and predicate, the extremes, of the conclusion have the same disposition that they had in the antecedent, we call is a direct conclusion. So when the minor and major terms exercised the functions of subject and predicate, respectively, in the antecedent we have a direct conclusion.

But when their roles change—when the subject of the conclusion was a predicate in the antecedent, when the predicate of the conclusion was a subject in the antecedent, or when both the subject and predicate of the conclusion were differently used in the antecedent—this is what is called an indirect conclusion.

Consequently, only the first figure has a direct conclusion:
M T
t M
t T

You can see that the major term, which is predicate in the conclusion, is also predicate in the premises. And the minor term, which is subject in the conclusion, is also subject in the premises. The other two figures have indirect conclusions because one term—the major in the second figure and the minor in the third figure—switches dispositions from antecedent to consequent.

However, the first figure *can* have an indirect conclusion. Take this examples:

Every living thing (M) is a substance (T)
But man (t) is a living thing (M)
Therefore, man (t) is a substance (T)

Here we have a first figure that concludes directly—the minor and major terms were subject and predicate, respectively, in the premises. But instead of concluding 'man is a substance' we can give the non-mutual conversion as the conclusion and say 'some substance is a man'. Since the conversion states nothing more than the original, this is a perfectly valid conclusion. So the argument would be:

Every living thing (M) is a substance (t)
But man (T) is a living thing (M)
Therefore, some substance (t) is a man (T)

Or simply:

Mt
TM
t T

Now you can see that the major term, the predicate of the conclusion, was really a subject in the premises. And the minor term was a predicate. So the major and minor extremes don't have the same disposition in the conclusion as they had in the antecedent. Hence, it is an indirect first figure.

Back in the first few centuries after Christ, a group of logicians tried to introduce another figure because they didn't understand that the first figure could conclude indirectly. The first of these logicians was named Galen, hence this new figure was called the Galenic figure. According to Galen, the middle term could be the predicate in the major and the subject in the minor. So:

T M
M t
t T

So the syllogism might state:

Every man (T) is a living thing (M)
But every living thing (M) is a substance (t)
Therefore, some substance (t) is a man (T)

Compare this 'fourth' figure to the indirectly concluding first figure. Notice anything? They are the same. The only difference is that the in our example of the first, the major premise was given second, after the minor premise. But the logical force is exactly the same as an indirectly concluding first figure. So even though there is a grammatical difference between this:

Mt
TM

and this:

T M
M t

They mean the same, logically speaking.

Let's examine the laws of the individual figures, then we'll be better able to understand the principles and comparative value of them.

Laws of the Individual Figures

These laws do not supplant the original nine laws. They are merely special applications of the original nine to the individual figures. A violation of any of these will violate one or more of the nine general laws.

Laws of the Direct First Figure

M T Major Premise
t M Minor Premise
t T

1. **The minor premise must be affirmative** – To prove this rule, let's assume that the minor is *not* affirmative and we'll see that absurdity follows (later on we'll call this method of proof *reductio ad absurdum).* Assuming the minor is negative, what happens? Well, first of all the major premise would have to be affirmative, otherwise we violate general rule number five. Additionally, the conclusion will have to be negative in accordance with rule seven. But if the major term is the predicate of an affirmative premise, it's particular. Yet if it becomes the predicate of a negative conclusion, it would be universal, in violation of general rule two. Hence, if the minor is negative the syllogism would be invalid. Therefore, it must be affirmative.
2. **The major premise must be universal** – Again let's assume for the sake of argument that the major is particular and we'll see what happens. We know already that the minor premise is affirmative, this means that the middle term, as the predicate of the minor premise, must be particular. But since the middle must be universal at least once, if it is particular in the minor premise, it must be universal in the major. But if the major premise is not universal, the middle term, as the subject of the major premise, would be particular. Hence, the fourth rule would be violated which states that the middle term cannot be particular twice.

Laws of the Indirect First Figure

Mt Minor Premise
TM Major Premise
t T

The Indirect first figure gives us some special considerations because in it, the middle term is differently related to the major and minor than in the direct; instead of the middle term being the subject of the

major premise and the predicate of the minor, it's the subject of the minor and the predicate of the major. Here are the special rules:

1. **If the major premise is affirmative, the minor must be universal** – This is because in this figure the middle term is the predicate of the major premise which is affirmative. And the predicate of an affirmative is particular. So since the middle term must be universal at least once (rule four), and its not universal in the major premise, it must be universal in the minor premise. And since the middle term is the subject in the minor premise, it follows that the minor premise is a particular proposition.
2. **If the minor premise is affirmative, the conclusion must be particular** – That's because in an affirmative proposition, the predicate is particular; and in the indirect third figure the minor term is the predicate of the minor premise (M t). And since the minor term becomes the subject of the conclusion, and the minor term can't go from being particular in the premises to universal in the conclusion (second general law), it follows that the subject of the conclusion is particular. But if the subject of the conclusion is particular, the conclusion must be a particular proposition.

Laws of the Second Figure

T M Major Premise
t M Minor Premise
t T

1. **One premise must be negative** – If a proposition is affirmative, the predicate will be particular. But in the second figure, the middle term is the predicate of both premises. Therefore, if both premises are particular, the middle term will be particular in each. But this is in violation of the fourth law which states that the middle must be universal at least once.
2. **The major premise must be universal** – Since one premise is negative, the conclusion must be negative (rule seven). The predicate of the conclusion, the major term, will therefore be universal.

Laws of the Third Figure

M T Major Premise
M t Minor Premise
t T

1. **The minor premise must be affirmative** – this is for the same reason as the first figure. If the minor premise is negative, and since we can't have two negative premises, the major premise will be affirmative. But the predicate of an affirmative proposition is particular. Hence, the major term (T) will be particular in the antecedent. But since we're assuming that the minor premise is negative, that means the conclusion must be negative (general rule seven). But the predicate of a negative conclusion is universal. And since the predicate of the conclusion is the major term, that means the major term goes from being particular in the premises to universal in the conclusion. A violation of rule general rule two; hence, a negative minor premise leads to an invalid syllogism.
2. **The conclusion must be particular** – since the minor term (t) is the predicate of an affirmative proposition (as we just saw), and since the predicate of an affirmative proposition is particular, it

follows that the minor term must be particular. But the minor term will be the subject of the conclusion. And since it can't go from being particular in the antecedent to being universal in the consequent (rule two), it follows that the subject of the conclusion will be particular. And if the subject of a proposition is particular, the proposition itself is particular.

Given what we've already established, notice that the second figure can *never* have an affirmative conclusion. That's a weakness because we don't want to know only what a thing is not, but what a thing is. The second figure can never be used for that. Furthermore, the third figure can *never* be universal. This is also a weakness because we want to know what pertains to something universally, not merely particularly. On the other hand, the first figure can conclude negatively, affirmatively, particularly, and universally. Hence, only in the first figure are all judgments about a thing possible. For this reason, we call the first figure the *perfect* figure. The second and the third are imperfect, and as often as possible we should reduce all arguments to the first figure. We'll learn how to turn them into the first figure a little later on.

EXERCISES: Give the figure of the following syllogisms. If any is not valid give the reason why.

1. **Some wars are successful**
   All wars are brutal
   All brutal things are successful
   3rd figure. Invalid. Conclusion not particular
2. **All feudalism was based on contractual relationships**
   No modern government is feudalism
   No modern government is based on contractual relationships
   1st figure direct. Invalid. Minor premise not affirmative.
3. **Some epics are poems**
   No novel is an epic
   No novel is a poem
   1st figure direct. Invalid. Minor not affirmative and major not universal.
4. **No true communists are Christians**
   All Catholics are Christians
   Some Christians are not true communists
   2nd figure. Invalid. Middle term enters the conclusion, violation of general categorical rule #3.
5. **All Babylonians wrote on clay tablets**
   Some non-Babylonians wrote on clay tablets
   Some non-Babylonians were Babylonians
   2nd figure. Invalid. No negative premise.
6. **All crusades were successful**
   All crusades were wars
   All wars were successful
   3rd figure. Invalid. Conclusion not particular.
7. **No bombs were used by the Crusaders**
   All bombs are modern inventions
   No modern inventions were used by the Crusaders
   3rd figure. Invalid. Conclusion not particular.
8. **No Muslims are Catholic**
   All Catholics are Christians
   No Muslims are Christian

1st figure direct. Minor premise not affirmative.

