

Chapter 7

The Ontology of Determining Judgment

Perhaps the cause of the present difficulty is not in the facts but in us.

Aristotle

§ 1. Ontology, Epistemology, and Logic

It has become commonplace to classify various topics within metaphysics as belonging to ontology, epistemology, or logic. However, the definitions ascribed to each of these terms seem to be rather fluid in the history of philosophy. The *Oxford Dictionary of Philosophy* presently gives us the following descriptions:

Ontology: a 17th century coinage for the branch of metaphysics that concerns itself with what exists;

Epistemology [Gk., *episteme*, knowledge]: the theory of knowledge;

Logic: the general science of inference.

Described in these ways, one might easily get the impression we are able to identify three distinct branches of philosophy, each with its own character and special methods, much like the division of engineering into electrical engineering, mechanical engineering, chemical engineering, civil engineering, etc. However, in my opinion it is misleading to regard these divisions of philosophy in this manner. In the engineering example just cited, the various disciplines of engineering share their common points (that which makes all of them “engineering”) in the physical sciences (primarily physics and chemistry) and in mathematics. Indeed, it can be argued that all these branches of engineering are “merely” applied physics, applied chemistry, and applied mathematics. Within each of these respective disciplines, though, each of these fields develops its own special methods and techniques and each sets itself more or less apart from the others.

Metaphysics, on the other hand, does not lend itself so easily to such a crisp division of labor. In summarizing his chapter on “Logic and the Laws of Thought” Joad made the following observation:

This chapter has been a lengthy one and has covered a good deal of ground. Beginning with a consideration of Logic, it has led us into the territory of Metaphysics, thus affording a good example of the tendency of philosophical questions to ramify into one another which I emphasized in the first chapter. It is notoriously difficult to isolate philosophical topics, so difficult that, wherever you start in philosophy, you are reasonably certain to come sooner or later within sight of the same perennial problems [JOAD: 151].

The “territory of Metaphysics” to which Joad refers is, specifically, epistemology (as he goes on to say a few lines later). In explaining the topic of logic, Joad found himself having to lead his readers into considerations of the theory of knowledge in order to explain and clarify exactly what it is that logic purports to do. Similar difficulties arise in trying to separate epistemology from ontology, as Adler *et al.* noted:

Knowledge, like being, is a term of comprehensive scope. Its comprehensiveness is, in a way, correlative with that of being. The only thing which cannot be an object of knowledge or opinion, which cannot be thought about in any way except negatively, is that which has no being of any sort - in short, *nothing*.

The considerations of knowledge extend, therefore, to all things knowable, to all kinds of knowers, to all the modes of knowledge, and all the methods of knowing [ADLE, v.2: 880].

But why, one might protest, can we not at least cleanly break out the topic of logic from these troublesome considerations of “being” and “knowledge”? Logic is, after all, said to be “the general science of inference”; perhaps the problem with the other two topics is merely that they are not sciences (at least, not in the *Oxford* definition)? As it happens, the word “logic” also seems to mean different things to different people *even when the word is used as a technical term*. Adler *et al.* wrote:

The question whether logic is itself a methodology, or includes rules for the discovery as well as the demonstration of truth, is answered in terms of broader and narrower conceptions of the science or art. Those who regard the rules of logic as primarily a canon of criticism, which test the validity of intellectual work, look elsewhere for a method whose rules are productive rather than critical. The question then usually arises whether there is one methodology applicable to *all* fields of inquiry, or as many distinct methods as there are different disciplines or subject matters.

The difference between the traditional Aristotelian and the modern mathematical logic suggests that there may be a plurality of logics. The attempts made by the exponents of each to subsume the other as a special case do not seem to be entirely successful. Though Aristotelian logic appears to give a satisfactory account of the forms of judgment and reasoning in certain types of discourse, it cannot, in the opinion of symbolic logicians, be applied to mathematics. “Mathematics consists of deductions, and yet,” according to Bertrand Russell, “the orthodox accounts of deduction are largely or wholly inapplicable to existing mathematics.” Symbolic logic, on the other hand, may succeed in formulating the relational structure of modern mathematics, but it does not, in the opinion of its critics, hold for metaphysics - at least not the sort of metaphysics which treats relation as a category subordinate to substance [ADLE v.2: 1041].

To this now-long-standing dispute between “classical” and “modern” logic we may also toss in the more recent issues raised by yet another “new” form of logic, namely *fuzzy* logic.

What we will shortly find is that there are indeed very fundamental differences among the plurality of logics, and that these differences go back to considerations we can call ontological and epistemological. Among those of us whose formal education and intellectual upbringing lie outside of the study of philosophy, the discovery that there is no single discipline of ‘logic’ may be profoundly surprising. Among my engineering colleagues, for instance, the majority opinion (on the infrequent occasions when “logic” comes up for discussion) tends to regard symbolic logic as an outgrowth of classical logic – a mere replacement of lengthy natural language sentences and phrases with more concise symbolic representation – but otherwise not a substantially different “type” of logic. We will presently see that this opinion is quite mistaken. Fuzzy logic, which has only been around for a relatively few number of years by comparison, created (and continues to create) much more controversy. When it was introduced by Lofti Zadeh in 1965 it was panned by virtually the entire scientific and technical establishment. “What we need is clearer thinking,” said one critic, “not fuzzier thinking.” This one remark expresses succinctly the enormous misconception held by most of the modern scientific world of what ‘logic’ *is*.

What is the present circumstance of opinion in the scientific community regarding the idea of ‘logic’? I doubt if there is one statement with which everyone would be willing to agree, but I think it is fair and not too incorrect to say that the *prevailing* view runs something like this. Fuzzy logic has found its primary acceptance (to the degree that some people *do* accept it) in the engineering community, particularly electrical, computer, and mechanical engineering, and in computer science. There it is viewed not so much as ‘logic’ as it is a sometimes-useful mathematical technique for solving certain problems that resist solution by other mathematical methods. As for the “classical” and “symbolic” logics, Joad writes:

From what has been said the reader is entitled to conclude that the logic which has been studied during the last two thousand years - that is to say, the so-called Formal Logic which derives from Aristotle - has lost much of its traditional importance. No reasons for this conclusion have, admittedly, been given, since to give them would entail precisely that exposition of the views of the modern logicians from which I have just excused myself on the score of their technicality. I can, therefore, only ask the reader to accept the fact, which I am now proposing to invoke as a ground for omitting any formal account of Aristotelian Logic. To omit modern Logic because it is immature and Aristotelian Logic because it is dead may strike the reader as somewhat disingenuous. I can only assure him that this cavalier treatment, or rather lack of treatment, does correspond to the facts of the case, and seek to defend myself by pointing out that my failure to give a formal treatment of Logic does not mean that all discussion of logical problems will be omitted [JOAD: 129].

Joad’s textbook is an introductory survey of philosophy and so it was perhaps appropriate for him to take the approach described above. What concerns us here is his characterization of ‘Aristotelian’ logic as “dead” and symbolic logic as “immature” and “technical.” In this treatise we will have to examine these claims more closely.

After all that has gone on up to now in this treatise, the reader will perhaps not be too surprised to learn that Kant's views of ontology, epistemology, and logic are rather at odds with the *Oxford's* descriptions given above. As his views are the views taken in this treatise, let us state them briefly before diving into the more detailed discussions to follow. Kant describes ontology as *the science of the properties of all things in general* [KANT19: 140 (29: 784)]. Let us compare this with the Oxford description. Whether one views the Oxford description from the standpoint of materialism, empiricism, or rationalism, Oxfordian ontology is concerned with "what exists" and it is difficult to see this as dealing with anything other than things-in-themselves. In the Platonic tradition these "things" are the Platonic Ideas; in the Aristotelian tradition these "things" refer to Aristotelian "substances"; in the materialist attitude, with its lingering traces of positivism, these "things" are "matter" (in the corporeal sense of matter as "that which occupies space, possessing size and shape, mass, movability, and solidity") and "energy". But in the Critical Philosophy we know things only through their appearances in experience; consequently, ontology can be concerned with nothing else than with those properties *in* appearances and cognitions that make experience *possible*. Ontology must be "centered" around the Critical epistemology rather than exported to the "external world."

As for epistemology, this is not a term Kant used because it was not coined until 1854. His word for it is *critique*. In his lectures on metaphysics we find:

What is philosophy? The system of cognitions of reason through concepts. Metaphysics is thus the system of pure cognitions of reason through concepts . . . We have two fields for the use of reason. It can proceed when it has *a priori* principles, or when it has *a posteriori* principles, wherein it draws on the advice of experience. The first part of this use is called metaphysics. Here it must provide two main parts:

1. We must look at reason itself - or the first part is the science which has reason for its object. It would deal with the sources, scope, and boundaries of our pure reason - or with nature, i.e., with the possibility of judging *a priori* . . . This first part one could call transcendental philosophy, or critique of pure reason. Pure reason is that which judges independently of all experience. One could also call this part pure metaphysics; and, [2.] the application of *a priori* principles to objects of experience would be applied metaphysics [KANT19: 113 (29: 750-751)].

Pure metaphysics, according to Kant, is a doctrine of the *sources*, *scope*, and *boundaries* of pure reason – the point of origin of our knowledge, the extent of what we *do* know, and the limits of what we *can* know *objectively*. This is the description of that which we can call "epistemology" in the Critical use of that word. The scope of this epistemology is hardly less than that of pure philosophy itself. This is what is rightly meant when someone says Kant's *ontology* is based on his *epistemology* – although to some it may seem barely worthwhile to break out "epistemology" as a *separate* doctrine of Kant's work.

As for 'logic', Kant employs this term rather freely as a general descriptor of several quite distinct methodologies and theories within his overall system. Put another way, Kantian "logic" is

very broad in scope with identifiable sub-parts that are delineated by adding an adjective to the word ‘logic’. Often, but not always, when he uses the word ‘logic’ by itself he is referring to “formal” or “general” or “abstracting” logic. Many commentators (e.g., Young [KANT8a]) are of the opinion that “Kant’s approach to logic falls within what can broadly be called the Aristotelian tradition, which has in important ways been superseded” [KANT8a: xv]. Professor Young has some rather unflattering opinions of Kant’s abilities as a logician:

To a modern reader it is likely to seem that Kant's argument rests on an impoverished logical theory and perhaps a flawed conception of logic as well. Kant believes that all logic is a strictly formal discipline, which "abstracts from all content of cognition of the understanding . . . and deals with nothing but the mere form of thought" . . . Given familiar attacks by Quine and others, Kant's view on the first point is likely to strike a modern reader as naive. Given developments in logical theory over the last century, his view . . . is likely to seem embarrassingly shortsighted.

But in any case, his logical theory is plainly impoverished. It deals, at best, with only a small fragment of propositional logic. It also provides no explicit treatment of quantification, the implicit treatment being limited to categorical propositions. Most important, his logic does not allow for the representation of multiplace predicates or of the complex quantificational structures that are the engines of mathematical reasoning [GUY: 105-106].

Now, with all due respect to Professor Young, this assessment is pretty wide of the mark. We will later have to devote considerable effort to Kantian logic and here is what we shall find: Kantian logic goes far beyond what Young and others consider; Perhaps Young’s comments above might apply to a specific *species* of ‘logic’ but Kant cannot be said to have viewed *all* logic as identical to this one piece. As for the “developments of the last century” (i.e., mathematical logic), regardless of its value to mathematics (which, in practice, is actually rather slight), as a part of *philosophy* I hope to presently show it is mathematical logic that is “impoverished” and, really, rather barren. If philosophy was based upon mathematics Young’s criticism might be justified; but rather the reverse is true: mathematics must be founded on philosophy and *is not itself philosophy*.

As for my argument that Kantian logic is broader in scope than is generally appreciated, let us look at one particular passage from Kant’s lectures on metaphysics I think is rather revealing. In discussing the critique of pure reason Kant tells us:

Knowing Reason stands here as a subject before the examining tribunal in consideration over its ability of how far it can employ itself in regard to its cognitions; the critique of pure reason *is moreover to be regarded as a higher logic* [italics added] in that it gives Reason rules at hand as to how it may know Objects *a priori*, and these rules are nothing but *a priori* principles; *it is thus different from logic itself* [italics added] in that this abstracts from all Objects, and states the rules of thinking in general [KANT19: 420-421 (29: 949)].

As is often the case, Kant himself is largely to blame for the many misunderstandings of his work that have bedeviled Kant scholars for the past two centuries. In the passage quoted above we see

the ambiguity in Kant's expression of a "higher logic" and "logic itself." Kant elsewhere defines "logic" as *the science of the necessary laws of understanding and of reason in general* and explains that it is "the mere form of thinking in general" [KANT8a: 528 (9: 13)]. This definition goes well beyond what Kant calls "general logic" or "formal logic" in *Critique of Pure Reason* and elsewhere. In order to try to avoid falling into the same confusing ambiguity of terminology Kant bequeathed to us in his writings, I shall denote this *broad* definition of Kantian logic as Logic.

One consequence of Kant's definition of Logic is that, as the "science of the necessary laws of the understanding and reason in general," Logic is well-nigh inseparable from Kantian ontology and both are subordinate to Critical epistemology. In other words, Logic is *about something*; it is concerned with the *material contents* of its "premises" as well as with the *formal* aspects of "logical representations." Put another way, Kantian Logic deals with *matter* as well as *form*. This, as we will shortly see, is a characteristic it has in common with Aristotle's "logic" but not with the logic of the Scholasticism and post-Scholasticism periods (what Young, myself, and many others call the "Aristotelian tradition") nor with mathematical logic.

It is one of my contentions in this treatise that ontology, epistemology, and logic must be viewed as whole before we can profitably view them as separate parts of the Critical system. The same, I contend, is true of the other "logics" identified above if we are to properly understand what (if anything) we can or cannot take from these intellectual edifices. In order for us to appreciate how the Critical Philosophy differs from these other systems, and to understand Kant's ontology, we need to spend some time taking a look at these other "logics."

§ 2. The Classical System

By the term "classical system" I refer to the entire tradition of metaphysics that evolved from the ancient Greeks through Aristotle into the Scholasticism period and beyond into the 18th century. In an important way it is not really correct to call this tradition "a system" since the paths taken from Plato onward diverged in a number of significantly different directions. What little unity these different paths have with one another is largely the product of the abstract ("formal") element of Aristotle's system – although the re-convergence (if we can call it that) of these paths in medieval European Scholasticism produces a result quite different from Aristotle's system. (I will not include in this recounting the Epicurean or the Stoic philosophies despite their important influences on abstract logic and on the later attitudes of positivism and materialism).

Our starting point is with the Greek philosopher Parmenides (*c.* 540-470 B.C.). It was he who "discovered" what has come to be known as "the Entity" (*ón*) and with him comes the birth of metaphysics. Earlier we discussed "being" – one of the troublesome words of philosophy. The

inflation of the verb *to be* into Margenau's "most independent noun" is the work of Parmenides. Whatever else we can say about any thing and its properties, the first and foremost is that we say of it, *it is* (has being). Parmenides' Entity is supposed to be the universal essential property of all things. We get the word ontology from Parmenides' *ón*. The Entity has been called *the real predicate*. Parmenides gave five predicates that correspond to the Entity [MARI: 22]. What these predicates were is of no particular importance to us here but what *is* significant is that Parmenides' theory of the Entity, and the paradoxes it contained, was to influence the course of Greek philosophy right through the time of Aristotle.