9. A horse is black
   Some ape is not a horse
   Some ape is not black
   1st figure direct. Minor premise not affirmative and major premise is not universal.
10. Some substance is not rational
    Some man is rational
    Some man is not a substance
    3rd figure. Invalid. Violation of general rule #9 and consequently general rule #2.

Restate each in strictly logical form and then evaluate in terms of figure and validity:

1. Some men are not patriotic because some men are not loyal Americans, and loyal Americans are patriotic.
   All loyal Americans are patriotic.
   But some men are not loyal Americans.
   Therefore, some men are not patriotic.
   First figure. INVALID. Violation of special rule# 1 (minor must be affirmative) and thereby violating general rule #2 re: patriotic.
2. Some men are not patriotic because some men are not loyal Americans, and only loyal Americans are patriotic.
   Only loyal Americans are patriotic.
   But some men are not loyal Americans.
   Therefore, some men are not patriotic.
   1st figure direct. VALID if the major premise is properly understood as an exponible: loyal Americans are patriotic AND all who are not loyal Americans are not patriotic.
3. Since not all men are rigorously logical, it follows that among scientists, all of whom are men, some are not rigorously logical.
   Some men are not rigorously logical (this is the English equipollent of 'not all men are rigorously logical'.
   All scientists are men.
   Therefore, some scientists are not rigorously logical.
   1st figure direct. INVALID. Violation of special rule #2 (major premise must be universal) and consequently violation of general rule #4.
4. John is a humble man because he knows his own weaknesses.
   Everyone who knows his own weaknesses is a humble man.
   But John is someone who knows his own weaknesses.
   Therefore, John is a humble man.
   1st figure direct. VALID (though the major premise is not true).
5. As a book, Introduction to the Devout Life, is an at-hand tool for moral development.
   N.B. This is a reduplicative proposition.
   All books are at-hand tools for moral development.
   But Introduction to the Devout Life is a book.
   Therefore, Introduction to the Devout life is an at-hand tool for moral development.
   1st figure direct. VALID (though the major premise is not true).

The following is a passage from Aquinas' Summa Contra Gentiles. Find the syllogisms in this passage, restate them in strictly logical form, and evaluate them in terms of figure and validity.

From this, moreover, it is also clear that riches are not the highest good for man.

Indeed, riches are only desired for the sake of something else; they provide no good of themselves but only when we use them, either for the maintenance of the body or some such use. Now, that which is the highest good is desired for its own sake and not for the sake of something else. Therefore, riches are not the highest good for man.

All riches are desired for the sake of something else
But man's highest good is not desired for the sake of something else.
Therefore riches are not man's highest good.

Again, man's highest good cannot lie in the possession or keeping of things that chiefly benefit man through being spent. Now, riches are chiefly valuable because they can be expended, for this is their use. So, the possession of riches cannot be the highest good for man.

Man's highest good is not the possession of things which benefit man through being spent.
The possession of riches is the possession of something which benefits man through being spent.
Therefore, the possession of riches is not man's highest good.

Besides, an act of virtue is praiseworthy the closer it is to felicity. Now, acts of liberality and magnificence, which have to do with money, are more praiseworthy in a situation in which money is spent than in one in which it is saved. So, it is from this fact that the names of these virtues are derived. Therefore, the felicity of man does not consist in the possession of riches.

Acts of virtue which are more praiseworthy are closer to man's highest good.
But acts of magnificence and liberality in which money is spent are more praiseworthy acts of virtue than those in which money is kept.
Therefore, acts of magnificence and liberality in which money is spent are closer to man's highest good than those in which money is kept.

[Further explanation of this depends on one other kind of proposition which, regrettably, I chose not to go over for the sake of time: the comparative proposition—when I edit this text, I'll be sure to include a section on that]

Moreover, that object in whose attainment man's highest good lies must be better than man. But man is better than riches, for they are but things subordinated to man's use. Therefore, the highest good for man does not lie in riches.

The object of man's highest good is something better than man.
But riches are not better than man.
Therefore, riches are no the object of man's highest good.

Thomas proves his minor premise:

All things which are subordinated to man's use are not better than man.
But riches are subordinated to man's use.
Therefore, riches are not better than man.

Furthermore, man's highest good is not subject to fortune, for things subject to fortune come about independently of rational effort. But it must be through reason that man will achieve his proper end. Of course,

fortune occupies an important place in the attainment of riches, Therefore, human felicity is not founded on riches.

Things subject to fortune are things which come about independently of rational effort.
But man's highest good IS NOT something which comes about independently of rational effort.
Therefore, man's highest good is not a thing subject to fortune.
But all things founded on riches are things subject to fortune.
Therefore, man's highest good is not a thing founded on riches.

Again, this becomes evident in the fact that riches are lost in an involuntary manner, and also that they may accrue to evil men who must fail to achieve the highest good, and also that riches are unstable-and for other reasons of this kind which may be gathered from the preceding arguments.

Man's highest good is not something lost in an involuntary manner.
But riches are something lost in an involuntary manner.
Therefore, man's highest good is not riches.

Man's highest good is not something which accrues to evil men.
But riches are something which accrues to evil men.
Therefore, man's highest good is not riches.

Man's highest good is not something unstable.
But riches are something unstable.
Therefore man's highest good is not riches.

Division According to the Form of the Remote Matter

Notion of the Moods

The figure of the syllogism has to do with how the *remote* matter is arranged: the disposition of the major, minor, and middle terms. The mood concerns the form of the *proximate* matter: i.e., the arrangement of the propositions themselves into a syllogism. Mood is defined as *the disposition of propositions according to their essential quality* (i.e., affirmation and negation) *and according to their quantity* (i.e., universal or particular—singular propositions, according to mood, don't differ from particulars, so they are included in them). This disposition is always given as a combination of propositions.

Take the following:

Some wars are successful.
All wars are brutal.
Therefore, some brutal things are successful.

The first premise is a particular affirmative, an I proposition. The second premise is a universal affirmative, an A proposition. The third premise is a particular affirmative, an I proposition. So the combination of these is IAI. We call this combination its *mood*.

All moral people are good for the country.
No communists are good for the country.
Therefore, no moral people are communists.

Here we have an A proposition as the first premise, an E proposition for the second, and an E proposition for the conclusion. It's mood is AEE.

Number of the Moods

Now, according to the arrangement of their premises there are sixteen possible moods for each figure. This is because each premise, the major and minor, can be either A, E, I, O (again, the singular proposition in this case doesn't logically differ from the particular). So each premise can be one four kinds, and the entire antecedent can be one of the following:

According to quantity:
1. Both premises are universal
2. Both premises are particular
3. The major is universal and the minor particular
4. The minor is universal and the major particular

According to quality:
1. Both premises are affirmative
2. Both premises are negative
3. The major is affirmative and the minor negative
4. The minor affirmative and the major negative.

Since four disposition according to quantity and four according to quality, that makes 16 possible combinations: 4 X 4 = 16. And since there are three figures, plus the indirect first figure, there are 64 possible combination: 4 X 16 = 64.

So the antecedent of each figure can have the following combinations:

1. AA
2. AE
3. EE
4. EA
5. II
6. IO
7. OO
8. OI
9. AI
10. AO
11. EI
12. EO
13. IA
14. IE
15. OA
16. OE

And because we know that a particular in the antecedent means a particular in the conclusion (rule 8) a negative in the antecedent means a negative in the conclusion (rule 7), and two affirmatives can't conclude to a negative (rule 6) these sixteen combinations must conclude as follows:

1. AA (A)
2. AE (E)
3. EE (E)
4. EA (E)
5. II (I)
6. IO (O)
7. OO (O)
8. OI (O)
9. AI (I)
10. AO (O)
11. EI (O)
12. EO (O)
13. IA (I)
14. IE (O)
15. OA (O)
16. OE (O)

But since every conclusion which is *universal* also includes its subalternated *particular,* several of these 16 may conclude differently/indirectly.