We also owe to Parmenides another contribution of long-standing consequence. It was he who introduced the doctrine or "ways" of truth *vs.* opinion. The "way of truth" is "the way of 'what is'." The "way of opinion" is "the way of 'what is and is not'." The object of the first "way" is the Entity; that of the second is "the way of the things" of sensory perception or "the way of mortals." This was the starting point for what would later become the division separating empiricism from rationalism. Diogenes Laertius¹ tells us

He was the first to declare that the earth is spherical and is situated in the center of the universe. He held that there were two elements, fire and earth, and that the former discharged the function of a craftsman, the latter his material . . . And he held that soul and mind are one and the same, as Theophrastus mentions in his *Physics*, where he is setting forth the tenets of almost all the schools. He divided his philosophy into two parts dealing the one with truth, the other with opinion. Hence he somewhere says:

You must learn all things, as well as the unshakable heart of well-rounded truth, as in the opinions of mortals there is no sure trust.

From Parmenides we move ahead to the three great philosophers of ancient Greece: Socrates (470-399 B.C.), Plato (427-347 B.C.), and Aristotle (384-322 B.C.). Socrates was the teacher of Plato, who in turn was the teacher of Aristotle. Hence, these three men share a unique position in early philosophy with regard to each other. Socrates left behind no writings; what we know or think we know of him is due primarily to Plato and the historian Xenophon. The importance of Socrates which pertains most directly to our purposes here is that with him we see the formative beginnings of what would much later come to be called epistemology. Socrates demands *definitions*; he wants to know the foundations for the things we *think* we know and he wants to know the arguments that establish the truth of what we think we know. Although Socrates' endeavors in this area would hardly pass muster today as 'epistemology' and he was primarily concerned with moral philosophy, there is little room to doubt that Socrates was concerned with "what is it we know?"

¹ Diogenes Laertius, *Lives of Eminent Philosophers*, vol. II, R.D. Hicks (tr.), Cambridge, MA: Harvard University Press, 1995, pp. 429-433.

Both Plato and Xenophon were pupils of Socrates. With Plato, though, it is often difficult to know when he is giving us an account of what Socrates said or did and when he is giving us his own philosophy – Plato's words placed in Socrates' mouth. Xenophon, on the other hand, seems to provide a more trustworthy account of Socrates the man – at least in those writings where Xenophon is being the historian rather than playing at philosophy.

Moreover, Socrates lived ever in the open; for early in the morning he went to the public promenades and training-grounds; in the forenoon he was seen in the market; and the rest of the day he passed just where most people were to be met; he was generally talking, and anyone might listen. Yet none ever knew him to offend against piety and religion in deed or word. He did not even discuss the topic so favored by other talkers, "the Nature of the Universe": and avoided speculation on the so-called "Cosmos" of the Professors, how it works, and on the laws that govern the phenomena of the heavens: indeed he would argue that to trouble one's mind with such problems is sheer folly. In the first place, he would inquire, did these thinkers suppose that their knowledge of human affairs was so complete that they must seek these new fields for the exercise of their brains; or that it was their duty to neglect human affairs and consider only things divine? Moreover, he marveled at their blindness in not seeing that man cannot solve these riddles; since even the most conceited talkers on these problems did not agree in their theories, but behaved to one another like madmen.

Such, then, was his criticism of those who meddle with these matters. His own conversation was ever of human things. The problems he discussed were, What is godly, what is ungodly; what is beautiful, what is ugly; what is just, what is unjust; what is prudence, what is madness; what is courage, what is cowardice; what is a state, what is a statesman; what is government, and what is a governor; - these and others like them, of which the knowledge made a "gentleman," in his estimation, while ignorance should involve the reproach of "slavishness." ¹

The Socratic method consisted of engaging a person in a dialog of questions and answers, with Socrates supplying a series of leading questions by which the other person was impelled to defend his view step-by-step (and which often led him into contradicting himself, thus revealing the inconsistencies in his own thinking on the subject). Usually the first question was along the lines of, "Tell me, what sort of thing is *X*?" followed by a series of probing questions ostensibly intended to get to the root of the matter in question.

Socrates held that those who know what any given thing is can also expound it to others; on the other hand, those who do not know are misled themselves and mislead others. For this reason he never gave up considering with his companions what any given thing is.

Whenever anyone argued with him on any point without being able to make himself clear, asserting but not proving that so and so was wiser or an abler politician or braver or what not, he would lead the whole discussion back to the definition required . . .

By this process of leading back the argument even his adversary came to see the truth clearly. Whenever he himself argued out a question, he advanced by steps that gained general assent, holding this to be the only sure method. Accordingly, whenever he argued, he gained a greater

¹ Xenophon, *Memorabilia* I. 1, 10-16.

measure of assent from his hearers than any man I have ever known.²

Socrates seems to have been a man not overly given to theoretical matters of no practical value. His interests in mathematics, science, and so on, according to Xenophon, seem to have been entirely pragmatic.

For instance, he said that the study of geometry should be pursued until the student was competent to measure a parcel of land accurately in case he wanted to take over, convey or divide it, or to compute the yield; and this knowledge was so easy to acquire that anyone who gave his mind to mensuration knew the size of the piece and carried away a knowledge of the principles of land measurement. He was against carrying the study of geometry so far as to include the more complicated figures, on the ground that he could not make use of them. Not that he himself was unfamiliar with them, but he said that they were enough to occupy a lifetime, to the complete exclusion of many other useful studies.

Similarly he recommended them to make themselves familiar with astronomy, but only so far as to be able to find the time of night, month and year, in order to use reliable evidence when planning a journey by land or sea, or setting the watch, and in all other affairs that are done in the night or month or year, by distinguishing the times and seasons aforesaid. This knowledge, again, was easily to be had from night hunters and pilots and others who made it their business to know such things. But he strongly deprecated studying astronomy so far as to include the knowledge of bodies revolving in different courses, and of planets and comets, and wearing oneself out with the calculation of their distance from earth, their periods of revolution and the causes of these. Of such researches, again he said that he could not see what useful purpose they served.

He also recommended the study of arithmetic. But in this case as in the others he recommended avoidance of vain application; and invariably, whether theories or ascertained facts formed the subject of his conversation, he limited it to what was useful.³

Plato tells us that Socrates described himself as a “gadfly” to the intellectually smug and a “midwife” helping others give birth to knowledge. However that may be, his influence on the course of philosophy which came after was enormous. For many years after his death ‘Socrates’ was made the central character in philosophical dialogues to such an extent that today it is virtually impossible to tell what his philosophy might have been or even if he had a system as such. The situation is very different for the two great figures who brought Greek philosophy to its pinnacle.

§ 2.1 Plato

If one’s degree of influence on the course of history is a measure of greatness, it can be strongly argued that no philosopher has more greatly affected the course of Western civilization than Socrates’ greatest student: Plato. It has been said that Plato was the first philosopher to approach philosophy with a systematic representation and development and that the Platonic system is “Socrates objectified.” To know something of Plato is to understand much of Western history.

² Xenophon, *Memorabilia* IV. 6. 1-15.

³ Xenophon, *Memorabilia*, IV. 7. 2-8.

Diogenes Laertius tells us Plato was a sixth-generation descendent of Solon, one of the “seven sages” of the ancient world. Diogenes also tells us

It is stated that Socrates in a dream saw a cygnet on his knees, which all at once put forth plumage, and flew away after uttering a loud sweet note. And the next day Plato was introduced as a pupil, and thereupon he recognized in him the swan of his dream.⁴

After Socrates’ death Diogenes reports that Plato “attached himself to Cratylus the Heraclitean, and to Hermogenes who professed the philosophy of Parmenides.” Later he embarked on a number of travels that brought him into contact with the Pythagorean philosophers.

Plato’s system brings together the philosophical themes from these four major arenas of Greek thought: Socrates, the Pythagoreans, the Eleatics, and Heraclitus. The Eleatic view is basically that of Parmenides, at which we have already looked. Heraclitus of Ephesus (c. 544-484 B.C.), also called “Heraclitus the Obscure”, was a contemporary of Parmenides and he put forward a philosophy that is the direct antithesis of Parmenides’ Entity. For Heraclitus “change” is the only reality; nothing is permanent except the flux of change that is so clearly apparent to our senses. “You cannot step in the same river twice” is a saying reputed to Heraclitus, by which he meant that when you step into a river the second time, it is not the same river because the water is not the same water you stepped in previously.

The Pythagorean order was a secretive and rather mystical group named after their founder, the semi-legendary Pythagoras of Samos (c. 582-500 B.C.). The Pythagorean influence on Plato was in mathematics (which at this time consisted only of geometry and arithmetic). Mathematics and astronomy were the only ‘special sciences’ studied at Plato’s Academy; mathematics was seen by Plato as an element that is intermediary between the sensible world and the supersensible world of Ideas (which we will discuss shortly). Diogenes writes

He mixed together doctrines of Heraclitus, the Pythagoreans and Socrates. In his doctrine of sensible things he agrees with Heraclitus, in his doctrine of the intelligible with Pythagoras, and in political philosophy with Socrates.⁵

This view accords reasonably well with those of modern scholars of Plato.

For our purposes in this treatise, our interest in Plato lies in his ontology and in his method of dialectic. The central theme in Plato’s philosophy is the doctrine of Ideas (also called the doctrine of Forms). Parmenides held that change was an illusion and that the Entity was unchanging. Heraclitus, on the other hand, held that change is the only reality. Plato’s doctrine of Ideas, in the words of Joad, “amounts in fact to an acceptance of both these assertions qualified

⁴ Diogenes Laertius, *Lives of Eminent Philosophers*, III., 5.

⁵ *ibid.*, III. 8.

by a limitation in their scope” [JOAD: 270-271]. Plato divides the world into two parts: the flux of change and a changeless “reality” behind or underlying the *appearance* of change.

In *Republic*, book VII, Plato likens the sensible world to a cave where men, confined to live their lives without ever leaving the cave, see only shadows on the cave wall:

Picture men dwelling in a sort of subterranean cavern with a long entrance open to the light on its entire width. Conceive them as having their legs and necks fettered from childhood, so that they remain in the same spot, able to look forward only, and prevented by the fetters from turning their heads. Picture further the light from a fire burning higher up and at a distance behind them, and between the fire and the prisoners and above them a road along which a low wall has been built, as exhibitors of puppet shows have partitions before the men themselves, above which they show the puppets.

All that I see, he said.

See also, then, men carrying past the wall implements of all kinds that rise above the wall, and human images and shapes of animals as well, wrought in stone and wood and every material, some of these bearers presumably speaking and others silent.

A strange image you speak of, he said, and strange prisoners.

Like to us, I said. For, to begin with, tell me do you think that these men would have seen anything of themselves or of one another except the shadows cast from the fire on the wall of the cave that fronted them?

How could they, he said, if they were compelled to hold their heads unmoved through life?

And again, would not the same be true of the objects carried past them?

Surely.

If then they were able to talk to one another, do you not think that they would suppose that in naming the things that they saw they were naming the passing objects?

Necessarily.

And if their prison had an echo from the wall opposite them, when one of the passers-by uttered a sound, do you think that they would suppose anything else than the passing shadow to be the speaker?

By Zeus, I do not, said he.

Then in every way such prisoners would deem reality to be nothing else than the shadows of the artificial objects.

Quite inevitably, he said [PLAT1: 747-748 (514-515)].

Metaphorically, the sensible world is the cave and objects as we perceive them are nothing but the shadows on the cave wall. The world outside the cave is the “true world” of things “as they really are.” Plato calls the first the world of opinion (*dóxa*). We have no more right to credit sensible things as having certain qualities, Plato tells us, than we have for crediting them with the contrary quality. The world of opinion is the “world of what both *is* and *is not*.” This is the Heraclitean element of Plato’s ontology. Opinions, which are based on sensible things, do not deserve to be called “knowledge” – a term Plato reserves for what we can discover about the world outside the cave, i.e. the “world of what *is*,” which is the *world of the Ideas* [PLAT1: 716-720 (476-480)]. This is the Eleatic element of Plato’s ontology.

Knowledge, then, can be set against only “that which truly is”; opinion concerns “that which both is and is not”; *ignorance* is set against “that which is not.” Plato’s system thus sets up a

three-fold structure in his theory; this triad structure tends to recur frequently throughout his writings. For example, there is a three-fold significance in the Ideas, i.e. [ZELL: 131]:

Ontological: Ideas are the “common qualities” of things of the same kind. The Ideas are supersensible, unchanging, and the “true nature” of things. Sensible things exist only through the presence of the Ideas within them or “through their participation in” the Ideas.

Teleological: The Ideas hold “the meaning of causes and ‘moving forces’.”

Logical: It is the Ideas that enable us to bring order to “the chaos of individuals” we perceive in the sensible world.

Although Plato has sometimes been characterized as an Idealist philosopher, I think this label is a bit inaccurate. Idealism, as that term is used today, is descriptive of the philosophy of a Descartes or a Berkeley; it makes *mind* the ultimate reality. This is not the view of Plato. For him the Ideas are not only “real” but, in fact, are the things that are supposed to possess the *highest degree* of reality. Plato does not deny the reality of sensible things and the Ideas do not depend upon one’s mind for their existence; they are “eternal and unchanging.” We might call Plato’s philosophy “Idea-ism” but perhaps the term “rationalist realism” would be more accurate.

It is also incorrect to view Plato’s division of knowledge, opinion, and ignorance as crisply divided along these lines. There can be degrees of “truth” among various opinions. Mathematics, for example, is closer to ‘that which is’ than the study of sensible nature. Mathematics, in Plato’s terminology, is “right opinion” (*orthodóxa*).

It is sometimes difficult to pick out when Plato is giving us his core theory and when he is merely expressing it metaphorically. One example of this comes up with regard to the question of innate ideas. Did Plato profess the innate ideas which later became so famous a part of the disagreement between the empiricists and the rationalists? His philosophy can be, and has been, interpreted both ways. In *Meno* Plato has Socrates question a slave boy on the length of the diagonal of a square. After a series of questions and answers, the boy correctly deduces what is, for all intents and purposes, Pythagoras’ theorem.

SOCRATES: What do you think, Meno? Has he answered with any opinions that were not his own?

MENO: No, they were all his.

SOC: Yet he did not know, as we agreed a few minutes ago.

MEN: True.

SOC: But these opinions were somewhere in him, were they not?

MEN: Yes.

SOC: So a man who does not know has in himself true opinions on a subject without having knowledge.

MEN: It would appear so.

SOC: At present these opinions, being newly aroused, have a dreamlike quality. But if the same

questions are put to him on many occasions and in different ways, you can see that in the end he will have a knowledge on the subject as accurate as anybody's.

MEN: Probably.

SOC: This knowledge will not come from teaching but from questioning. He will recover it for himself.

MEN: Yes.

SOC: And the spontaneous recovery of knowledge that is in him is recollection, isn't it?