1. AA (A)
    a. AA(I)

2. AE (E)
    a. AE (O)
3. EE (E)
    a. EE (O)
4. EA (E)
    a. EA (O)
5. II (I)
6. IO (O)
7. OO (O)
8. OI (O)
9. AI (I)
10. AO (O)
11. EI (O)
12. EO (O)
13. IA (I)
14. IE (O)
15. OA (O)
16. OE (O)

From the remaining general laws that we gave for every categorical syllogism, we can eliminate

1. Any combination with two negatives in the antecedent (rule 5)
2. Any combination with two particulars in the antecedent (rule 9)

Thus:

1. AA (A)
    a. AA(I)
2. AE (E)
    a. AE (O)
~~3. EE (E)~~
    ~~a. EE (O)~~
4. EA (E)
    a. EA (O)
~~5. II (I)~~
~~6. IO (O)~~
~~7. OO (O)~~
~~8. OI (O)~~
9. AI (I)
10. AO (O)
11. EI (O)
~~12. EO (O)~~
13. IA (I)
14. IE (O)
15. OA (O)
~~16. OE (O)~~

We now have twelve possible combinations remaining.

1. AA (A)
    a. AA(I)
2. AE (E)
    a. AE (O)
3. EA (E)
    a. EA (O)
4. AI (I)
5. AO (O)
6. EI (O)
7. IA (I)
8. IE (O)
9. OA (O)

Applying the special rules of each figure we can determine precisely which ones will be valid. We come up with the following list of moods which survive all the tests:

The direct first figure – we can eliminate every combination where the minor premise is negative (special rule 1), and every combination where the major premise is particular (special rule 2).

Thus:

1. AA (A)
2. ~~AE (E)~~
3. EA (E)
4. AI (I)
5. ~~AO (O)~~
6. EI (O)
7. ~~IA (I)~~
8. ~~IE (O)~~
9. ~~OA (O)~~

Now the AAI combination and the EAO are *subalternate* conclusions, included under AAA, and EAE. So the valid moods for the first figure concluding directly are these:

1. AA (A)
2. EA (E)
3. AI (I)
4. EI (O)

The indirect first figure – we can eliminate every combination where the major (keeping in mind that compared to the direct figure, the major premise is listed second) is affirmative while the minor is particular (special rule 1), where the minor is affirmative while the conclusion is universal (special rule 2), and where one premise is negative while the major is particular (special rule3).

1. ~~AA (A)~~
    a. AA(I)
2. ~~AE (E)~~
    a. AE (O)

3. EA (E)
    a. EA (O)
4. AI (I)
~~5. AO (O)~~
~~6. EI (O)~~
~~7. IA (I)~~
8. IE (O)
~~9. OA (O)~~

The EAO is included in the EAE, so the valid moods for the indirectly concluding first figure are:

1. AA(I)
2. AE (O)
3. EA (E)
4. AI (I)
5. IE (O)

The second figure – we can eliminate all combinations with two affirmative premises (special rule 1), and every combination where the major is particular (special rule 2)

~~1. AA (A)~~
    ~~a. AA(I)~~
2. AE (E)
    a. AE (O)
3. EA (E)
    a. EA (O)
~~4. AI (I)~~
5. AO (O)
6. EI (O)
~~7. IA (I)~~
~~8. IE (O)~~
~~9. OA (O)~~

The AEO and the EAO are already included under AEE and EAE, so the valid moods for the second figure are:

1. AE (E)
2. EA (E)
3. AO (O)
4. EI (O)

The third figure – we can eliminate every combination where the minor is negative (first special rule) and every combination where the conclusion is universal (second special rule).

~~1. AA (A)~~
    a. AA(I)
~~2. AE (E)~~
    ~~a. AE (O)~~
~~3. EA (E)~~
    a. EA (O)
4. AI (I)

5. ~~AO (O)~~
6. EI (O)
7. IA (I)
8. ~~IE (O)~~
9. OA (O)

The valid moods, then, for the third figure are these:

1. AA(I)
2. EA (O)
3. AI (I)
4. EI (O)
5. IA (I)
6. OA (O)

So to sum it all up, the only valid combinations of propositions, the only valid moods, are these:

Four in the direct first figure: AAA, EAE, AII, EIO
Five in the indirect first figure: AAI, EAE, AII, AEO, IEO
Four in the second figure: EAE, AEE, EIO, AOO
Six in the third figure: AAI, EAO, IAI, AII, OAO, EIO

To help remember all the valid moods, medieval logicians decided to name them with mnemonic devices. These names are

In the direct first figure: ***Barbara, Celarent, Darii, Ferio***
In the indirect first figure: ***Baralipton, Celantes, Dabitis, Fapesmo, Frisesomorum***
In the second figure: ***Cesare, Camestres, Festino, Baroco***
In the third figure: ***Darapti, Felapton, Disamis, Datisi, Bocardo, Ferison***

The first three vowels in the name indicate the mood; e.g., Baralipton (b **A** r **A** l **I** pton) is an AAI proposition.

But these mnemonic devices do more than give the mood of the syllogism. In the indirect first, second, and third figures they also tell how these syllogisms can be reduced to the first syllogism.

Reduction of the Moods

Recall that only the first figure syllogism can tell us everything we want to know about a thing. Only in the first figure can the conclusion be affirmative, negative, universal, or particular. But more than that, it is exceedingly natural to the mind because the middle term functions truly as the middle, being both more extended than the minor term and less extended than the major term. This makes it far easier to understand. As I've said before, when a term functions as subject in a proposition it takes on different logical properties than it does when it functions as a predicate. And when a term switches functions between the antecedent and the consequent (i.e., when it goes from being predicate to being subject or vice versa) the mind needs to understand it with different logical relations in each instance. This is extra work for the intellect; it's intellectual labor that doesn't need to be there and it's just one more place for logical error to creep in. Hence, as often as possible we should reduce the other figures to the direct

first figure where the minor and major terms don't switch logical roles—we should make the indirect, second, and third figures into the direct first.

There are two ways to reduce the other figures to the first:

1. Direct reduction (also called ostensive reduction)
2. Indirect reduction (also called reduction to the impossible)

Direct reduction is made through a series of conversions and *transposition*s. By transposition I mean only that the major and minor premises switch places in the syllogism. Let's take an example:

All animals are living. (A)
No stones are living. (E)
Therefore, no stones are animals. (E)

We can mutually convert the minor premise here because it's negative, and we'll get 'no living things are stones'. We can also transpose the major premise and minor premise. Finally, we can convert the conclusion (since it's negative) and it becomes 'no animals are stones'. This will give us:

No living things are stones. (E)
But all animals are living things. (A)
Therefore, no animals are stones. (E)

We've now taken an imperfect, indirect syllogism and made it into a first figure direct syllogism. The ability to reduce the other figures to the direct first figure is immediately founded on one of the general laws of all reasoning: what is compatible with the truth of the consequent must be compatible with the truth of the antecedent. Since 'no animals are stones' is immediately compatible with the original conclusion (i.e., 'no stones are animals') it must likewise be immediately deducible from the antecedent. Reduction is nothing more than giving propositions which are equivalent to the original antecedent to show precisely how this new conclusion comes about.

Indirect reduction is also called the *reductio ad absurdum* (reduction to absurdity) or *reductio ad impossibile* (reduction to the impossible). This happens when your opponent accepts the premises of your argument but denies your conclusion. And the point of this reduction is to hold him in contradiction. Take the following:

Some X is Z
But all X is Q
Therefore, some Q is Z.

Let's say your opponent accepts that some X is Q and that all X is Q, but he still stubbornly refuses to admit that some Q is Z; he still holds that no Q is Z. Fine. Assume for the sake of argument that he's right. Grant him that no Q is Z. Now, take what you grant him, that no Q is Z, and use that in place of the original major premise. You get:

No Q is Z. (which you grant your opponent)
But all X is Q.
Therefore, no X is Z. (which is contradictory to what he granted at the beginning, that some X is Z)

He has no choice but to abandon his position, admit that contradictories can be true together, or just not think about it anymore. This indirect reduction is founded likewise on one of the most universal laws of all reasoning: what is repugnant to the truth of the consequent must be repugnant to the truth of the antecedent. Because the contradictory of the conclusion is immediately opposed to that conclusion, it must also be immediately opposed to the antecedent in which that conclusion is potentially contained. The indirect reduction consists in making that opposition apparent. And strictly speaking, this kind of reduction is possible in every figure (other than the direct first, of course). However, keep in mind that the indirect reduction is not really the same syllogism as you started out with but merely stated in a different order. It is in fact an entirely new syllogism with absurd consequences.

Now, not every syllogism can be directly reduced. But the mnemonic devices give us an easy guide to these reductions.

1. The first letter of the name indicates the first letter of the first figure to which the syllogism should be reduced. For example, Celantes, Cesare, Camestres are reducted to Celarent; Baralipton, Baroco, Bocardo are reduced to Barbara.
2. Several of the other consonants indicate the precise operation possible for reducing to the direct first figure:
    a. When you see the letter S, it means that the propositions symbolized by the vowel before the S is to be simply (mutually) converted.
    b. When you see the letter P, it means that the propositions symbolized by the preceding vowel are to be accidentally (non-mutually or *Per accidens*) converted.
    c. When you see the letter M it means that you should transpose the major and minor premises.
    d. When you see the letter C, it means that you can only indirectly reduce it by leaving out the proposition just before the C and replacing it with the contradictory of the conclusion (Baroco and Bocardo).

The Scholastics remembered this with the following passage:

S vult simpliciter verti; P vero per accidens;
M vult transponi; C per impossibile duci.

So taking one of the above examples:

All animals are living. (A)
No stones are living. (E)
Therefore, no stones are animals. (E)

This is CAMESTRES (AEE). The first letter (C) means that it is reduced to the first figure syllogism beginning with C—i.e., Celarent (EAE). To do this, look at the other consonants in Camestres. Here we find two Ss. The first comes after the minor premise (E), while the second comes after the conclusion. This means that you can construct a first figure syllogism by mutually converting the minor premise AND the conclusion, as well as transposing the major and minor.

Now, two syllogisms (namely, Baroco and Bocardo) can't be reduced directly—but they can still, like every other imperfect syllogism, be indirectly reduced. The steps for indirect reduction are as follows:

1. In the indirect first figure (e.g., every animal is living; but every man is an animal; therefore, some living thing is a man)
    a. Take the contradictory of the conclusion and use it in place of the original major premise. (e.g., no living thing is a man)
    b. Take the original major premise (which the opponent has conceded) and use it in place of the original minor premise (which was also conceded). (e.g., no living thing is a man, but every animal is living)
    c. Deduce the contrary of the original minor premise. (therefore, no animal is man
    This is slightly modified in the case of Celantes because the contradictory of its original conclusion (which was an E proposition) will be a particular proposition (I). In this case, you should place the contradictory of the original conclusion where the original minor premise was, move the original minor premise to the major premise, and conclude to the contradictory of the original major premise. For example, if the original syllogism is "no animal is a stone; but every man is an animal; therefore, no stone is a man", the reduction would be "every man is an animal, but some stone is a man, therefore, some stone is an animal". Here the conclusion 'some stone is an animal' contradicts the original major premise, 'no animal is a stone'.
2. In the second figure (e.g., no stone is an animal; but every man is an animal; therefore, no man is a stone)
    a. Take the contradictory of the conclusion (e.g., some man is a stone) and use in place of the original minor premise.
    b. Keep the major premise from the original. (e.g., no stone is an animal; but some man is a stone)
    c. Conclude to the contradictory of the original minor. (e.g., no stone is an animal; but some man is a stone; therefore, some man is not an animal)
3. In the third figure (e.g., every man is living; but some man is white; therefore, some white thing is living)
    a. Take the contradictory of the conclusion (e.g., no white thing is living) and use it in place of the original major premise.
    b. Keep the original minor premise. (e.g., no white thing is living; but some man is white)
    c. Conclude to the contradictory of the original major premise (e.g., no white thing is living; but some man is white; therefore, some man is not living)

These rules were summed up by Scholastics in the following passage:

PRIMA *minorem* adimit, facit e *maiore* MINOREM
CELANTES *minor* est contradic, MINOR sede *maioris*;
Maiorem servat, variatque SECUNDA *minorem*;
TERTIA *maiorem* variat, servatque MINOREM

The Hypothetical Syllogism

We'll look at the common characteristics of the hypothetical syllogism, then we'll divide it into its various species and examine each one in turn.

The Nature of the Hypothetical Syllogism

Besides the categorical, there is another kind of deductive argumentation. In this kind, instead of comparing two things by means of a third and the overall connection between these three concepts, we're interested in the connection between entire propositions themselves. Recall that we spent a fairly good bit of time with the hypothetical proposition—the one which didn't state the fact of something, but merely the sequence between two truths: if A, then B. In the hypothetical proposition, remember, we don't say that either part of that proposition is true or false. When I say 'if A, then B' I've not affirmed that A is true, nor have I affirmed that B is true. What I *have* affirmed is that the relationship between A and B is such that A cannot B true while B is false.

But once I've determined the causal nexus between A and B, I *could* take another step—once I know that A being true means B is true, I can go a bit farther and actually judge that A is *true* thereby affirming that B must be true as well. Truly affirming or denying A will give us a second proposition and a conclusion:

If A, then B.
But B.
Therefore, A.

This is called the hypothetical syllogism. We define it as *a syllogism in which the major is a hypothetical proposition, and the minor posits or removes one of the parts of the major.*

The hypothetical really does differ from the categorical. The categorical proceeds by perceiving the identity or diversity between its component terms, between the remote matter. No such perception takes place in the hypothetical syllogism. It doesn't place two concepts in relation to the extension of the third and conclude to their relation to each other. It works only by expressing the causal dependence of one proposition on another. Whenever you encounter a syllogism which looks like a hypothetical but in fact proceeds by identifying or separating the terms themselves, it is really a categorical syllogism. Take this for example:

If A is, B is.
But if B is, C is.
Therefore, if A is C is.

We call this a disguised categorical. Logically, it means the same as the following:

Every A is B.
But every B is C.
Therefore, every A is C.

When a hypothetical proposition is used as a premise in argumentation, we call that premise the major premise. The minor premise then posits or removes one member, one component proposition, of the

hypothetical major premise. Why do we say posit or remove? Why don't we say affirm or deny? Take the following:

If Peter runs, then Peter is not at rest.
But Peter is at rest.
Therefore, Peter does not run.

The minor premise indeed denies that the second part of the hypothetical proposition (i.e., the 'conditioned' to use some of our previous terminology) is true, but it does this by making an affirmation, 'Peter IS at rest'. Hence, to avoid any confusion we say that this minor premise, which is an affirmation, REMOVES part of the hypothetical. Likewise if we were to argue:

If Peter does not move, then Peter does not run.
But Peter does run.
Therefore, Peter moves.

The minor premise again removes the conditioned by an affirmation, and the conclusion removes the condition by another affirmation. Or if we were to say:

If Peter does not move, then Peter does not run.
But Peter does not move.
Therefore, Peter does not run.

In this case, we do indeed affirm that the condition is true, but we do this by a negation (i.e., Peter really DOES NOT move). Hence, to avoid confusion we say that we have POSITED the condition, even though the condition was a negation—moving was denied of Peter.