MEN: Yes.

SOC: Either then he has at some time acquired the knowledge which he now has, or he has always possessed it. If he always possessed it, he must have always known; if on the other hand he acquired it at some previous time, it cannot have been in this life, unless somebody has taught him geometry. He will behave in the same way with all geometric knowledge, and every other subject. Has anyone taught him all these? You ought to know, especially as he has been brought up in your household.

MEN: Yes, I know that no one ever taught him.

SOC: And has he these opinions, or hasn't he?

MEN: It seems we can't deny it.

SOC: Then if he did not acquire them in this life, isn't it immediately clear that he possessed and had learned them during some other period?

MEN: It seems so.

SOC: When he was not in human shape?

MEN: Yes.

SOC: If then there are going to exist in him, both while he is and while he is not a man, true opinions which can be aroused by questioning and turned into knowledge, may we say that his soul has been forever in a state of knowledge? Clearly he always either is or is not a man.

MEN: Clearly.

SOC: And if the truth about reality is always in our soul, the soul must be immortal, and one must take courage and try to discover - that is, to recollect - what one doesn't happen to know, or, more correctly, remember, at the moment.

MEN: Somehow or other I believe you are right [PLAT7: 365-371 (82b-86c)].

Despite the mystic element of the boy's "existence in some other life" that appears in *Meno*, this dialogue (and some others) have been pointed to as evidence that Plato held as true the existence of the immortal soul and that the "right opinions" we are capable of summoning forth are traces in memory of one's actual perception of the Ideas "before the soul fell and became imprisoned in the body."

Hegel, on the other hand, disagreed with this interpretation:

Now if Plato here calls this coming forth of knowledge from consciousness a recollection, it follows that this knowledge has been already in this consciousness, *i.e.*, that the individual consciousness has not only the content of the knowledge implicitly, in accordance with its essential nature, but has also possessed it as this individual consciousness and not as universal. But this moment of individuality belongs only to the ordinary conception, and recollection is not thought; for recollection relates to man as a sensuous "this," and not as a universal. The essential nature of the coming forth of knowledge is hence here mingled with the individual, with ordinary conception, and knowledge here appears in the form of soul, as of the implicitly existing reality, the one, for the soul is still only a moment of spirit. As Plato here passes into a conception the content of which has no longer the pure significance of the universal, but of the individual, he further depicts it in the form of a myth. He represents the implicit existence of mind in the form of a pre-existence in time, as if the truth had already been for us in another time. But at the same time we must remark that he does not propound this as a philosophic doctrine, but in the form of a saying received from priests and priestesses who comprehend what is divine [HEGE3, v. 2: 35].

Ideas are “universals” in the sense that a Platonic Idea is supposed to represent that which is common to many things. Hegel, who tends to interpret Plato from the perspective of his own philosophy of the Absolute Mind, contends that when Plato mixes his Ideas with the “common” constituents of the world of opinion he is no longer expounding philosophical doctrine but, rather, is speaking metaphorically. By a long and involved argument [HEGE3, v. 2: 35-43], Hegel concludes that we “must not think that the bald conception of innate ideas is hereby indicated” and that “From this it is clear that Plato receives the reality of the soul entirely in the universal, and does not place its true being in sensuous individuality, and hence the immortality of the soul cannot in his case be understood in the ordinary acceptance, as that of an individual thing.” What Hegel seems to be saying is that Plato’s philosophy is one where ‘reality’ is found in the ‘movement’ of Hegel’s own theory of the Absolute Mind. Reading Hegel’s analysis, one can be left with the impression that, in Hegel’s view, if only Plato had thought things through a bit more, he would have been Hegel.⁶ But, according to Hegel’s theory, the time was not yet come for this more penetrating understanding.

My own view is that Hegel is correct in at least the sense that Plato is not expounding a religious theme as part of his basic doctrine in *Meno*. There is a dualism in his theory of Ideas between the “eternal and unchanging Forms” (Ideas) which possess the “highest degree of reality” (the Parmenidean component) and the sensible world of that-which-both-is-and-is-not (the Heraclitean component). Plato never resolved this dualism (and perhaps within his ontology it can only be resolved by a resort to a system such as Hegel’s). Nevertheless, his “soul theory” (if we can call it that) was taken very seriously by the Neo-Platonists, by the early Christian theologians, and by the Scholastics of the Middle Ages. Whether Plato did or did not profess a doctrine of innate ideas, those who followed him almost certainly interpreted him to profess such a doctrine, and it was later made part of the rationalism of the seventeenth century.

We now turn to a second principal element in Plato’s system: the art of dialectic. Dialectic is, according to Plato, the *method (dialektike methodos)* of the philosopher. Like the Ideas, dialectic has a three-fold significance. Zeller summarizes these as follows [ZELL: 129]:

- 1) the art of conducting a discussion, but also
- 2) the art of developing knowledge by question and answer, and finally,
- 3) the art of grasping conceptually “that which is.”

⁶ I admitted earlier in this treatise that much of what Hegel has to say goes over my head. However, I do hold the opinion that Hegel is less obscure if one thinks of him as ‘Plato-nizing’ Kant. To whatever degree this impression may be correct, one might view Hegel as doing to Kant’s philosophy what the Neo-Platonists did to Aristotle’s work. This is one reason I contend that Hegel should be viewed as a rationalist and not as a developer and “finisher” of Kant’s philosophy.

Plato described the “science of dialectic” in a number of places. In *Sophist* he writes:

STRANGER: Well, now that we have agreed that the kinds stand toward one another in the same way as regards blending, is not some science needed as a guide on the voyage of discourse . . . ?
THEAETETUS: Surely some science is needed - perhaps the most important of all.

STRANGER: Dividing according to kinds, not taking the same form for a different one or a different one for the same - is that not the business of the science of dialectic?
THEAETETUS: Yes [PLAT10: 998-999 (253)].

In *Phaedrus* we have

SOCRATES: Believe me, Phaedrus, I am myself a lover of these divisions and collections, that I may gain the power to speak and to think, and whenever I deem another man able to discern an objective unity and plurality, I follow 'in his footsteps where he leadeth as a god.'¹ Furthermore - whether I am right or wrong in doing so, God alone knows - it is those that have this ability whom for the present I call dialecticians [PLAT5: 511-512 (266)].

The primary importance of dialectic is made quite clear in *Republic VII*:

Then, said I, is not dialectic the only process of inquiry that advances in this manner, doing away with hypothesis, up to the first principle itself in order to find confirmation there? And it is literally true that when the eye of the soul is sunk in the barbaric slough of the Orphic myth, dialectic gently draws it forth and leads it up, employing as helpers and co-operators in this conversion the studies and sciences we enumerated, which we called sciences often from habit, though they really need some other designation, connoting more clearness than opinion and more obscurity than science [PLAT1: 765 (533d-e)].

Do you agree, then, said I, that we have set dialectic above all other studies to be as it were the coping stone - and that no other higher kind of study could rightly be placed above it, but that our discussion of studies is now complete? [PLAT1: 766 (534e)]

It is only through dialectic, Plato maintains, that the true knowledge of the Ideas can be remembered. In *Philebus* we have:

SOCRATES: Then these are the kinds of knowledge which we maintain to be pre-eminently exact?
PROTARCHUS: Clearly.
SOC: But we, Protarchus, are likely to be repudiated by the art of dialectic, if we prefer any other to her.
PRO: Then how ought we to describe her, in her turn?
SOC: Plainly everyone will recognize her of whom we now speak. The knowledge of that which is, that which exists in reality, ever unchanged, is held, I cannot doubt, by all people who have the smallest endowment of reason to be far and away truer than any other [PLAT11: 1139-1140 (57-58)].

Many scholars use the word “logic” more or less interchangeably with Plato’s “dialectic.”

¹ Plato is quoting from *The Odyssey*.

There are even some who hold the view that Plato is “the real father of logic” rather than Aristotle. The weight of evidence, it seems to me, makes Aristotle’s claim to the title a safe one; the questions more pertinent to our purposes are these: Is dialectic the same thing as logic? and Where is its (dialectic’s) place in Plato’s system?

Inasmuch as Plato’s dialogues provide example after example of logical reasoning in the form of dialectic, it is clear that Plato’s dialectic is at least a logical art. But because he nowhere supplies a doctrine for *how* dialectic should be conducted – merely examples of conducting it – it is hardly accurate to say Plato’s dialectic is a “formal” logic with well-delineated rules and procedures. Despite the numerous translations of *episteme* into English as “science” I think it is more correct to view Plato’s dialectic as an *art*. Like all arts it requires skill and practice, and it certainly has unwritten rules of some sort – but so do photography and painting.

There seems to be no reason to doubt that Plato’s dialectic was the starting point for Aristotle’s formalization; in this sense, Plato was indeed a logician and perhaps we should view the development of logic as one where Plato played Faraday to Aristotle’s Maxwell, thereby recognizing the contributions of both men. The point here is that by neglecting to provide a discussion on dialectic *itself*, Plato leaves us uncertain as to how he viewed dialectic within the framework of his philosophy. It is clearly of enormous importance in his practice of philosophy, but where does it stand with respect to Plato’s ontology of the Ideas?

The difficulty here is this: if dialectic is a “true science” or *the* “true science” – which it must be if it is to be an integral part of Plato’s system – then it must be tied to the theory of Ideas in a fundamental way. Put another way, there must be an *Idea* of dialectic *itself*. Plato, however, does not develop or investigate this aspect of dialectic. He employs it in a very *particular* way in each dialogue and so what he *shows to us* in his work is not “dialectic” but the manifestation of dialectic. It thus appears to be, and seems to have been taken by Plato’s successors as being, something separate from his ontology of the Ideas. This apparent estrangement of dialectic from ontology would have great historical consequences – leading up to the logical positivism of modern symbolic logic – and would color the view of logic for centuries to come. Hegel writes:

The form of Plato's methods being not yet, however, developed purely on its own account, this is the reason that his dialectic is still often merely reasoning, and that it proceeds from individual points of view and frequently remains without result. On the other hand, Plato's own teaching is directed against this merely reasoning dialectic; yet we see that it gives him trouble properly to show forth the difference. The speculative dialectic which commences with him is thus the most interesting but also the most difficult part of his work . . .

Plato first comprehended the Absolute as the Being [Entity] of Parmenides, but as the Universal which, as species, is also end, *i.e.* which rules, penetrates, and produces the particular and the manifold. Plato, however, had not yet developed this self-producing activity and hence often stumbled into an external teleology [HEGEG3, v.2: 52-53].

In my opinion Hegel is correct in this analysis. Marias has commented

The problems which the things created for Plato led him to the discovery of the Ideas; and when a man has discovered the Ideas, he has already done quite a bit. Plato remained in the realm of the Ideas, amidst the difficulties that they caused him, and had no time left to return to the things. In his old age he longed to solve these difficulties - as in his dialogue of *Parmenides* - and to return to the things, to create his metaphysics [MARI: 297-298].

Regarding *Parmenides*, Hegel remarked, “The fully worked-out and genuine dialectic is, however, contained in the *Parmenides* – that most famous masterpiece of Platonic dialectic” [HEGE3, v.2:56]. Hegel goes on to analyze this dialogue [HEGE3, v.2: 56-62], one of the most notoriously obscure of all Plato’s works, to illustrate that Plato has actually figured out the “true nature” of the dialectic (a “true nature” that happens to be identical to Hegelian dialectic) but has not realized that he has done so in all its ramifications. “But, on the other hand, for this very reason, this being reflected into itself . . . still remains with Plato something separated; and in his representation of the Becoming of Nature in the *Timaeus*, God, and the essential reality of things, appear as distinguished.”

Again Hegel’s analysis, in my view, is correct at least for the most part. Whether or not Plato himself realized he had “discovered the true dialectic” is something for philosophers and historians to debate at parties and in speculations in the learned journals. What is pertinent for us in *this* treatise is that what Plato passed on to his followers was a philosophy in which dialectic is *not* incorporated into his ontology of the Ideas and which stands as an art, a skill, separate and distinct from Plato’s ontology. As we shall see, this had the most pronounced consequences for how logic would come to be viewed after Aristotle.

§ 2.2 Aristotle

We now come to Plato’s greatest student. What shall we say of Aristotle? He was: The Father of Science; The Founder of Logic; the premier empiricist of antiquity; second only to Plato as the most influential philosopher in history. It is to Aristotle more than to Plato that science owes its most basic tenet – deduction from *first principles* – as well as the pluralistic division of labor whereby the world is sliced up into topics to be studied by specialists: the biologist, the mathematician, the meteorologist (whose studies were to include not only astronomy but also geology, the “causes of winds and earthquakes,” and “with the falling of thunderbolts and with whirlwinds and fire-winds”), etc. He wrote, according to ancient chroniclers, somewhere between four hundred and a thousand “books” (manuscripts), a publication record most modern scholars would envy. Diogenes Laertius placed his written productivity at “in all 445,270 lines.” Plato, the historian Will Durant tells us, called Aristotle’s home “the house of the reader.”

Of all these works, only a fraction – perhaps one fifth, perhaps less – have survived and come down to us through time. Aristotle’s writings fell into two classes. The “exoteric” writings were popular, intended for the public, and published by Aristotle himself. Cicero praised Aristotle the author as having “an unbelievable charm and richness in his style.”² Unfortunately, none of Aristotle’s exoteric works have survived except for a pitiful few fragments.

The other class of writings were the “esoteric” works. These were notes, lectures, essays, and treatises intended for the serious advanced students of Aristotle’s school (the Lyceum). Aristotle did not publish these works but, ironically, these are the works that have come down to us – through the editing and composition of Andronicus of Rhodes (c. 60-50 B.C.) – and that make up our *corpus* of Aristotle’s philosophy. The esoteric Aristotle is dry, formal, terse; to enjoy reading these works is an acquired taste. The arrangement and ordering of these works is often confusing and shows sudden breaks and shifts in the topic – an unfortunate feature for which we must thank Andronicus rather than Aristotle, although many later commentators have charged Aristotle with being “unsystematic” more or less precisely because of the “hotchpotch”³ arrangement of the esoteric *corpus*.

One reason for treating Aristotle in detail rests in the fact that no philosopher has had so much wrong done him by thoughtless traditions which have been received respecting his philosophy, and which are still the order of the day, although for centuries he was the instructor of all philosophers. For to him views are ascribed diametrically opposite to his philosophy. And while Plato is much read, the treasures contained in Aristotle have for centuries, and until quite modern times, been as good as unknown, and the falsest prejudices reign respecting him. Almost no one knows his speculative and logical works; in modern times more justice has been done to his views regarding nature, but not to his philosophic views [HEGE3, v. 2: 118].

If you only know Aristotle by means of what writers of modern textbooks, especially on logic, say of his system, and you have not read Aristotle yourself, then you do not know Aristotle at all.