Furthermore, removing one member of the hypothetical proposition can occur in two ways: by giving its contradiction, and by giving its contrary. For example:

If all men are stones, then no men are living.

We can remove the conditioned by giving its contradictory:

But some men ARE living.

And this would give us the contradictory of the condition as a conclusion:

Therefore, some men are not stones.

Alternatively, we could have removed the conditioned by giving its contrary:

But all men are living.

And the conclusion would then be the contrary of the condition:

Therefore, no men are stones.

So you can see that any denial of one member of the hypothetical will be sufficient to remove it. The same is not the case for positing, however. The posited member must be declared true in its entirety. If the posited member is an A proposition, for example, the positing cannot be done by means of an I proposition. So:

If every man needs family, then society is natural.
But some man needs family.
Therefore, …

This is invalid and no conclusion follows because the condition wasn't posited in its entirety. The fact that some man needs family neither proves that society is natural, nor proves that society is not natural.

Division of the Hypothetical Syllogism

The hypothetical propositions, if you will recall, were of five kinds: simple conditional (if A, then B), reciprocal conditional (if and only if A, then B), inclusive alternative (either A or B or both), exclusive alternative (either A or B but not both), and disjunctive (it cannot be true that both A and B). And since each of these can be used as a proposition in a syllogism we have five kinds of hypothetical syllogisms.

Now, the conditional proposition admits of only two parts: an antecedent (or condition) and a consequent (or conditioned). However, the alternatives and the disjunctive have the possibility of many, many parts. The simplest alternative, for example, has only two member: either A or B. But there's no reason we can't have: either A or B or C or D, etc. The disjunctive has the same possibility. When we treat of the alternative and disjunctive syllogisms, we'll look first at the simplest kinds with only a two-member major premise, then we'll examine the more complex kinds with a multi-membered major premise.

The Conditional Syllogism

Again the conditional is of two types, simple and reciprocal. We look at each in turn.

The Simple Conditional Syllogism

We'll look first at the nature of the simple conditional syllogism. From this nature, we'll pull out several rules so that its nature isn't violated when reasoning. Given these rules, we can see the valid arrangement of the simple conditional syllogism; this will give us its figures and moods. Finally, since the fundamental type of reasoning is categorical reasoning, we'll see how to reduce the simple conditional to the categorical syllogism.

Nature of the Simple Conditional Syllogism

The simple conditional syllogism is one whose major premise is a simple conditional proposition and whose minor premise posits or removes either the condition or the conditioned or the major. In the simple conditional, the first member of the hypothetical proposition—i.e., the condition—is seen to be the cause of the second member—i.e., the conditioned—though it is not the only possible cause. So when I say 'if a, then b', 'a' is one possible cause of the effect, 'b'. This means that wherever you find cause 'a' you will find effect 'b', but this doesn't mean that wherever you find effect 'b' you will find cause 'a'. Let's say the effect is dying. Dying has many possible causes. Ingesting a lethal dosage of

poison is one possible cause. So we might say 'if you take poison, you will die'. When we find the cause, when we find someone who has taken poison, we may likely find the effect—he dies. But just because we see the effect—someone dies—doesn't mean that we have to find a bottle of poison lying around. Poison is only one of many possible causes.

Laws of the Simple Conditional Syllogism

Because of this relation between possible cause and effect, we can lay down the following rules of the simple conditional:

1. To posit the condition (i.e., the cause) is to posit the conditioned (i.e., the effect).
2. To posit the conditioned (i.e., the effect) is NOT to posit the condition (i.e., the possible cause). Positing the effect says nothing about the cause, so there is no conclusion in this case
3. Removing the conditioned (i.e., the effect) is to remove the condition (i.e., the cause). Obviously, if there's not effect there's no cause. We may argue right, for example, 'if Peter runs, Peter moves; but Peter does not move, therefore Peter does not run.'
4. Removing the condition (i.e., the cause) is NOT to remove the conditioned (i.e., the effect). The reason is because in the simple conditional the cause is only one of several possible causes. Just because this particular cause is removed doesn't mean the effect necessarily ceases. So we cannot argue: 'If Peter runs, Peter moves; but Peter does not run; therefore, Peter does not move.'

Figures and Moods of the Simple Conditional Syllogism

So there are two possible arrangements in the simple conditional:

1. Concluding from the truth of the condition to the truth of the conditioned.
2. Concluding from the falsity of the conditioned to the falsity of the condition.

The first posits the cause and thereby posits the effect. We call this in Latin *modus ponendo ponens*, or 'in positing posits'.

The second removes the effect and thereby removes the cause. We call this in Latin *modus tollendo tollens*, or 'in removing removes'.

These two arrangements concern the remote matter; i.e., they concern the component propositions of the hypothetical premise. For this reason we call these two arrangements the figures of the simple conditional. First figure: in positing posits. Second figure: in removing removes.

Furthermore, the quality (i.e., affirmation or negation) of the premises (and the hypothetical's component propositions) give us four possible combinations for each figure. These combinations are the moods of the simple conditional:

1. Modus Ponendo Ponens
    a. If A is, B is. But A is. Therefore, B is.
    b. If A is, B is not. But A is. Therefore, B is not.
    c. If A is not, B is. But A is not. Therefore, B is.
    d. If A is not, B is not. But A is not. Therefore, B is not.

2. Modus Tollendo Tollens
    a. If A is, B is. But B is not. Therefore, A is not.
    b. If A is, B is not. But B is. Therefore, A is not.
    c. If A is not, B is. But B is not. Therefore, A is.
    d. If A is not, B is not. But B is. Therefore, A is.

Reduction of the Simple Conditional Syllogism to the Categorical Syllogism

The simple conditional can be resolved into a categorical syllogism because the categorical is implicitly contained within it. But how to make this reduction will depend upon whether or not the subject in each member of the hypothetical proposition is the same.

Reduction of the Simple Conditional with the Same Subject in Each Member

This is a very simple resolution to make. Take this example:

If Peter runs (or strictly, 'is someone who runs'), Peter moves (or strictly, 'is someone who moves').
But Peter runs.
Therefore, Peter moves.

The subject is same in each member of the hypothetical—namely, Peter. This syllogism is reduced to:

All who run move.
But Peter is one who runs.
Therefore, Peter moves.

To make the reduction when the subject is the same:

1. Construct a new universal major premise using the predicate of the original hypothetical's condition as the universal subject of the new major premise (e.g., 'someone who runs' from the original becomes 'everyone who runs').
2. Use the predicate of the original hypothetical's conditioned as the predicate of the new major premise (e.g., 'someone who moves'—so our new major premise reads, 'everyone who runs is some who moves' or 'all who run move').
3. Keep the original minor as the minor in the new syllogism (e.g., 'But Peter runs', or strictly 'but Peter is someone who runs')

Reduction of the Simple Conditional with a Different Subject in Each Member

So it's fairly straightforward when we have 'Peter' as the subject in each member of the hypothetical proposition. But things are a bit more complicated when the subject changes from one member to the other. Take this example:

If water is scarce, flowers will die.
But water is scarce.
Therefore, flowers will die.

If we use our first set of rules, this makes absolutely no sense:

Everything which is scarce will die.
But water is scarce.
Therefore, water will die.

And, unfortunately, no general set of rules can be given which will make a reduction sound pleasant in every case. Nevertheless, we can always state this kind of conditional as a categorical because we know that the condition is the cause and the conditioned is the effect: the scarcity of water IS something which causes the death of flowers. Yet this can only very awkwardly be used as a replacement for the original hypothetical syllogism. Perhaps something like:

The scarcity of water is something which causes the death of flowers.
But the situation right now is one of scarce water.
Therefore, the situation right now is one of dying flowers.

There are obvious defects with this and it only vaguely resembles the original. However, given the fact that the condition is the cause of the conditioned we can set down a very general form of categorical that will apply in all cases:

Every situation in which the condition is true is a situation in which the conditioned is true.

Applying this to the syllogism at hand, we can say:

Every situation in which water is scarce is a situation in which flowers will die.
But our present situation is one in which water is scarce.
Therefore, our present situation is one in which flowers will die.