Aristotle was born in 384 BC in the small town of Stagira. His father was the physician of King Amyntas of Macedon. Aristotle was not, and never became, a citizen of Athens. He moved to Athens in 367 BC and became a student in Plato’s Academy. There he remained for twenty years, studying and probably conducting his own research. By the end of that time, his own views were sufficiently in conflict with Platonic rationalism that Plato is said to have remarked, “Aristotle spurns me, as colts kick out at the mother who bore them.”⁴ Even so, it seems the two men remained friends despite their differences in philosophy. In 347 BC, following Plato’s death, Aristotle left Athens and the Academy. In 343 BC King Philip II of Macedon invited Aristotle to return to the court and undertake the teaching of his son – the boy who would later be known to

² Cicero, *Topica* I., 3.

³ [BARN: 68].

⁴ Diogenes Laertius, *Lives*, V. i.

history as Alexander the Great.

Aristotle returned to Athens, which had fallen under Macedonian rule in 338 BC, around 336 and in 334 opened his own school, the Lyceum, in competition with the Academy (which was then under the head-mastership of Plato's nephew, Speusippus). It was during his years at the Lyceum that many think he wrote most of the esoteric *corpus* that has come down to us today. The majority opinion is that these works served as lecture notes and treatises for his students. It was also during this period that Aristotle found himself – possibly through his exoteric works – as a spokesman defending the rule of Alexander to a hostile Athens as a more preferable form of government than the dangerous and bellicose state of Hellenic civilization under individual city-states. In 323 BC, word came to Greece that Alexander had died in Asia. The reaction to this news, in Athens and in other cities, was an eruption of revolution in which most Macedonians, including Aristotle, had to flee the city. Aristotle died soon afterwards, in 322 BC.

Aristotle's "Metaphysics"

Let us now examine the philosophical underpinnings of Aristotle's system. Since our objective in this chapter is to understand the ontology of determining judgment, and since this ontology is *not* that of Aristotle, it is not appropriate for us to try to explore in depth the specifics of Aristotelian thought. However, Aristotle's views of the relationship between ontology, epistemology, and logic *are* pertinent to this discussion and to understand these views a brief summary is in order.⁵

First of all, the word "metaphysics" nowhere appears in Aristotle's *corpus* outside the title of the fourteen books (we would call them chapters) known collectively as *Metaphysics*. This title, which literally means "after physics," was bestowed upon this collection by later commentators. Nor is there complete agreement that the *Metaphysics* even represents a *single* treatise. My own view is: it is most likely the collected works in the *Metaphysics* contains more than one treatise, just as today the curriculum in physics uses different and progressively more advanced textbooks that students read as they progress through the curriculum. Nor do I think the *Metaphysics* is necessarily a complete collection of all Aristotle might have had to say on the subject at the Lyceum.

And what is this subject? Plato held mathematics to be the single universal science.

⁵ There is a degree of general overall agreement among modern philosophers on Aristotle's doctrine, but it is not correct to say there is general agreement over all of its specifics. The opinion presented here is my own. It is in common with those of some scholars, in disagreement with others, and not necessarily entirely in common at all points with the views of any particular school of thought. In the interests of brevity, I will merely summarize what I think are the key points that pertain to the development of the system of the Critical Philosophy. I will not undertake a general defense of my interpretation of Aristotle in this treatise, nor will I attempt to present a balanced exposition of contrary viewpoints regarding Aristotle.

Aristotle, on the other hand, took the view that there could be a regular *system of sciences*, broken out by topics, but that there was no “one size fits all” science that treats every topic. The Aristotelian system is *topical*, i.e., one defines the topic of inquiry and then goes after all the knowledge one can obtain about that topic. The resulting doctrine is the science of that topic.

This approach would result in a confederation, rather than a system, unless there is some topic that touches on *all* the sciences. What topic would this be? Aristotle concludes (*Met.* I. ii.) that this topic can be none other than the study of *first principles* (*proton eisin* - literally “first beings”⁶) and that the science which studies the nature of first principles themselves is the most fundamental of all sciences since it supplies the starting point for every other science. Aristotle calls this science *sophia* (“Wisdom”) and describes it as “knowledge about certain principles and causes” (*περί τινος αρχας και αιτιας*)⁷ [ARIS7: 1553 (982^a1)]. Elsewhere he calls it “the science of the philosopher” (*philosophu episteme*) [ARIS7: 1676 (1060^b31)].

Aristotle does not simply assume that the science of first principles is *the* fundamental science; he does not even simply assume that there can be such a science. He spends many words in the *Metaphysics corpus* analyzing whether this is the case and deduces that it is so only after a lengthy discussion of the many “perplexities” that the study of nature holds. However, once he has concluded that this *is* the case and is the proper “science of the philosopher,” the next question to be faced is: What is the *nature* of or the attributes which constitute first principles and causes? Whatever this is, its scope must take in everything else in nature or this science will not be fundamental to all other sciences.

This is a tall order, but Aristotle steps up to the challenge.

There is a science which studies being *as* being, and the attributes which belong to this in virtue of its own nature. Now this is not the same as any of the so-called special sciences; for none of these others deals generally with being as being. They cut off a part of being and investigate the attributes of this part . . . Now since we are seeking the first principles and highest causes, clearly there must be some thing to which these belong in virtue of its own nature [ARIS7: 1584 (1003^a21-25)].

Whatever else we can say about anything, the common property we find in every case is that the thing we are talking about must first *exist* in some sense of that word. But, of course, there are many different ways in which this existence may be expressed. Any *proposition* we may predicate of a thing, Aristotle tells us, can first of all be classified as either a definition, a property, a genus, or an accident [ARIS5: 169-170 (101^b15-102^b25)]. These are the “four predicables” of Aristotle’s *Topics*. Within this general framework we can view any predication as dealing with one of ten questions; these are called the “figures of predication” or, more popularly,

⁶ Let us not get too mystical about this troublesome word “beings” in this context. Read this phrase in the sense of, say, “it first being the case that . . .”; *eisin* is the plural form of a verb predicated of things.

⁷ *αρχας* is “principles” in English; *αιτιας* in English is “causes.”

the Aristotelian *categories*. In *Topics* I, 9 Aristotle listed these as: *ti esti* (what is it?), *poson* (how much?), *poion* (what kind?), *pros ti* (in relation to what?), and so on. The names that have been given to these ten figures of predication are: substance, quantity, quality, relation, place, time, position, state, activity, and passivity.⁸

Of these ten “predicates of being” are there some that are more *fundamental*, more in the nature of addressing first principles or first causes, than the others?

There are many senses in which a thing may be said to 'be', but they are related to one central point, one definite kind of thing, and are not homonymous . . . so 'being' is used in various senses, but always with reference to one principle. Some things are said to be because they are substances, others because they are affections of substance, others because they are a process toward a substance, or destructions or privations or qualities of substance, or productive or generative of substance, or of things which are relative to substance, or negations of some of these things or of substance itself. For this reason we say even of non-being that it *is* non-being . . . It is clear then that it is the work of one science also to study all things that *are, qua* being.⁹ But everywhere science chiefly deals with that which is primary, and on which other things depend, and in virtue of which they get their names. If, then, this is substance, it is of substances that the philosopher must grasp the principles and the causes [ARIS7: 1584-1585 (1003^a33-1003^b19)].

“First Philosophy” (*prote philosophia*) is therefore the science that concerns itself with, in a manner of speaking, “how things are in themselves,” i.e. their *substance*. It is concerned with the constitution, principles, and “first causes” of *things* in general. All other sciences, Aristotle says, presume their objects and depend upon First Philosophy to supply the knowledge of the scope and validity of these objects.

This, of course, immediately raises the issue: what *is* substance? This is a question that raises, as Aristotle puts it, “many perplexities.” It is the job of First Philosophy to sort through these perplexities and establish the principles by which we must regard “the substance of a thing.” The quest throughout the entire *corpus* of the *Metaphysics* is the search for these principles. In the course of this quest Aristotle discusses the views of previous philosophers (including Plato and his former colleagues in the Academy). A point he raises again and again is that where these distinguished thinkers of the past went wrong was in mistaking the meaning of words that describe or define ‘substance’ and its attributes. Put another way, they mistakenly employ *homonyms* in their reasoning and these homonyms lead them astray. Aristotle is very sensitive to

⁸ Aristotle is generally very careful about the use of his technical terms. The main bodies of his theoretical treatises generally seem to assume familiarity with these terms on the part of the student or reader. However, Aristotle also supplied what might be best described as "glossary-dictionaries" of these terms. One may presume that the student was expected to study his "dictionary" and become familiar with these definitions and descriptions. In the *corpus* of *Metaphysics*, Book V provides one such abridged glossary; the largest and most comprehensive of these is, of course, Aristotle's *Categories* [ARIS1].

⁹ The Latin "*qua*" is used rather liberally in translating Greek texts. *Qua* means roughly "in the manner in which they are" in the context of the translation here. Put less succinctly but more clearly, Aristotle's "one science" is going to study things with an eye toward looking at *how* we regard them to "truly exist."

the fact that a given word often has many *different* meanings; the science that studies “being as being” must be ruthlessly exact in understanding and employing such terms.¹⁰

Aristotle conducts his inquiry in a slow, careful, methodical, step-by-plodding-step fashion.¹¹ The *Metaphysics* is not for the impatient. Aristotle follows his own *dictum* that

we must sometimes begin to learn not from the first point and the origin of the thing, but from the point from which we should learn most easily [ARIS7: 1599 (1013^a1)].

After a preliminary discussion and criticism of the works of previous philosophers (what we would today call a review of the existing literature) in *Met. I*, Aristotle outlines, in *Met. III*, a list of thirteen “perplexities” and “difficulties” that must be dealt with: 1) does the study of causes belong to one or more than one science? 2) does this science only contemplate the first principles of substance or is it also concerned with “the principles all use for demonstration” (i.e., the principles of logic and mathematics)? 3) is there one science that deals with substance or more than one? 4) should we hold that only sensible substances exist, or that they do not “really” exist, or are there additional kinds of non-sensible substances that also exist? 5) is our study only concerned with substances or is it also concerned with the essential attributes of substances? 6) are the first principles and elements of things the *genera*? 7) is there any cause *per se* other than “matter” (*hyle*) and, if so, is it “dissociable” (capable of existing other than in sensible things)? 8) are the first principles “limited in kind or in number”? 9) are the principles of “perishable” things and those of “imperishable” things (e.g. the Platonic Ideas) the same or are they different? 10) are Unity and Being distinct or not distinct? 11) are the first principles universal or are they “like individual things”? 12) do their potentiality and actuality depend on anything other than *kinesis* (motion)? and, finally, 13) are “numbers” etc. substances in *any* sense of that word?

Some of these “perplexities” are of a fairly timeless nature, others reflect the “hot topics” of debate in Aristotle’s day (although they all *do* have an annoying tendency to recur with every new metaphysical system proposed by later philosophers). We will not attempt to summarize the details of Aristotle’s arguments here, but there are a couple of conclusions he draws that are of interest to us.

¹⁰ Such exactitude leads inexorably to ideas of supersensible objects. As has already been noted, supersensible ideas knit science together. Some scholars, notably A.E. Taylor, have taken Aristotle’s attentiveness to this as an indication that he is actually a Platonist, e.g. [TAY: 30-33].

¹¹ One of the difficulties with the metaphysical *corpus* lies in the arrangement given to it by Andronicus. The proper or the chronological order of the books of *Metaphysics* can be, and has been, debated. My own view is that these works read most naturally in the following order: *Met. I*, *Met. III*, *Met. IV*, *Met. VI*, *Met. VII*, *Met. VIII*, *Met. IX*, *Met. XIII*, *Met. XIV*, *Met. X*. It is held by some, including me, that *Met. II* does not really belong to this work; there is evidence that suggests it is merely the lecture notes of a pupil (Pasicles of Rhodes). *Met. V* is, as I mentioned earlier, a kind of “dictionary”; *Met. XII* seems to be an abridged stand-alone work. *Met. XI* seems to be an earlier work and, it seems to me, shows signs of being written in something of a hurry and without the patience and methodical attention to detail shown in the other books.

The first is that Aristotle finds “substance” to indeed be the fundamental or “primary” sense in which *everything* is said “to be.” This takes in not only sensible things but also fundamental principles, causes, and so on. What, then, is the “nature” of “substance”?

The word "substance" is applied, if not in more senses, still at least to four main objects; for both the essence and the universal and the genus are thought to be the substance of each thing, and fourthly the substratum [ARIS7: 1624 (1028^b32-35)].

Aristotle undertakes an examination of each of these four connotations of the word substance. At times he discusses sensible objects and intelligible objects in an almost Kantian manner. At the end, however, he concludes that “essence” is the *primary* “being” of all substances.

The essence of each thing is what it is said to be in virtue of itself [ARIS7: 1625-1626 (1029^b14)].

The *definition* is the “formula” of a thing’s essence. Two points are worth noting in this. First, Aristotle is very strict about what a “definition” must be. In particular, a description is not a definition if it is in any way self-referencing. For example, the essence of being a surface cannot be “being a white surface” because the word “surface” appears twice – once as subject, then again as predicate. A definition must be *unequivocal*. Aristotle’s system clamps tight requirements on how definitions of “substances” must be carried out.

The second point to note is that primary definitions involve a “formula”; Aristotle’s word was *logos*, which translates more commonly into English as “reason, ground; account, reckoning.” The “formula” of a substance tells us *what it is*. This, however, introduces a consequence that is central to Aristotle’s system. Not every thing has a formula that satisfies the requirements of a definition.

Therefore there is an essence only of those things whose formula is a definition. But we have a definition . . . [only] where there is a formula of something primary. Nothing, then, which is not a species of a genus will have an *essence* [ARIS7: 1626 (1030^a5-15)].

This is bad news for the Platonic Ideas. Plato viewed the Ideas as the ultimate reality, denying to the merely sensible things of the world any “primary” existence. Aristotle reverses this. The Ideas do not admit to any proper and primary definition and, consequently, they have no essence; therefore, while Ideas “exist” in some sense, they do not exist *as substances*.

There is another consequence that follows from the above. The “most primary” kinds of substances are those that are ‘incomposite’ – i.e. indivisible into parts. Here, however, we run into the problem that for such things no *definition* is possible because any formula we might try for these kinds of things will be self-referencing and, therefore, not a valid definition:

Evidently, then, in the case of simple things no inquiry nor teaching is possible; but we must inquire into them in a different way [ARIS7: 1644 (1041^b5-10)].

How does Aristotle escape from the corner he has apparently painted himself into? Substance, he reminds us, is “a principle and a cause.” Bearing in mind that First Philosophy investigates ‘being as being,’ Aristotle dryly observes that to ask “why a thing is itself” is “a meaningless question” because ‘a thing is itself’ is “the single formula and the single cause to all such questions.”

We *can*, however, ask, “Why is something predicable of something?” When we ask why or what something *is*, he tells us, we are really making an inquiry about the predication of one thing to another. We must, therefore, be very careful to make sure that our inquiry is *meaningful* rather than unmeaningful. In *On Interpretation* (iv), Aristotle tells us that all *propositions* “have truth or falsity in them.” To be ontologically sound, a *scientific* inquiry must take the form of propositions. “How is your wife?” is not an inquiry that can be put, as a form of proposition, to an unmarried man.

Aristotle was unquestionably more interested in concrete sensible things than in merely intelligible things, judging from the depth of treatment he brought to the question of the ‘substance’ of this class of things in the *Metaphysics* in comparison with his discussion of the supersensible ‘intelligible’ things. His detailed doctrine of these things, i.e. his doctrine of matter (*hyle*) and form (*eidos*), potentiality (*dynamis*) and actuality (*entelechy*), and so on, need not overly occupy us in this treatise. The main point of interest for us here is that Aristotle’s entire system takes ontology as its basis and the doctrine of substance underlies all other aspects of his philosophy. This most especially includes our second topic of interest: Aristotle’s ‘logic.’

Aristotle’s “Logic”

“Logic” is not a word Aristotle uses. What *we* call logic was by Aristotle called the science of demonstration (*epistemes apodeikties* or “demonstrative knowledge”). The so-called logical *corpus* of Aristotle’s work is found in five principal treatises: *On Interpretation*, *Prior Analytics* (consisting of two books), *Posterior Analytics* (also two books), *Topics* (eight books), and *On Sophistical Refutations* (sometimes called “*the Elenchi*”). A sixth treatise, *Categories*, is placed by tradition among this logical *corpus*, but its place in Aristotle’s ‘logic’ has sometimes been a point of debate. Smith, for instance, says of it:

The treatise we know as the *Categories* is more difficult to classify. An ancient tradition took it to be the preface to the whole of logic, giving a theory of the meanings of the terms of which propositions are composed. So interpreted, however, its latter half (Chapters 10-15) makes no sense (thus there is an equally ancient tradition regarding this as spurious or out of place). But an even older tradition entitled it “Prefatory Materials for the *Topics*,” implying that the *Categories* has

something of the same relationship to the dialectical treatises as *On Interpretation* to the works on demonstration [BARN: 28-29].

My own view is that the *Categories* is a kind of glossary, dictionary, and technical encyclopedia all rolled into one. As such it does pertain to the ‘logical’ treatises, but equally to the *Metaphysics*, the *Physics*, and, indeed, Aristotle’s system of philosophy in general. And this brings us straight-away to a point that is of rather central importance, in my view, regarding Aristotle’s system.

What we call the “traditional Aristotelian logic” is a formal system of, let us say, rules of ‘logical deduction’ devoid of explicit material content and concerned only with the structure (or “form”) of correct ‘rules of logic’ or, as some have put it, “laws of abstract reasoning.” This is a rather accurate description of the logic of the Middle Ages coming down to the late nineteenth century; but is it *Aristotle’s* system? I would answer this: No.

Buried in the plodding, sometimes mind-numbing, minutiae of the *Metaphysics* we encounter a few brief remarks such as the following:

Evidently then the philosopher, who is studying the nature of all substance, must inquire also into the principles of deduction¹ [ARIS7: 1587 (1005^b5-10)]

Therefore as substance is the starting-point of everything in deductions (because deductions start from the "what" of a thing), so too generation proceeds from it [ARIS7: 1633 (1034^a31)].²

Now let us treat first of definition in so far as we have not treated it in the *Analytics*; for the problem stated in them is useful for our inquiries concerning substance. I mean this problem: wherein consists the unity of that, the formula [*logon*] of which we call a definition? [ARIS7: 1638 (1037^b9)].

Even the famous principle of contradiction – which in Aristotle’s formulation is: the same attribute cannot at the same time belong and not belong to the same subject in the same respect – is set forth in *Metaphysics* (IV., iii). If these clues are not convincing enough evidence that Aristotle’s ‘logic’ is thoroughly bound-up with his ontology, we can examine the writings in the logical *corpus* itself. *On Interpretation* (also known as *De interpretatione*) is where Aristotle defines most of his basic ‘logical’ terminology, including the definition of a “sentence” and under what circumstances a “sentence” is also a “proposition.” It literally drips with Aristotle’s ontological terminology. The *Prior Analytics* – regarded by most people as the core of Aristotelian logic with its detailed theory of the syllogism – includes Aristotle’s much-disputed theory of *modality* in “the science of demonstration.” Aristotle tells us that propositions have a

¹ This is Ross’ translation of Aristotle’s term, *syllogistikon*. *Syllogistikos* is literally “for concluding” and “principles for making conclusions” is perhaps closer to the context of Aristotle’s discussion here.

² I have used a modified version of the Tredennick translation here (the Loeb Classical Library edition); contrary to Tredennick, I have *ousia* rendered as “substance” and *syllogismoi* as “deduction.”

modal distinction, i.e., they are either problematic (x may be y), assertoric (x is y), or necessary (x must be y). While there seems to be no shortage of logicians, now or in the past, willing and eager to lay criticism on the modal distinctions (and I am not acquainted with any who speak strongly in support of them), it is hard to see how their presence in the *Prior Analytics* can be viewed as anything other than a direct reference to the “being as being” of propositions.

It goes on. In *Posterior Analytics* we find throughout an on-going concern with *material* considerations in “logic”: what constitutes unqualified knowledge of a fact? what are the ultimate premises? what is the difference between knowledge and opinion? etc. *Topics*, which seems to be, for the most part at least, one of Aristotle’s earliest treatise on the subject, discusses the difference between demonstrative and dialectical reasoning. It contains his “four predicables” (definition, property, genus, and accident), what seems to be his earliest enunciation of the ten “categories of predication” (substance, quantity, quality, relation, place, time, position, state, activity, passivity), his treatment of induction and why induction is *not* demonstration, and so forth. It speaks on how to examine contraries, how to examine “differentiae” in terms of their actual meanings and look for “homonymous” uses of them, and it discusses the “problems” with accidents, universals, and particulars.

This *corpus* contains far more than the medieval “four Aristotelian forms” of propositions and the “categorical syllogism.” It is as distant from being the “formal logic that abstracts all material content from its arguments” as the moon is from Pasadena. Bart Kosko, a well-known researcher in and proponent of fuzzy logic, seems to blame Aristotle for the modern-day attitudes that fought the very idea of fuzzy logic. His disdainful summary of Aristotle runs thus:³

This faith in the black and white, this *bivalence*, reaches back in the West to at least the ancient Greeks. Democritus reduced the universe to atoms and void. Plato filled his world with the pure forms of redness and rightness and triangularity. Aristotle took time off from training his pupil Alexander the Great to write down what he felt were the black-and-white laws of logic, laws that scientists and mathematicians still use to describe and discuss the gray universe.

Aristotle's binary logic came down to one law: A or not-A. Either this or not this. The sky is blue or not blue. It can't be A AND not-A. Aristotle's "law" defined what was philosophically correct for over two thousand years.

Perhaps Dr. Kosko knows a different Aristotle? His description, ignoring the attitude of coffee-house positivism in which it is expressed, bears no resemblance to the Aristotle found in the *corpus*. But Kosko is right about one thing: the formal “bivalent” contentless logic he describes is the “standard” logic of today (allowing for the mutation of ‘Aristotelian logic’ into mathematical logic). It is worthwhile for us to take a look at how Aristotle’s ‘logic’ – brimming with a material content of which a fuzzy logician must approve – came to be seen in this ‘black-and-white’ way.

³ Bart Kosko, *Fuzzy Thinking*, N.Y.: Hyperion, 1993.

§ 2.3 The Neo-Platonist's Aristotle

After Aristotle it can be fairly said that no new growth or development in philosophy took place in the school he founded. Only five names among the “Peripatetics” who followed him are significant. The first two of these were Aristotle’s students, Theophrastus of Eresus and Eudemus of Rhodes. Theophrastus succeeded Aristotle as head of the school. He seems to have been primarily a scientist who made contributions in zoology and botany, and he was regarded as ‘the authority’ on the latter until the close of the middle ages. Eudemus is known primarily for his historical works. Both Theophrastus and Eudemus made extensions and modifications to Aristotle’s ‘logic’, the most well-known of which is the “hypothetical syllogism” which, in later terminology, was called the “material implication.”

The third name is Strato of Lampsacus (also known as Strato the Physicist), who succeeded Theophrastus as head of the Peripatetic School in Athens (c. 287-269 B.C.). With Strato we see some modifications being made to Aristotelian metaphysics – particularly by the introduction of the influence of Democritus the atomist in metaphysical principles – in his reworking of Aristotle’s principles of motion. After Strato the Peripatetics gradually came to ignore philosophical considerations of any depth and fixed their attention instead on other matters. Aristotle slowly disappears from the school he founded for some two centuries until Andronicus of Rhodes became its head *circa* 70 B.C. It was Andronicus, as we noted earlier, who re-published Aristotle’s esoteric works. Zeller notes:

His investigation into their authenticity and his commentaries to many of these works gave an impulse to the diligent study of Aristotle to which the Peripatetic school from now on devoted itself. It was a necessary result of this study of their founder's works that it now became difficult to attribute views to him which did not belong to him. Nevertheless neither Andronicus nor his pupil Boethus of Sidon . . . surrendered their independence of judgment in favor of Aristotle [ZELL: 255].

This independence of judgment seems to have continued in the Peripatetic school to the end. The last important figure in this school was Alexander of Aphrodisias, also known as Alexander the Commentator, *circa* 200 A.D. In the long, slow decline of the Peripatetic school Aristotle’s “science of demonstration” became separated from metaphysics and came to be regarded as an “instrument” or “Organon” – a name Alexander bequeathed to the collective works of the *Categories*, *On Interpretation*, *Prior Analytics*, *Posterior Analytics*, *Topics*, and *Sophistical Refutations*. By the time we reach Alexander, Aristotle’s “science of demonstration” has become merely *logike*, a term that has stuck to it ever since.

In the meantime Plato’s Academy had been evolving as well. Unlike the Peripatetics, the Academicians remained in much closer touch with the works of their founder. Much of their effort went into attempting to “systematize” Plato’s rather unsystematic presentations. In doing

so, they gradually came to incorporate into their philosophy elements of Neo-Pythagoreanism, the ideas of the Stoics, and even some of those of the Peripatetics. As a result of so much mingling of different systems, the doctrine of the Academy came to be called Eclecticism. By their efforts was laid the groundwork for the last great gasp of classical philosophy: Neo-Platonism.

In name at least, Neo-Platonism was started in Alexandria by Ammonius Saccas; but Ammonius left no writings and so his student Plotinus (205-270 A.D.) is *de facto* the founder of the Neo-Platonist school. Our interest in the Neo-Platonists revolves around two things: their reconstruction of Aristotle's philosophy and their influence on early Christian theology that was transmitted to the scholastics of the Middle Ages. Neo-Platonism was the last great effort of classical times to produce a single, systematic, all-encompassing philosophy. By the end of the third century A.D. the Peripatetics had disappeared forever, absorbed into the Neo-Platonist school. Of all the pagan philosophies of the ancient world, Neo-Platonism was the one most compatible with early Christianity – which at that time had no established theology of its own – and it is likely that Christianity affected Neo-Platonism almost as much as Neo-Platonism affected Christianity. The “Platonic” philosophy of the Middle Ages is not that of Plato but, rather, Christian Neo-Platonism.

The opinions of historians have not been kind to Neo-Platonism. The Neo-Platonists tended toward mysticism, preoccupation with the “state of the soul,” and theosophy. Zeller acidly remarked, “This last attempt of ancient thought to fashion our knowledge of the world into a philosophic system bore from the beginning the marks of senility upon its countenance” [ZELL: 290]. Schwegler wrote:

The common characteristic of all the Neo-Platonists is a tendency to mysticism, theosophy, and theurgy. The majority of them gave themselves up to magic and sorcery, and the most distinguished boasted that they were the subjects of divine inspiration and illumination, able to look into the future, and to work miracles. They professed to be hierophants as much as philosophers, and exhibited an unmistakable desire to establish a Pagan copy of Christianity, which should be at the same time a philosophy and a universal religion [SCHW: 179].

The Neo-Platonists, as the name implies, were true to Plato's doctrine of the Ideas as the basis of reality and to the use of the dialectic as the instrument of argumentation. This does not, however, mean that they left Plato's philosophy unchanged. (If they had, they would, of course, be Platonists and not Neo-Platonists). They made room for “the sensibles” (the primal reality of which Plato had utterly denied) and, at least in what I call Christian Neo-Platonism, located the Ideas in the Mind of God. And they tried to bring home Plato's prodigal son, Aristotle.

The Neo-Platonists revered both Plato and Aristotle. To them these men were thinkers of the most profound of thoughts, giants in a world of pygmies. It was inconceivable that they should disagree on the most fundamental issues of philosophy. Yet disagree they did, or at least seemed

to. In his *Sixth Ennead*, Plotinus takes on Aristotle's ten "categories" one by one, raising serious objections to the claims Aristotle makes about them in the text of *Categories*.

Philosophy at a very early stage investigated the number and the character of the Existents. Various theories resulted: some declared for one Existent, others for a finite number, others again for an infinite number, while as regards the nature of the Existents . . . there was a similar disagreement . . . our attention must be directed upon the results of those whose examination has led them to posit on their own account certain well-defined genera . . .

But here again there is a divergence of views. To some the genera are first-principles; to others they indicate only a generic classification of the Existents themselves.

Let us begin with the well-known tenfold division of the Existents and consider whether we are to understand ten genera ranged under the common name Being, or ten categories. That the term Being has not the same sense in all ten is rightly understood [PLOT: 252].

Note the distinction Plotinus calls for in his question: Is the "tenfold division of Existents" (Aristotle's ten "figures of predication") to be regarded in terms of ten "genera of Being" or as ten "categories"? Upon the answer to this question hinges whether or not Aristotle's ten terms are ontological or merely logical. If the former, they pertain to "real being" and nature; if the latter, they are merely forms of speech we use in making deductions, inferences and statements *about* "reality."

Plotinus will conclude that they are "categories" in the merely logical sense. There are not, he says, ten "genera of Existents" but only five.

We have caught the radiance of Being, and beheld it in three manifestations: Being, revealed by the Being within ourselves; the Motion of Being, revealed by the motion within ourselves; and its Stability revealed by ours. We accommodate our being, motion, and stability to those [of the Archtypall], unable however to draw any distinction but finding ourselves in the presence of entities inseparable and, as it were, interfused. We have, however, in a sense, set them a little apart, holding them down and viewing them in isolation; and thus we have observed Being, Stability, Motion - these three, of which each is a unity to itself; in so-doing, have we not regarded them as different from each other? By this posing of three entities, each a unity, we have, surely, found Being to contain Difference.

Again, inasmuch as we restore them to an all-embracing unity, identifying all with unity, do we not see in this amalgamation Identity emerging as a Real Existent?

Thus, in addition to the other three [Being, Motion, Stability], we are obliged to posit the further two, Identity and Difference, so that we have in all five genera. . . They will, moreover, be primary genera because nothing can be predicated of them as denoting their essential nature [PLOT: 273].

Plotinus reaches his conclusion by basing his examination on what we find "revealed within ourselves" – i.e., in the Soul. 'True Being' (or 'Reality') is to be discovered there and not, as poor Aristotle apparently thought, in the sensible world. What does this bode for "substance" in the sensible world?

We have now explained our conception of Reality [True Being] and considered how far it agrees with the teaching of Plato. We have still to investigate the opposed principle [the principle of Becoming] . . .