We now have a direct first figure.

The Reciprocal Conditional Syllogism

As before, we examine the nature of the reciprocal conditional syllogism. From this nature we establish general laws. From the possible combinations which survive these laws we get the figures and moods. Finally, since the categorical syllogism is more fundamental, we reduce the reciprocal to it.

Nature of the Reciprocal Conditional Syllogism

The reciprocal conditional syllogism is one whose major premise is a reciprocal conditional proposition and whose minor premise posits or removes either the condition or the conditioned or the major. In many respects its treated just like the simple conditional, except that the two figure, *modus ponendo ponens* and *modus tollendo tollens*, can both be used with reference to each part of the conditional proposition. Remember, in reciprocal conditional propositions not only is the condition the cause of the conditioned, but it's the only possible cause of the conditioned. So wherever you find the condition you will find the conditioned as an effect; and wherever you find the effect, you must find the condition since it is the only possible cause. For example:

If and only if you are morally culpable for a crime, then you can be justly punished.
But you are morally culpable for a crime.
Therefore, you can be justly punished.

Being morally culpable is the necessary condition for just punishment, as we learn in Ethics; no one can be justly punished unless they are guilty of an immoral action. So whenever you find someone justly punished, it's impossible that they be innocent.

Laws of the Reciprocal Conditional Syllogism

Because of this relation between only possible cause and its effect, we can lay down the following rules of the reciprocal conditional:

1. To posit the condition (i.e., the cause) is to posit the conditioned (i.e., the effect).
2. To posit the conditioned (i.e., the effect) is to posit the condition (i.e., the cause).
3. To remove the condition (i.e., the cause) is to remove the conditioned (i.e., the effect).
4. To remove the conditioned (i.e., the effect) is to remove the condition (i.e., the cause).

Figures and Moods of the Reciprocal Conditional

Like the simple conditional, there are two figures: in positing posits, in removing removes. The only difference is that the positing and removing works in both ways; i.e., we can posit either the condition or the conditioned, and likewise we can remove the condition or the conditioned. So in each figure there will be a total of eight moods depending on the quality (i.e., affirmation or negation) of each component member of the hypothetical proposition.

1. Modus Ponendo Ponens
    a. If A is, B is. But A is. Therefore, B is.
    b. If A is, B is not. But A is. Therefore, B is not.
    c. If A is not, B is. But A is not. Therefore, B is.
    d. If A is not, B is not. But A is not. Therefore, B is not.
    e. If A is, B is. But B is. Therefore, A is.
    f. If A is, B is not. But B is not. Therefore, A is.
    g. If A is not, B is. But B is. Therefore, A is not
    h. If A is not, B is not. But B is not. Therefore, A is not.
2. Modus Tollendo Tollens
    a. If A is, B is. But B is not. Therefore, A is not.
    b. If A is, B is not. But B is. Therefore, A is not.
    c. If A is not, B is. But B is not. Therefore, A is.
    d. If A is not, B is not. But B is. Therefore, A is.
    e. If A is, B is. But A is not. Therefore, B is not.
    f. If A is, B is not. But A is not. Therefore, B is.
    g. If A is not, B is. But A is. Therefore, B is not.
    h. If A is not, B is not. But A is. Therefore, B is.

Reduction of the Reciprocal Conditional Syllogism to the Categorical

The resolution is made in a fashion similar to the simple conditional. The difference, though, is that the subject and the predicate of the new categorical proposition will always be mutually convertible—we can make a mutual conversion regardless of whether or not the new proposition is A, E, I, or O because

we will know that the subject and the predicate are *co-extensive* (cfr. our discussion many pages ago of convertible and inconvertible pertinence of sequel). To explain this, let's examine, as before, cases where the subject is the same in each component member of the conditional; then, we'll examine cases where they are different.

Reduction of the Reciprocal Conditional with the Same Subject in Each Member

This is made using the same rules as the simple conditional's reduction, but, again, with the big difference being that the subject and predicate of the new categorical will be mutually convertible.

So if I say, 'if and only if a plane figure has three sides, it is a triangle', this will become 'every plane figure with three sides is a triangle.' Now, ordinarily, this proposition is not mutually convertible because it is an A proposition and the predicate logically has greater extension than the subject. However, in this case, we know for certain that the subject is the only thing within the predicate's extension because the original conditional told us as much: it told us that wherever you find a triangle you will find a plane figure with three sides and wherever you find a plane figure with three sides, you have a triangle. To make this clear when reduced, it is often helpful to use the exclusive exponible proposition: ONLY every plane figure with three sides is a triangle. Expounded, then, we would know that every plane figure with three sides is a triangle and that nothing else is a triangle.

If our original argument was:

If and only if a plane figure has three sides, it is a triangle.
But a rectangle is not a plane figure with three sides.
Therefore, a rectangle is not a triangle.

We could turn this into:

Every plane figure with three sides is a triangle.
But a rectangle is not a plane figure with three sides.
Therefore, a rectangle is not a triangle.

Now, ordinarily this syllogism would be invalid. 'Triangle' has particular supposition in the antecedent, but universal supposition in the conclusion. However, we know from the original conditional proposition that 'plane figure with three sides' and 'triangle' are co-extensive and, therefore, mutually convertible. So we can easily make this syllogism valid by mutually converting the major proposition:

Every triangle is a plane figure with three sides.
But a rectangle is not a plane figure with three sides.
Therefore, a rectangle is not a triangle.

To take another example from above:

If and only if you are morally culpable for a crime, then you can be justly punished.
But you are morally culpable for a crime.
Therefore, you can be justly punished.

The major will become something like:

Every person (and only those people) morally culpable for a crime can be justly punished.

Which, because it is mutually convertible, might be stated:

Everyone who can be justly punished is morally culpable for a crime.

And our new categorical syllogism would be:

Every person morally culpable for a crime can be justly punished.
But you are morally culpable for a crime.
Therefore, you can be justly punished.

Reduction of the Reciprocal Conditional with a Different Subject in Each Member

As with the simple conditional, the reduction is a little more difficult when there is a different subject in each component proposition of the hypothetical. Take this example:

If and only if some people are guilty, then punishment can be just.

In accordance with the general categorical that we explained above (i.e., Every situation in which the condition is true is a situation in which the conditioned is true) we can give a similar categorical for the reciprocal; of course, with the one difference being that the subject and the predicate are mutually convertible:

Every situation, and only in those situations, in which the condition is true is a situation in which the conditioned is true.

And, again, because this is mutually convertible, we can also say:

Every situation in which the conditioned is true, is a situation in which the condition is true.

Giving this some context we can say:

Every situation, and only in those situations, in which some people are guilty is a situation in which punishment can be just.

Or:

Every situation in which punishment can be just is a situation in which some people are guilty.

From this we can argue (albeit somewhat awkwardly):

Every situation in which some people are guilty is a situation in which punishment can be just.
But our situation right now is one in which some people are guilty.
Therefore, our situation right now is one in which punishment may be just.

Alternative Syllogisms

Alternatives state that at least one of several members must be true in light of the others. There are two types of alternative propositions and, therefore, two possible alternative syllogisms: inclusive and exclusive. We examine each.

Furthermore, as I said above, the alternative can have simply two members in it (either A or B), or it can have more than two members (either A or B or c or D etc.). We'll examine the inclusive and exclusive, first, by looking at two-membered alternatives, then, by examining multi-membered alternatives.

The Inclusive Alternative Syllogism

The inclusive alternative in its simplest and most common form has two members, or rather two alternatives. We examine this two-membered alternative first (either A or B), then we examine a more complicated form of alternative with more than two members (either A or B or C or D etc.).

Two-Membered Inclusive Alternatives

As with the conditionals, we examine the nature, the laws which follow as a consequence of this nature, and the arrangement of figures and moods in accordance with these laws. Finally, we see how the inclusive alternative can be reduced to the simple conditional, which in turn can be reduced to the categorical.

Nature of the Inclusive Alternative Syllogism

The inclusive alternative syllogism is one in which the major premise is an inclusive alternative proposition and the minor premise removes one member. In the inclusive alternative, if you recall, there is always the possibility that both members are true. Either socialism will be defeated, or the free world is not safe. It may be the case that both of these are true: socialism is defeated but the free world is still not safe. The inclusive alternative only tells us that, in light of one component proposition's falsity, the other component proposition must be true. If it is false that socialism is defeated, if socialism survives, then it is true, given this, that the free world is in danger. The falsity of one part is the cause of the other part's truth—but it isn't the only cause. So if that cause is removed (i.e., if that part is true) it won't follow that the other part is necessarily false. Socialism's survival (i.e., if it is FALSE that socialism is defeated) causes the truth of the other proposition, that the free world is in danger. But socialism's survival isn't the only possible cause of danger to the free world. Hence, even if socialism doesn't survive (i.e., even if it is true to say 'socialism is defeated') there may still be other causes responsible for the danger of the free world.

Laws of the Inclusive Alternative Syllogism

Given what I've pointed out, we can lay down the following laws for arguing from the inclusive alternative.

1. Both members cannot be false at the same time. This is because the inclusive alternative already allows that possibility that both members are true. If they can also be false together, then no argument will be possible. If the major premise is 'either A or B or both or neither', then no matter what the minor premise is (e.g., 'but A', 'but B', 'but not A', 'but not B') no conclusion would ever follow.

2. Positing either member yields no conclusion. This is because both parts can be true, though one might be false. Just because, then, one is true doesn't tell us anything about the other part. Just because it is true to say socialism is defeated doesn't mean it's false (or true) to say the free world is in danger.
3. Removing either member posits the other member. This is because at least one must be true. So if one is false, the other must be accepted as true. If it is false to say 'socialism is defeated' then it must be true to say 'the free world is in danger'. And if it is false to say 'the free world is in danger' it must be true to say 'socialism is defeated'. So we can legitimately argue:

   Either socialism is defeated or the free world is in danger.
   But socialism is not defeated.
   Therefore, the free world is in danger.

Figures and Moods of the Inclusive Alternative Syllogism

From what's been said, you can see that there is only one valid mood of the inclusive alternative syllogism: in removing one alternative (i.e., by declaring that one component proposition is false) you posit the remaining member—*modus tollendo ponens*, of 'in removing posits'. Positing one member removes, on the other hand, can give you no valid conclusion.

In this figure, there are either possible moods given the quality (i.e., affirmation or negation) of the premises.

1. Either A is, or B is. But A is not. Therefore, B is.
2. Either A is, or B is. But B is not. Therefore, A is.
3. Either A is not, or B is. But A is. Therefore, B is.
4. Either A is not, or B is. But B is not. Therefore, A is not.
5. Either A is, or B is not. But A is not. Therefore, B is not.
6. Either A is, or B is not. But B is. Therefore, A is.
7. Either A is not, or B is not. But A is. Therefore, B is not.
8. Either A is not, or B is not. But B is. Therefore, A is not.

Reduction of the Inclusive Alternative Syllogism to the Conditional Syllogism

We saw in the section on inclusive alternative propositions, that they can be reduced to the simple conditional. We do this by assuming the falsity of one member as a condition. Since the falsity of one member yields the truth of the other in the inclusive alternative, the conditioned will be the truth of the other member. So we go start with:

Either socialism is defeated or the free world is in danger.

Since one part has to be true, IF we remove one member, THEN we must posit the remaining member. Let's remove the first alternative:

IF socialism IS NOT defeated (removing the first member), THEN the free world IS in danger (positing the second).

We might also remove second member instead of the first, and we would get:

IF the free world IS NOT in danger, THEN socialism IS defeated.

Now that the alternative has been a condition proposition, we can restate our original argument. Instead of:

Either socialism is defeated or the free world is in danger.
But socialism is not defeated.
Therefore, the free world is in danger.

We now have:

If socialism is not defeated, then the free world is in danger.
But socialism is not defeated.
Therefore, the free world is in danger.

Furthermore, now that we have a simple conditional syllogism, we can reduce it further to the categorical by using the rules already given. So we would end up with something like.

Every situation in which socialism is not defeated is a situation in which the free world is in danger.
But ours is a situation in which socialism is not defeated.
Therefore, ours is a situation in which the free world is in danger.

Multi-Membered Inclusive Alternatives

The rules for multi-membered inclusive are simply an application of the general rules already given.

1. If one member is posited, nothing follows. This is because several of the members can be true together in the inclusive alternative.
2. If one member (or several) is removed, the conclusion is another inclusive alternative proposition containing the remaining members. This is because at least one member must be true in an alternative. So if one member is not true, one of the remaining members must be true. So we would argue:
   Either A or B or C or D
   But not A
   Therefore, either B or C or D
3. If all but one member are removed, the conclusion is a categorical proposition positing the remaining member.
   Either A or B or C or D
   But not A or B or C
   Therefore, D

The Exclusive Alternative Syllogism

As with the inclusive alternative syllogism, we look first at the simplest and most common kind of exclusive—a two-membered alternative syllogism (either A or B). Then we examine its more complicated versions—multi-membered alternatives (either A or B or C or D, etc.).

The Two-Membered Exclusive Alternative Syllogism

As we have done, we examine the nature, the laws which follow as a consequence of this nature, and the arrangement of figures and moods in accordance with these laws. Finally, we see how the exclusive alternative can be reduced to the reciprocal conditional, which in turn can be reduced to the categorical.

Nature of the Exclusive Alternative Syllogism

This is one in which the major premise is an exclusive alternative proposition, while the minor premise posits or removes one member of the major. Notice that the definition of the inclusive alternative only mentions removing, while this definition for the exclusive mentions also positing. That's because the inclusive alternative syllogism (assuming, as we have been , that it only has two members) has only one valid mood: in removing posits. But in the exclusive alternative, the case is a little different. In the exclusive alternative, only one can be true (either A or B, but not both). So if one is identified as true, the others must be admitted as false. Hence, not only does the falsity of one part lead to the truth of the other (as in the inclusive), but the truth of one part rules out the truth of the other. So, EITHER a plane figure has three sides OR it is not a triangle. If the first member is false—i.e., if a plane figure DOES NOT have three sides—then the second member must be true—i.e., it is NOT a triangle. But if the first member is TRUE—i.e., a plane figure DOES have three sides—then the second member must be false—i.e., it IS a triangle.

Laws of the Exclusive Alternative

From what we've discusses just now and what we've discussed when treating of the exclusive alternative propositions, we can lay down the following rules:

1. Both members cannot be true or false together (if both parts could be true together, it wouldn't be an exclusive alternative; and if both parts could be false together, no conclusion would ever follow, as I've already pointed out).
2. To posit one member is to remove the other: *modus ponendo tollens* , or in positing removes. This is because only one can be true.
3. To remove one member is to posit the other: *modus tollendo ponens*, or in removing posits. This is because one MUST be true.

Figures and Moods of the Exclusive Alternative

So there are two possible figures for the exclusive alternative: in positing removes and in removing posits. And each admits of eight possible moods:

1. Modus Ponendo Tollens
    a. Either A is, or B is. But A is. Therefore, B is not.
    b. Either A is, or B is. But B is. Therefore, A is not.
    c. Either A is not, or B is. But A is not. Therefore, B is not.
    d. Either A is not, or B is. But B is. Therefore, A is.
    e. Either A is, or B is not. But A is. Therefore, B is.
    f. Either A is, or B is not. But B is not. Therefore, A is not.
    g. Either A is not, or B is not. But A is not. Therefore, B is.
    h. Either A is not, or B is not. But B is not. Therefore, A is.
2. Modus Tollendo Ponens

a. Either A is, or B is. But A is not. Therefore, B is.
b. Either A is, or B is. But B is not. Therefore, A is.
c. Either A is not, or B is. But A is. Therefore, B is.
d. Either A is not, or B is. But B is not. Therefore, A is not.
e. Either A is, or B is not. But A is not. Therefore, B is not.
f. Either A is, or B is not. But B is. Therefore, A is.
g. Either A is not, or B is not. But A is. Therefore, B is not.
h. Either A is not, or B is not. But B is. Therefore, A is not.