Our first observations must be directed to what passes in the Sensible realm for Substance. It is, we shall agree, only by analogy that the nature manifested in bodies is designated as Substance, and by no means because such terms as Substance or Being tally with the notion of bodies in flux; the proper term would be Becoming [PLOT: 281].

Substance, then, is that from which all other things proceed and to which they owe their existence; it is the center of passivity and the source of action.

These are the incontrovertible facts in regard to the pseudo-substance of the Sensible realm: if they apply also in some degree to the True Substance of the Intellectual, the coincidence is, doubtless, to be attributed to analogy and ambiguity in terms [PLOT: 283].

How could the venerable Aristotle – whom Plato himself called “the mind of the Academy” – have been so wrong? Is he one of the pygmies rather than one of the giants? Of course not. As Plotinus’ greatest student, Porphyry, will tell us, the answer is: Aristotle was *not* wrong; he was merely misunderstood by lesser men.

Porphyry (232-304 A.D.) will complete the philosophical reincarnation of Aristotle. To understand how he accomplished this we must first acknowledge that Aristotle’s *Categories* was a work notorious in antiquity for its obscurity. Unlike most of his other works, Aristotle never says to which branch of philosophy the *Categories* belongs. Is it metaphysics? Is it merely the preface to logic? In favor of the first viewpoint, Aristotle certainly *seems* to be talking about ontological entities in this work. But, on the other hand, he also is talking about such things as: what is a synonym? what is a homonym? what things can be *said* “of things without combination”? and so on. This sounds like a work of mere semantics. Furthermore, Aristotle is quite clear in *Metaphysics* that “universals” cannot be substances; hence the ten categories cannot be “entities” either. Does that not mean that they are merely names for logical constructs?

Alexander of Aphrodisias concluded it was the latter – i.e., logical – interpretation that must be the correct one, and Porphyry gladly accepts this interpretation. The *Categories* is merely a work of logic and not of metaphysics; Aristotle did not err because we cannot take his categories to have ontological significance. In Porphyry’s first *Commentary* on the *Categories* we find:

Q. Was *Categories* the only title that he gave the book, or did he also call it, as do others, *The Ten Categories*?

A. Certainly not.

Q. Why do you say that?

A. Because others have given it the title *Introduction to the Topics*, others, *On the Genera of Being*, and others, *On the Ten Genera*.

Q. Were they correct in giving it these titles?

A. They were not.

Q. Explain for us the absurdity of each of these titles.

A. It would be absurd to call the book *Introduction to the Topics* for why call it *Introduction to the Topics* rather than *Introduction to the Analytics* or *Introduction to On Interpretation*? It is not for the sake of the studying the *Topics* that one first has to learn about predications, but also for the sake of learning about the *Analytics* and about categorical propositions, and indeed just about any other

subject. This work is the most elementary one, and serves as an introduction to all parts of philosophy. It would be best to consider it as an introduction to the physical part of philosophy, rather than to the *Topics*. For substance, qualification, and so forth are the product of nature. But it definitely ought not to be given the titles *On the Genera of Being* or *On the Ten Genera*.

Q. Why?

A. Because beings and their genera and species, and differentiae are things, not words. After listing the ten items, i.e. substance, qualification, quantity, and so forth, Aristotle says, 'None of the above is said just by itself in any affirmation, but it is by the combination of these with one another that an affirmation is produced'. But if the combination of these is what produces an affirmation, and an affirmation is something that has its existence as significant speech and as a declarative sentence, then the treatise cannot be about the genera of being nor about things *qua* things at all, but instead is about the words that are used to signify things. For no combination of things gives rise to an affirmation; rather it is the combination of significant words indicating things that produces an affirmation, and Aristotle says explicitly, 'Of items said without any combination, each signifies either substance . . .' and so forth. If he were giving an account of things, he would not have said 'each *signifies* either substance . . .' For things do not signify; rather they are what is signified [PORP: 31-32].

Porphyry conveniently overlooks the fact that we do not know *what* Aristotle actually called the work we know as the *Categories*. Presumably that title might have been given to it by Andronicus. As far as this goes, we do not actually know if Aristotle gave it any title whatsoever. Porphyry also conveniently overlooks other things in the Aristotelian *corpus* that run counter to his interpretation of Aristotle as a Platonist. Rather, as Strange observes, he “exploits the inconsistency for his own purposes, to show that the Aristotle in the *Categories* is really a Platonist, though he appears not to be” [PORP: 11].

Porphyry wrote an “Introduction to the Categories” (the *Isagoge*) that had great impact throughout the Middle Ages on how Aristotle’s ‘logic’ was to be interpreted. This interpretation is still held by at least some people today. O.F. Owen’s *The Organon or Logical Treatises of Aristotle* (written in 1853 and still in print in 1901) included Porphyry’s *Isagoge* as an integral part of the translation. Porphyry’s *Isagoge* and his commentaries established how Aristotle would be transmitted to Europe and to Arabian society and how his work would be viewed for centuries to come. Once divorced from Aristotelian ontology, it is a simple, even natural, step for logic to descend from being a fundamental constituent of metaphysics to being a lowly tool for dialectic and argumentation.

§ 2.4 The Journey to the Present

It is, as I just said, a simple step; but it is not necessarily a quick one. Between the end of classical antiquity and the rise of scholasticism we encounter an era of some significance in the journey to the present: the Dark Ages.

Putting a starting and an ending date on the Dark Ages is a somewhat arbitrary undertaking, but for our purposes here we can go along with Durant and define the Dark Ages as that period

from 566 to 1095 A.D. (from the death of Justinian to the proclamation of the First Crusade). We will begin, naturally enough, in the closing years of classical antiquity.

Amidst the growing chaos of the collapsing Western Roman Empire we find Anicius Manlius Severinus Boethius (480-524 A.D.) – Roman senator, former consul of Rome, minister to King Theodoric the Ostrogoth, and Christian Neo-Platonist – busily at work translating the six treatises of Aristotle’s *Organon* and the *Isagoge* of Porphyry from Greek into Latin. He also wrote his own commentaries on them, as well as his own monographs on logic, mathematics, music, and theology. Boethius, as Will Durant¹ has noted, “wrote dreary books that were read and treasured for a thousand years.” As a translator Boethius had every virtue; all accounts attest to the meticulous and loving care with which he rendered Aristotle’s and Porphyry’s words into Latin [GIBS: 73-85]. As a commentator he was an outright Neo-Platonist. This, however, did not prevent him from disagreeing with Porphyry’s commentaries on Aristotle when he thought it appropriate. In his second commentary on Porphyry he argued that logic was “not confined by the limits and aims of other parts of philosophy, and is not restricted to a particular set of questions” [CHAD: 109]. He divided philosophy into two parts: speculative philosophy and practical philosophy.

Speculative philosophy, in turn, is comprised of Aristotle’s division into natural science, mathematics, and theology. With regard to the last of these, Boethius essentially equates theology with metaphysics. Practical philosophy is comprised of ethics, politics, and economics. Each of the three speculative divisions is to have its own *methods* and its own *logic* [CHAD: 110]. Boethius follows Plotinus in assigning to “speculative theology” three distinct objects of knowledge: intellectual objects, intelligible objects, and natural objects. The “intelligible objects” – which stand midway between the supersensible and rather Platonic “intellectual objects” and the common objects of the physical world – include the study of astronomy, the “higher regions of the sublunary realm” (i.e. the objects of Aristotle’s *Meteorology*), and human souls “which once were of that prior intellectual substance, but by contact with bodies degenerated to the level of intelligibles” [CHAD: 111] – a viewpoint which describes the Neo-Platonic adaptation of Plato’s *Phaedo* [PLAT6].

Boethius also faithfully passes on Porphyry’s amendment of Aristotle’s four predicables of Definition, Property, Genus, and Accident. Under Porphyry these become: genus, species, differentia, property, and accident. We may note the disappearance of “definition” from this list; we may also recall that “definition” played a central role in Aristotelian metaphysics so that its disappearance from the list of “primary” predicables is but another illustration of the fundamental changes the Neo-Platonists wrought in Aristotle’s system. Porphyry’s list will become known to

¹ Will Durant, *The Age of Faith*, NY: MJF Books, 1950.

the Middle Ages as “the Five Words.” These and Porphyry’s other changes will establish the medieval view of Aristotelian logic that persists (except perhaps among a few scholars of Aristotle) to this day. The ‘logic’ of the *Isagoge* may be Aristotle’s, but whenever “metaphysical” issues arise, they are resolved according to Plato’s viewpoint [CHAD: 133].

The Plato of Neo-Platonism – if not the writings of Plato himself – flooded into the Dark Ages and on to the Scholastic era by many paths. The principal one, of course, was by way of the Church. St. Augustine (354-430 A.D.) had been greatly influenced by Neo-Platonism, and Augustinian theology dominated the thinking of the Western Church all the way to, and including, St. Thomas Aquinas [WICK: 28-32]. The direct impact of Aristotle on St. Augustine was nil. There was, however, an *indirect* impact. Augustine maintained that it was not only lawful but the duty of Christian teachers to be skilled at rhetoric [AUGU3, bk. IV] and recommended not only St. Paul, the prophets, and the Scriptures as models to be studied, but commended Cicero’s *De oratore* as well. Cicero, in turn, was influenced in rhetoric by Aristotle:²

Thereupon Catulus remarked, "You are right, Antonius, in saying that most philosophers prescribe no rules for speaking, and yet have something ready to say about everything. Aristotle, however, whom I greatly admire, set forth certain commonplaces, among which every line of argument might be found, not merely for philosophical debate, but also for our own contentions in the Courts: it is certainly long, Antonius, since your own style deviated from his principles, whether it be through likeness to that godlike genius you fall into the same track, or, as seems far more probable, you too have perused and learned those very maxims.

This brings up a point that has a direct bearing on the fate of logic in the Middle Ages. With Porphyry’s authoritative *Isagoge* as the introduction to *Categories*, it becomes permissible to divide Aristotle’s “science of demonstration” cleanly into “analytics” and “dialectics.” This, in fact, will be the case, with *On Interpretation*, *Prior Analytics*, and *Posterior Analytics* being swept to one side as “formal logic” while *Topics* and *On Sophistical Refutations* will be paired with Aristotle’s *Rhetoric* to constitute “dialectic.” Would Aristotle sanction this division? We may question if he would. For example, in the *Prior Analytics*, book I, we have

The premise of demonstration differs from the premise of dialectic in that the former is the assumption of one member of a pair of contradictory statements (since the demonstrator does not ask a question but makes an assumption), whereas the latter is an answer to the question which of two contradictory statements is to be accepted. This difference, however, will not affect the fact that in either case a deduction results [ARIS3: 39 (24^a21-26)].

Neither Porphyry nor Boethius *say* this division is permitted; but it *is* implied.

² Cicero, *De oratore* II., xxxvi. The reference to Aristotle made in the dialogue is to *Topics*.

Neo-Platonism also had another pathway directly into the Middle Ages, this one through the anonymous fifth-to-sixth century monk we today know only as Pseudo-Dionysius. This unknown writer was believed to be Dionysius the Areopagite (the first bishop of Athens) until the fifteenth century. His works are seen today as a mixture of Christian Platonism, originating from Clement of Alexandria and passed on through St. Gregory of Nyssa, and the Neo-Platonism that impregnated the Eastern Church [KNOW: 50-52], [WICK: 28-32].

Aristotle was less successful than Plato in exiting classical antiquity. While Boethius' translations of *Categories*, *On Interpretation*, and the *Isagoge* proved popular, along with his commentaries, the rest of the *Organon* proved to be rather a literary dud. Thus after the Carolingian schools were established in the ninth century, during the reign of Charlemagne, to teach the "seven liberal arts" (grammar, rhetoric, dialectic, arithmetic, geometry, astronomy, and music), the text-books in use by the eleventh century were [KNOW: 67-68], [GIBS: 162-188], [PEDE: 106-109]:

Grammar:	Priscian's <i>Institutiones Grammaticae</i> Aelius Donatus' <i>Ars Grammatica</i>
Rhetoric:	Cicero's <i>De Oratore</i> Quintilian's <i>Institutio Oratoria</i>
Dialectic:	Porphyry's <i>Isagoge</i> Aristotle's <i>Categories</i> and <i>On Interpretation</i> Boethius' commentaries
Arithmetic:	St. Bede's <i>Liber de Temporibus</i> and <i>Liber de Ratione Temporum</i> Boethius' <i>De Institutione Arithmetica</i>
Geometry:	Gerbert of Aurillac's <i>Isagoge Geometriae</i>
Astronomy:	Pliny the Elder's <i>Historia Naturalis</i> St. Bede's <i>De Natura Rerum</i>
Music:	Boethius' <i>De Institutione Musica</i>

A quick glance at this list tells us two things with regard to medieval logic. First, it is not "formal logic" at all but, rather, dialectic. Second, it is only *On Interpretation* that is transmitted to Europe at this time. Thus the classical theory of the structure of propositions and their truth-conditions is all that Europe will have to begin with. It is from this work that medieval logicians will eventually produce the "traditional" propositional forms, i.e.,

the universal affirmative or A form:	Every S is P;
the universal negative or E form:	No S is P;
the particular affirmative or I form:	Some S are P;
the particular negative or O form:	Some S are not P.

This is but a ghost of Aristotle's science of demonstration. The rest of Aristotle will wait 700 years from the time of Boethius before re-appearing in Europe.

Scholasticism was always a religion first and a philosophy second (if at all). Thus it is easy to understand St. Anselm's motto: *Fides quarens intellectum* ("faith seeking to understand"). Even dialectic was not taken too seriously until the end of the eleventh and beginning of the twelfth centuries when the great debate on the question of "universals" erupted. The early scholastics knew nothing of Aristotle's metaphysics and not too much more about Plato's Ideas. Logic in the eleventh century was little more than grammar (e.g., the more or less "grammatical" interpretation of the *Categories*) plus the elementary "forms" found in *On Interpretation*.

But in the twelfth century a dispute arose over the question of whether the "universals" (as that term is used in *On Interpretation*) were "real Existents" – which was the position taken by the realists and, of course, is the Platonic interpretation – or whether a "universal" is just the name for something – which was the position taken by the "nominalists." Knowles writes:

The subject was not a wholly novel one; it is, especially in its metaphysical implications, basic to any system of thought, but it emerged as something new to the masters in the age of Anselm, and as one to which their text-books gave no answer. They were logicians and took it up, so to say, by its logical end, and in doing so gave it a new look. The Greek thinkers, taking it up on the physical level, had been led on to the levels of epistemology and metaphysics, and ultimately to that of theology. The early scholastics approached it as a matter of terms and concepts, and it was some time before the metaphysical and epistemological implications became apparent [KNOW: 98-99].

All the early scholastics – e.g. John Scotus Erigena, St. Anselm, William of Champeaux – were realists. Roscelin of Campiegne and Abelard (1079-1142 A.D.) were the leading proponents of nominalism. And it was just at this time when Europe began to rediscover Aristotle.