Reduction of the Exclusive Alternative Syllogism to the Conditional Syllogism

When we discussed hypothetical propositions, we saw that the exclusive alternative was reducible to the reciprocal conditional. We do this by assuming the truth or falsity of one part as a condition, and then giving the falsity or truth of the other part as the conditioned. IF one part is true, THEN the other part is false; and IF on part is false, THEN the other part is true. Let's start with:

EITHER a plane figure has three sides OR it is not a triangle

Assuming the falsity of the first part, we get:

IF AND ONLY IF a plane figure DOES NOT have three sides, THEN is it not a triangle.

Or assuming the truth of the first part, we get:

IF AND ONLY IF a plane figure DOES have three sides, THEN it IS a triangle.

Again, assuming the falsity of the second part, we get.

IF AND ONLY IF a plane figure IS a triangle, THEN is DOES have three sides.

And finally, assuming the truth of the second part we get:

IF AND ONLY IF a plane figure IS NOT a triangle, THEN it DOES NOT have three sides.

In this manner we can change the following syllogism:

EITHER a plane figure has three sides OR it is not a triangle
But this plane figure (e.g., a rectangle) does NOT have three sides.
Therefore, this plane figure is not a triangle.

It can become a conditional using any of the major premises given above. For example:

IF AND ONLY IF a plane figure DOES have three sides, THEN it is a triangle.
But this plane figure (e.g., a rectangle) DOES NOT have three sides.
Therefore, this plane figure is NOT a triangle.

And using the rules given above for resolving the reciprocal conditional into a categorical, this syllogism will become something like:

Every triangle is a plane figure with three sides.
But this plane figure (e.g., a rectangle) is not a plane figure with three sides.
Therefore, this plane figure is not a triangle.

The Multi-Membered Exclusive Alternative Syllogism

Again, the rules for a multi-membered major premise in the exclusive alternative syllogism are simply special derivations of the rules for the two-membered major.

1. If one member is posited, the others must be removed. This is because only one alternative is true in the exclusive—it excludes the possibility that several are true.
   Either A or B or C or D.
   But A.
   Therefore, neither B nor C nor D.
2. If one member (or several) is removed, the conclusion will be another exclusive alternative containing the remaining members. This is because they cannot all be false.
   Either A or B or C or D.
   But not A.
   Therefore, either B or C or D.
3. If all but one member are removed, the conclusion is a categorical proposition positing the remaining member.
   Either A or B or C or D.
   But not A and not B and not C.
   Therefore, D.

The Disjunctive Syllogism

Just like the alternative syllogisms, the disjunctive has a simple form with only two members and a complex form with more than two members. We look at each in turn.

The Two-Membered Disjunctive Syllogism

As we've been doing, we examine the nature, the laws which follow as a consequence of this nature, and the arrangement of figures and moods in accordance with these laws. Finally, we see how the disjunctive can be reduced to the conditional, which in turn can be reduced to the categorical.

Nature of the Disjunctive Syllogism

The disjunctive syllogism is one whose major premise states that two predicates cannot simultaneously exist in the same subject—that at least one member must be false—whose minor posits or removes one of those predicates, and whose conclusion removes or posits the remaining predicate. Recall that in a disjunctive proposition, we state that two component propositions cannot be true at the same time because each component proposition affirms a repugnant predicate of the subject, or because one proposition gives a predicate and the other takes it away: e.g., 'man is living' and 'man is not living'. So the disjunctive would state, 'it cannot be true both that man is living and that man is not living'. Again, we might say 'Peter cannot be in both Jerusalem and Rome'. But we made a distinction based on the different kinds of opposed components. Sometimes the opposition admits of no middle ground, as in

the case of 'Peter cannot be both alive and not alive'. We called this *immediate* disjunction. There is no possibility of a third alternative in this case. But sometimes there is a possible middle ground: 'Peter cannot be in both Jerusalem and Rome'. In this case, there are potentially infinite possibilities of other places where Peter might be. He might be in Tokyo or Baghdad or Chicago, etc. We called this *mediate* disjunction.

Laws of the Disjunctive Syllogism

Given what we've said, we can set down the following rules.

1. To posit one member is to remove the other. This is because the predicates (or the affirmation and negation) are incompatible, one with the other. So if a subject has one of the predicates he necessarily does not have its opposite. If Peter is in Rome, he is not in Jerusalem.
2. To remove one member sometimes posits the other member. This depends on whether or not we're dealing with an immediate disjunctive or a mediate disjunctive
    a. In the case of immediate disjunctions, to remove one member is to posit the remaining member. This is because there is not third possibility. If we posit that Peter is living, we must remove the proposition 'Peter is not living'.
    b. In the case of mediate disjunctions, to remove one member yields no conclusion. If we say that Peter is not in Rome, it doesn't follow that Peter is in Jerusalem. He could be anywhere else.

Figures and Moods of the Disjunctive Syllogism

There is only one figure for the mediate disjunctive: *modus ponendo tollens*, in positing removes. If a subject has one predicate, it necessarily doesn't have the opposed predicate. However, in the immediate disjunctive, there are two figures: *modus ponendo tollens* and *modus tollendo ponens*, in positing removes and in removing posits. Its moods are these:

1. Modus Ponendo Tollens
    a. A is not both B and C. But A is B. Therefore, A is not C.
    b. A is not both B and C. But A is C. Therefore, A is not B.
2. Modus Tollendo Ponens
    a. A is not both B and C. But A is not B. Therefore, A is C
    b. A is not both B and C. But A is not C. Therefore, A is B.

Reduction of the Disjunctive Syllogism to the Conditional Syllogism

The mediate disjunctive is reduced to the simple conditional. By assuming the truth of one member as the condition, we give the falsity of the other member as the conditioned.

Peter cannot be both in Rome and Jerusalem

If we assume that it is true to say 'Peter is in Rome', we get the following:

If Peter is in Rome, then Peter is not in Jerusalem.

But this, again, is not reciprocal. We can't say 'if Peter is not in Jerusalem, then Peter is in Rome'. The immediate disjunctive, however, resolves into the reciprocal conditional. Let's take this:

Peter cannot both be seeing and non-seeing.

If we assume the truth of either component, obviously we must grant the falsity of the remaining component. But, also, assuming the falsity of either will give us the truth of the remaining. So:

IF Peter IS NOT seeing, THEN Peter IS non-seeing.

Or another example:

It cannot be true both that Peter is in Rome and Peter is not in Rome.

This becomes:

IF it is false that Peter is in Rome, THEN it is true that Peter IS NOT in Rome.

Once the disjunctive is reduced to the conditional, it can easily be reduced to the categorical syllogism using the rules already given. So:

Peter cannot be both in Rome and Jerusalem
But Peter is in Rome.
Therefore, Peter is not in Jerusalem.

This becomes the simple conditional:

If Peter is in Rome, then Peter is not in Jerusalem
But Peter is in Rome.
Therefore, Peter is not in Jerusalem.

And this becomes the categorical:

Everyone who is in Rome is not in Jerusalem.
But Peter is someone who is in Rome.
Therefore, Peter is not in Jerusalem.

The Multi-Membered Disjunctive Syllogism

We look at the special rules for when a premise is something like 'A cannot be altogether B and C and D'

1. If one member (or several) is posited, the conclusion is another disjunctive proposition with the remaining members. This is because at least one member must be false, though several might be. So:
   A cannot be altogether B and C and D.
   But A is B.
   Therefore, a cannot be both C and D.
2. If all but one member is posited, the conclusion is a categorical proposition removing the remaining member.

A cannot be altogether B and C and D.
But A is B and C.
Therefore, A is not D.