From about 1100 to about 1270 A.D. Aristotle's writings slowly, and piece by piece, were re-introduced to Europe. Knowles identifies four principal pathways through which this took place [KNOW: 167-170]. These were: 1) Moorish Spain, 2) Syria following the crusades, 3) Constantinople, and 4) Sicily under the Normans. In most cases Aristotle's writings were Latin translations from Arabic translations of the Greek sources – heavily laced with Neo-Platonic biases introduced in the translation process³ and oftentimes suffering from a number of errors introduced as manuscripts were passed from one copyist to another.

Coming as it did just when the realist vs. nominalist debate was taking place, the "logical" works of Aristotle attracted attention first. The *Prior and Posterior Analytics*, *Topics*, and *On Sophistical Refutations* came first. Except for *Posterior Analytics*, it seems to have been Boethius' translations that were received at this time. These works were enthusiastically hailed as "the new logic." As for the rest of the *corpus*, there was a considerable delay before Latin translations became widespread.

³ Translation is never a process of simply replacing a word in one language by a word in the other language. A translator must know what the writer was talking about, or think that he does, and this colors the process of translation. Our modern Aristotelian *corpus* is translated directly from the Greek.

When they did come, trouble came with them – at least in the eyes of the Church. Scholasticism, as I said earlier, was a religion first, then a theology, and then a philosophy. It was, and had always been, thoroughly laced with Neo-Platonism. Aristotelian metaphysics, however, is more or less in direct conflict with the Platonic themes Christianity had found most attractive. Consequently Aristotle’s work – especially the *Metaphysics* – was viewed with deep suspicion and alarm by church authorities. A Paris decree in 1210 forbade all persons to read and comment on Aristotle’s work. This ban was re-issued in 1215 making an exception for his works on logic and ethics. Pope Gregory IX ordered Aristotle’s work to be “revised” and “corrected” to remove the “heresies” it contained. So it was that St. Thomas Aquinas undertook his *Summa Theologica* from 1266 to 1272 – the work that made Aristotle safe for Christianity.

We have one more major figure to discuss before we can pass on to “modern” logic. Our understanding of the modern-day divorce between logic and “metaphysics” is not complete until we take a look at the judge who granted the divorce decree: Francis Bacon.

As we have seen, logic had already been, in theory, sterilized of ontological contamination by the end of the thirteenth century. Nonetheless, it was still the principal tool of “disputations” and the scholastic logicians could hardly have been expected to leave their theology at the door even when dealing with questions of logic. The debate between the realists and the nominalists – all of whom were deeply religious men – illustrates this very clearly. To Bacon, the field marshal of the mustering of science, this was unacceptable. Bacon’s call to arms was issued in 1605:

7. Another error that hath some connexion with this latter is, that men have used to infect their meditations, opinions, and doctrines, with some conceits which they have most admired, or some sciences which they have most applied; and given all things else a tincture according to them, utterly untrue and unproper. So hath Plato intermingled his philosophy with theology, and Aristotle with logic; and the second school of Plato, Proclus and the rest, with the mathematics. For these were the arts which had a kind of primogeniture with them severally [BACO1: 16].

Let us put, Bacon will say, the “arts which have a kind of primogeniture” – that is, those areas of human knowledge that are primary: theology, logic, mathematics – where they belong and keep them pure and uncontaminated from the “conceits” and “idols” of popular but unlearned prejudices.

2. Natural science or theory is divided into physic and metaphysic; wherein I desire it may be conceived that I use the word metaphysic in a differing sense from that that is received. And in like manner, I doubt not but it will easily appear to men of judgment, that in this and other particulars, wheresoever my conception and notion may differ from the ancient, yet I am studious to keep the ancient terms.

3. To return therefore to the use and acception of the term metaphysic, as I do now understand the word; it appeareth, by that which hath been already said, that I intend *philosophia prima*, summary

philosophy and metaphysic, which heretofore have been confounded as one, to be two distinct things. For the one I have made as a parent or common ancestor to all knowledge; and the other I have brought in as a branch or descendent of natural science. It appeareth likewise that I have assigned to summary philosophy the common principles and axioms which are promiscuous and indifferent to several sciences: I have assigned unto it likewise the inquiry touching the operation of the relative and adventive characters of essences, as quantity, similitude, diversity, possibility, and the rest: with this distinction and provision; that they be handled as they have efficacy in nature and not logically . . . It is therefore now a question what is left remaining for metaphysic; wherein I may without prejudice preserve this much of the conceit of antiquity, that physic should contemplate that which is inherent in matter, and therefore transitory; and metaphysic that which is abstracted and fixed . . . The one part, which is physic, inquireth and handleth the material and efficient causes; and the other, which is metaphysic, handleth the formal and final causes.

4. Physic . . . is situate in a middle term or distance between natural history and metaphysic. For natural history describeth the variety of things; physic the causes, but variable or respective causes; and metaphysic the fixed and constant causes.

5. For metaphysic, we have assigned unto it the inquiry of formal and final causes; which assignation, as to the former of them, may seem to be nugatory and void, because of the received and inveterate opinion, that the inquisition of man is not competent to find out essential forms or true differences: of which opinion we will take this hold, that the invention of forms is of all other parts of knowledge the worthiest to be sought, if it be possible to be found.

6. But the use of this part of metaphysic, which I report as deficient, is of the rest the most excellent in two respects: the one, because it is the duty and virtue of all knowledge to abridge the infinity of individual experience, as much as the conception of truth will permit, and to remedy the complaint of *vita brevis, ars longa*;⁴ and which is performed by uniting the notions and conceptions of sciences. For knowledges are as pyramids, whereof history is the basis. So of natural philosophy, the basis is natural history; the stage next the basis is physic; the stage next the vertical point is metaphysic. As for the vertical point, "*opus quod operatur Deus a principio usque ad finem*,"⁵ the summary law of nature, we know not whether man's inquiry can attain unto it. But these three be the truest stages of knowledge . . .

7. The second part of metaphysic is the inquiry of final causes, which I am moved to report not as omitted but as misplaced. And yet if it were but a fault in order, I would not speak of it: for order is matter of illustration, but pertaineth not to the substance of science. But this misplacing hath caused a deficiency, or at least a great improvidence in the sciences themselves. For the handling of final causes, mixed with the rest in physical inquiries, hath intercepted the severe and diligent inquiry of all real and physical causes, and given men the occasion to stay upon these satisfactory and specious causes, to the great arrest and prejudice of further discovery [BACO1: 42-45].

Bacon is not entirely clear about what role "summary philosophy" is to have other than it is to deal with "common principles and axioms" and that any pronouncements it makes are to "be handled as they have efficacy in nature and not logically" (the latter, presumably, a warning against applying logic in the manner of the scholastics, e.g. "proofs" of the existence of God). He is somewhat more clear on the role of "metaphysic." It is to confine itself to formal principles that can serve to unite sciences. Hence he will place mathematics within it.

⁴ "Life is short, but art is long."

⁵ "The work which God worketh from beginning to end" - Eccles. 3.

He is also clear that “metaphysic” is not to involve itself with final causes, i.e., teleology. Teleological pronouncements held an important place in Aristotle’s physics, but teleological “explanations” such as “an acorn becomes an oak tree because being an oak tree is the final cause of its *kinesis*” tend to be either useless or entirely specious. Bacon’s view is *mechanistic*; he is willing to accept efficient causes (“the fire heated the water and the heat caused the water to boil”) but not teleological causes (e.g., “the rivers flood in the spring to replenish the fertility of the soil”).

And where amidst all this is logic? Bacon first gives us a glimpse of what it is *not*; it is not something that delivers to us sciences or principles of science, and it does not help us “invent” – a term by which he means the making of an art or a science.

2. That this part of knowledge is wanting, to my judgment stands plainly confessed; for first, logic doth not pretend to invent sciences, or the axioms of sciences, but passeth it over with a *cuique in sua arte credendum*¹ [BACO1: 56].

Logic comes into play when we render *judgments*.

XIV. 1. Now we pass unto the arts of judgment, which handle the natures of proofs and demonstrations; which as to induction hath a coincidence with invention. For in all inductions, whether in good or vicious form, the same action of the mind which inventeth, judgeth; all one as in the sense. But otherwise it is in proof by syllogism; for the proof being not immediate, but by mean, the invention of the mean is one thing, and the judgment of the consequence is another; the one exciting only, the other examining.

3. So then this art of judgment is but the reduction of propositions to principles in a middle term. The principles to be agreed by all and exempted from argument; the middle term to be elected at the liberty of every man's invention . . .

4. But this art hath two several methods of doctrine, the one by way of direction, the other by way of caution; the former frameth and setteth down a true form of consequence, by the variations and deflections from which errors and inconsequences may be exactly judged. Toward the composition and structure of which form, it is incident to handle the parts thereof, which are propositions, and the parts of propositions, which are simple words. And this is that part of logic which is comprehended in the Analytics [BACO1: 59-60].

The “principles agreed to by all” are not the business of logic. Logic is therefore merely *formal*. Bacon makes this purely formal role for logic clear a few lines later when he writes, “For first, I conceive . . . that that part which is variably referred, sometimes to logic, sometimes to metaphysic, touching the common adjuncts of essences, is but an *elenche*.” An *elenche* is a sophism – a false argument that passes itself off as the truth. Logic is not to disguise itself as ontology but is to confine itself to judgment and to what Bacon calls the “method of tradition” – a

¹ "Believe every artist in his own art."

term which, he explains, means the method of the *delivery of knowledge*. Logic is for proofs, not discoveries:

2. Method hath been placed and that not amiss, in logic, as a part of judgment. For as the doctrine of syllogisms comprehendeth the rules of judgment upon that which is invented, so the doctrine of method containeth the rules of judgment upon that which is to be delivered; for judgment preceedeth delivery, as it followeth invention [BACO1: 64].

He will go on to say awhile later, "It appeareth also that logic differeth from rhetoric, not only as the fist from the palm, the one close, the other at large; but much more in this, that logic handleth reason exact and in truth, and rhetoric handleth it as it is planted in popular opinions and manners" [BACO1: 67]. It is here that we may perhaps see the first step on a road that many later took – the presupposition that human reason obeys "the laws of logic." We cannot convict Bacon of holding this view; the evidence is entirely too scanty. But if logic is not metaphysic nor mathematics nor physics, one might well ask – and the later empiricists will ask – if that leaves it to nothing other than reason itself.

Were Bacon's views effective? By this, I mean: did others follow him in these views? However much his philosophy is open to criticism – and philosophers have been universally uncomplimentary to Bacon – the simple fact is that Bacon wielded an incredible amount of influence over the scientists of the seventeenth and eighteenth centuries. The founders of the Royal Society, which was established on July 15, 1662, credited the inspiration for the society on the "House of Salomon," a vision of the future Bacon painted in his *New Atlantis*:

"Ye shall understand, my dear friends, that amongst the excellent acts of that king, one above all hath pre-eminence. It was the erection and institution of an order, or society, which we call Salomon's House; the noblest foundation, as we think, that ever was upon the earth and the lantern of this kingdom. It is dedicated to the study of the works and creatures of God."

The Royal Society is Bacon's dream brought to life.

From Hobbes to Spencer – with the exception of Hume and Berkeley – the entire cadre of British philosophy followed Bacon's program. The list of men who were influenced by him is a veritable Who's Who of a most remarkable age: Boyle, Hooke, Hobbes, Leibniz, Diderot, d'Alembert, Voltaire, Priestly. It is not without reason that a modern science education involves large doses of mathematics but has no requirement for even a single course in logic.

We have now followed the course of ontology and logic from classical antiquity to the dawn of the Age of Reason. One more bit of background will bring us up to the present and complete the picture of how we arrived where we are with respect to our views of these subjects. Let us look at that final historical metamorphosis of logic: mathematical logic.

§ 3. Mathematical Logic

As empiricism swept through the physical sciences, gaining through the successes achieved there a legitimacy that seemed unquestionable, one branch of knowledge remained as the principal citadel of rationalism: mathematics. From the Pythagoreans, through Plato, the Neo-Platonists, and the eighteenth century mathematicians, mathematics had always been the bulwark of the Ideas. Its Platonic walls were unbreached until the mid-nineteenth century. Mathematical truths were seen as the perfect expression of Truth Absolute and Certain. Then the cracks began to appear. Davis and Hersh write:

Geometry was regarded by everybody, including mathematicians, as the firmest, most reliable branch of knowledge. Mathematical analysis - calculus and its extensions and ramifications - derived its meaning and legitimacy from its links with geometry . . . Until [the discovery of non-Euclidean geometries], geometry was simply geometry - the study of the properties of space. These existed absolutely and independently, were objectively given, and were the supreme examples of properties of the universe which were exact, eternal, and knowable with certainty by the human mind.

In the nineteenth century, several disasters took place. One disaster was the discovery of non-Euclidean geometries, which showed that there was more than one thinkable geometry.

A greater disaster was the development of analysis so that it overtook geometrical intuition, as in the discovery of space-filling curves and continuous nowhere-differentiable curves. These stunning surprises exposed the vulnerability of the one solid foundation - geometrical intuition - on which the whole of mathematics had been thought to rest. The loss of certainty in geometry was philosophically intolerable, because it implied the loss of certainty in human knowledge. Geometry had served, from the time of Plato, as the supreme exemplar of the possibility of certainty in human knowledge.

The mathematicians of the nineteenth century met the challenge. Led by Dedekind and Weierstrass, they turned from geometry to arithmetic as the foundation for mathematics . . . Thus, in the effort to reduce analysis and geometry to arithmetic, one was led to introduce infinite sets into the foundations of mathematics.

Set theory at first seemed to be almost the same as logic. The set-theory relation of inclusion, A is a subset of B , can always be rewritten as the logical relation of implication, "If A , then B ." So it seemed possible that set-theory-logic could serve as the foundation for all of mathematics. "Logic," as understood in this context, refers to the fundamental laws of reason, the bedrock of the universe. The law of contradiction and the rules of implication are regarded as objective and indubitable. To show that all of mathematics is just an elaboration of the laws of logic would have been to justify Platonism, by passing on to the rest of mathematics the indubitability of logic itself. This was the "logicist program," pursued by Russell and Whitehead in their *Principia Mathematica*.

Since all mathematics can be reduced to set theory, all one need consider is the foundation of set theory. However, it was Russell himself who discovered that the seemingly transparent notion of set contained unexpected traps.

The Russell paradox and other antinomies showed that intuitive logic, far from being more secure than classical mathematics, was actually much riskier, for it could lead to contradictions in a way that never happens in arithmetic or geometry.

This was the "crisis in the foundations," the central issue in the famous controversies of the first quarter of this [the twentieth] century [DAVI: 330-333].

A succession of contributors led to the development of mathematical logic – Boole, Peirce, Cantor, Frege, Peano, Whitehead, Russell, Quine. This development took place under the influence of positivism and, somewhat ironically considering its Platonic roots, contributed to the development of the peculiar attitude of empiricism that came to be known as *logical positivism*. As the philosophers of old had argued over the meaning of substance and universality, the philosophers of the early twentieth century struck at the meaning of "truth." Before we examine the roots of mathematical logic, let us take a look at the tree itself full-grown. I quote from a symbolic logic textbook written at the time when logical positivism was at its peak:

We shall distinguish in the first place between *a priori* and empirical truth or falsity. A proposition is said to be true *a priori* if its truth can be ascertained by examination of the propositions alone or if it is deducible from propositions whose truth is so ascertained, and by examination of nothing else [AMBR: 17].

Here is the first thing to note: "truth" is in this view something that is "ascertainable," i.e., *able to be made certain*. It is a property of propositions, and in an ontology-centered metaphysic this is but a mere step away from Hegelian Absolute Truth. Now, as for the next distinction,

Empirical truths and falsities stand in sharp contrast to those which are *a priori*. A proposition is true, or false, empirically when its truth or its falsity is ascertainable not by inspection, but only by recourse to matters of fact, that is, by observation or by an experiment of some sort . . . Thus an empirical truth, sometimes called a "contingent" one, is determined by states of affairs in the world, so that if the states of affairs were otherwise, what is true would instead be false. By contrast, what is true or false *a priori* is in no sense contingent upon states of affairs. An *a priori* proposition is true, or false, regardless of what the world is like and of what happens in it. For this reason, *a priori* truths and falsities are characterized as "necessary" [AMBR: 17-18].

Here is a second thing for us to note: the meaning given to the term "*a priori*" differs essentially (as Aristotle might say) from the meaning of that term as used by Kant. The *a priori* truth of mathematical logic is said to stand as such "regardless of what the world is like" – a viewpoint one cannot read without summoning to mind the Platonic Ideas or the Neo-Platonic *Logos*.

Now in logic we have no concern whatever with whether any empirical proposition is actually true or actually false. This follows from the fact that we deal only with the formal elements in propositions and not with their subject matter, except in the indirect sense of noting how formal concepts function in *any* such context. This is one reason why logic is said to be a nonempirical study. Another reason is that it does not concern itself with empirical propositions except as these are constituents of *a priori* propositions, especially those that are *a priori* true. Out of these latter the deductive system is constructed [AMBR: 18].

What does it mean for an "empirical proposition" to be a "constituent" of an *a priori*

proposition? This statement would seem to me, taken out of context and standing naked under the spotlight, to be a contradiction of how “*a priori* propositions” are to be viewed. Are we to think that the noble Platonic ‘world of Ideas’ will take its building material from the vulgar ‘world of what-is-and-is-not’? But it is unfair and invalid to attack at this point by kidnapping a single statement and setting it up, so to speak, as a straw man taken out of context. Let us grant that the fathers of mathematical logic were brilliant men and examine this seemingly self-contradictory idea in its proper context.

When we say that logic is “formal” what this generally means is that it deals with “forms”, e.g.,

_____ is _____.

What goes in the blanks are called “propositions” and the formal logic concerns itself only with how different propositions tie together. This, of course, presumes that the idea of a “proposition” is a valid idea to begin with, that propositions ‘exist’, and that any propositions we are likely to employ are going to come from ‘the universe’ as we find it. Logic, then, is going to concern itself with making “true and certain statements” about empirical things *insofar as we are willing to accept* what is premised by these propositions. This, of course, is Bacon’s view, as we saw earlier.

This viewpoint is simple, obvious, and no one is very likely to contest it. There is, however, another level to all this. Mathematical logic proceeds from *axioms* and what constitutes an “*a priori* true” formal statement in logic does depend, at the root, on these axioms. And here we find certain disagreements between mathematical logic and Scholastic “Aristotelian” logic. For example, suppose we accept a “universal affirmative” proposition

All *S* are *P*.

Under Scholastic logic, and under Aristotle as well, accepting the truth of this statement *necessarily* implies the statement

Some *S* are *P*

is also true. However, *mathematical logic does not accept that this second statement is necessarily true*. It claims we must have a *another* proposition – namely, “*S* exists” – before this *second* statement can be accepted as true. Thus, “some *S* are *P*” follows only “contingently” from “all *S* are *P*.” This, of course, is a statement about formal logical statements but is not derivable *from* mathematical logic; rather, it is part of the “ground rules” or *axioms* of mathematical logic.

What, then, is the explanation of the two inconsistent claims: (1) that "some tigers are fierce" is deducible *only* from the conjunction "All tigers are fierce and there are tigers," not from "All tigers . . ." alone; (2) that "All tigers are fierce" by itself implies "Some tigers are fierce"? The answer is that the two claims stem from a discrepancy in interpretation of the universal propositions. According to the classical view, universals have existential import; according to the modern view, they do not [AMBR: 183-184].

Modern logicians point their fingers at Aristotle and say, "Aristotle just assumes that if one makes a universal proposition, that proposition automatically assumes the existence of the subject premise." Often this point is emphasized with the implication – unspoken or otherwise – that Aristotle blundered in this. After all, logic is *formal* and is not "permitted" to make ontological suppositions of this kind. This is precisely where the difference between Aristotle and Scholasticism becomes important. Aristotle always tied his science of demonstration to ontology.

Of course Aristotle's "logic" has "existential import"; I venture to guess Aristotle would have considered it to be the height of folly to make assertions and arguments about something that did not exist. If there are no griffins, who cares whether or not they are "fierce"? I have already discussed at length my view that Aristotle's logic is firmly planted in ontological soil. The question is: Why does mathematical logic have such a concern over the "existential import" of premises? To understand this, we must look at the development of mathematical logic.

First, let us be quite clear on one thing: the founders of mathematical logic are quite serious when they insist that logic *is* mathematics and mathematics *is* logic. This is a viewpoint unheard of prior to the late nineteenth century and would be denied by past thinkers from Aristotle and Plato all the way to Bacon and Kant. Bertrand Russell, who along with Whitehead was one of the chief instigators of mathematical logic, wrote:

Mathematics and logic, historically speaking, have been entirely distinct studies. Mathematics has long been connected with science, logic with Greek. But both have developed in modern times: logic has become more mathematical and mathematics has become more logical. The consequence of this is that it has now become wholly impossible to draw a line between the two; in fact, the two are one. They differ as man and boy: logic is the youth of mathematics and mathematics is the manhood of logic. This view is resented by logicians who, having spent their time in the study of classical texts, are incapable of following a piece of symbolic reasoning, and by mathematicians who have learnt a technique without troubling to inquire into its meaning or justification. Both types are now fortunately growing rarer. So much of modern mathematical work is obviously on the border-line of logic, so much of modern logic is symbolic and formal, that the very close relationship of logic and mathematics has become obvious to every instructed student. The proof of their identity is, of course, a matter of detail: starting with premises which would be universally admitted to belong to logic, and arriving by deduction at results which as obviously belong to mathematics, we find that there is no point at which a sharp line can be drawn, with logic to the left and mathematics to the right. If there are still those who do not admit the identity of logic and mathematics, we may challenge them to indicate at what point, in the successive definitions and deductions of *Principia Mathematica*, they consider that logic ends and mathematics begins. It will then be obvious that any answer must be quite arbitrary [RUSS1: 194-195].

Very well. Everyone loves a challenge. Let us turn to the *Principia* – that crowning

achievement of what Davis and Hersh called “the outstanding example of an unreadable masterpiece.” However, let us not yield to Russell all the advantages of the home field. Russell tells us to begin with “the successive definitions and deductions” of the *Principia*; I propose we start a bit earlier – in the *introduction* to this monumental work. There we find:

The mathematical logic which occupies part I of the present work has been constructed under the guidance of three different purposes. In the first place, it aims at effecting the greatest possible analysis of the ideas with which it deals and of the processes by which it conducts demonstrations, and at diminishing to the utmost the number of undefined ideas and undemonstrated propositions (called respectively *primitive* ideas and *primitive* propositions) from which it starts. In the second place, it is framed with a view to the perfectly precise expression, in its symbols, of mathematical propositions . . . In the third place, the system is specially framed to solve the paradoxes which, in recent years, have troubled students of symbolic logic and the theory of aggregates [WHIT].

The “theory of aggregates” is nothing else than an older name for “set theory.” Of the three “principal purposes” toward which the *Principia* is aimed, this is the only one that speaks directly to its *topic*. The “students of symbolic logic” to whom Whitehead and Russell refer are, presumably, those individuals who, at the time, were engaged in following the logicist program championed by Peano prior to the writing of the *Principia*, and these individuals were, without exception, mathematicians. So let us ask: If the topic of the work is, in its very beginnings, aimed at mathematics, shall we not be concerned that what we are about to encounter is a mathematical doctrine, dressed in the language of logic perhaps but still a specialized doctrine *constructed* for the very purposes of mathematical dogmatism? Might not its formal symbolism merely be a tool with which to work out the mechanical steps of mathematical deduction? If we are willing to accept that such a tool *is* “logic” Russell is in no danger of having his challenge successfully met.

But shall we concede before we have begun the very point on which Russell challenges us? Let us investigate further – in the *preface* of the *Principia*. There we find:

In constructing a deductive system such as that contained in the present work, there are two opposite tasks which have to be concurrently performed. On the one hand we have to analyze existing mathematics, with a view to discovering what premises are employed, whether these premises are mutually consistent, and whether they are capable of reduction to more fundamental premises. On the other hand, when we have decided on our premises, we have to build up again as much as may seem necessary of the data previously analyzed, and as many other consequences of our premises as are of sufficient general interest to deserve statement [WHIT].

Now here we have an interesting turn of events indeed! Logic and mathematics, the premier examples of the rationalist program, are to have their foundations established *empirically* by a presumably thorough analysis of “what premises are employed” by “existing mathematics.” Presumably, if we can catalog *all* the premises employed by working mathematicians in the course of their work, these premises are to reveal to us the most fundamental “*a priori* truths” of human reasoning if only the “data” can be properly analyzed.

Whitehead and Russell did not share with us the details of their analysis in the *Principia Mathematica*. Are we to suppose they examined (during their three year collaboration) every mathematical paper that saw the light of publication after being thoroughly reviewed by the publication referees? Of course not. Fortunately for Whitehead and Russell, such an encyclopedic (and certainly improbable) review would not have been necessary. Mathematics has always, since the days of the Greeks, been based upon a relatively small number of primitive definitions and axioms. No mathematics paper is ever published if it disregards or tramples on these axioms, excepting only when this is done *on purpose* for, say, proving the existence of non-Euclidean geometries. All Whitehead and Russell would have had to do would have been to examine the various systems of primitive definitions and axioms that mathematics, during its history, has drawn upon.

However, if all of mathematics is reducible to set theory, their problem is even simpler; they would only need to draw on the axioms and definitions of set theory in order to have the collection of premises they need for their examination. However, the first axiomatization of set theory was only carried out in 1908 by Zermelo – a scant two years before the *Principia*. So, we should presume that Whitehead and Russell most probably examined a number of axiom systems. It seems very likely, although they do not say so, they would have included Zermelo’s system.¹

Now this is what Whitehead and Russell *tell* us they did. The system that results can certainly not go beyond the boundaries within which it was developed; if it did, it would violate its own rules! The system of the *Principia Mathematica* is certainly logical, but *is it Logic?* No. It is at best a restricted logical system – restricted by the very topic which *by design* it addresses.

Now, can this opinion of mine be backed up by more than the merely dialectic argument just given? Let us see. There is one definition and one axiom in the Zermelo system to which we can pay particular attention.² The definition is: A set which contains no element is called a null set. The axiom is the Axiom of Subsets: For any set s and any predicate P which is meaningful for all elements of s , there exists the set y that contains just those elements x of s which satisfy the predicate P . Using this axiom, the ‘existence’ of the null set can be ‘proved’ as a theorem in Zermelo’s system. It follows that the primitive ideas and primitive propositions of mathematical logic must be such that it is valid to make statements regarding the null set.

Now we are in a position to understand the issue raised earlier about the “All S are P implies Some S are P ” distinction between traditional logic and mathematical logic. Mathematical logic

¹ For an interesting history of axiomatic set theory, written by Paul Bernays and Abraham Fraenkel, two of its pioneers, see Part I: Historical Introduction in Paul Bernays' *Axiomatic Set Theory*, NY: Dover Publications, 1991.

² Although the Zermelo system of 1908 has since been superseded by more "enhanced" axiom systems - e.g. the Zermelo-Fraenkel-Skolem system - all the systems that came after and replaced each other one by one still contain the equivalent of this definition and axiom, although later the null set was made axiomatic.

requires the conjunction “ S exists³ and All S are P ” for the implication “Some S are P ” to be necessarily true *because S may be the null set*. If logic is to *be* mathematics and vice versa, what this amounts to is that logic must be allowed to make formal statements regarding the null set.

But, of course, logic is also supposed to be a system of ‘ascertained *a priori* truths’ as well. Let us put these two together. What do we find? If “existential import” is an important issue *in the way logical positivists make it out to be*, then the implication is: mathematical logic *must be allowed to make true and certain statements regarding nothing-at-all*. Such is the fruit of logical positivism. The null set is the set with no elements. It is *null*; it is Nothing; it is “the empty set.” Now, historically, Nothing is an idea about which only *negative* statements and propositions are possible without contradiction. Kant described the idea of Nothing as [KANT1a: 383 (A: 292)]:

In Quantity: *ens rationis* – empty concept without object
 In Quality: *nihil privativum* – empty object of a concept
 In Relation: *ens imaginarium* – empty intuition without object
 In Modality: *nihil negativum* – empty object without concept.

Mathematical logic thus finds itself having to concede that we may not inject objective *meaning* into our terms. The objects of mathematical logic are to be not “things” but “variables”. Any objection to its making true and certain statements about Nothing are then misguided because we are to understand that we are not to laden its variables with connections to ‘contingent things.’ Thus **logic is forced to be “object-neutral.”** (We will return to this point in Chapter 23).

I wonder if Dr. Kosko would agree. If logic is object-neutral, then it cannot be “the fundamental law of reason” (Logic) and ‘existential import’ is a moot point. We can accept the term “mathematical logic” as the name for a particular method of expressing mathematics. But where *I* draw the line Russell challenges us to draw is before the first printed letter in the *Principia Mathematica*. The discipline described there is *not* Logic, and mathematics and Logic are not the same thing (in the sense of the latter being the “youth” of the former).

Poincaré seems to have shared this view and flung down this gauntlet to the logicians:

Can mathematics be reduced to logic without having to appeal to principles peculiar to itself? There is a whole school full of ardor and faith who make it their business to establish the possibility . . . It will, perhaps, be useful to examine these affirmations somewhat more closely, in order to see whether they justify the peremptory tone in which they are made [POIN2: 143].

It is time that these exaggerations were treated as they deserve. I have no hope of convincing these logicians, for they have lived too long in this atmosphere. Besides, when we have refuted one of their demonstrations, we are quite sure to find it cropping up again with insignificant changes, and some of them have already risen several times from their ashes [POIN2: 144-145].

³ More formally, the condition is “ S is not the null set.”

Must we follow your rules blindly? Certainly, for otherwise it would be intuition alone that would enable us to distinguish between them. But in that case they must be infallible, for it is only in infallible authority that we can have blind confidence. Accordingly, this is a necessity for you: you must be infallible or cease to exist.

[But] the logicians *have applied* their rules, and yet they have fallen into contradiction. So true is this, that they are preparing to alter these rules and "sacrifice the notion of class." Why alter them if they are infallible? [POIN2: 177-179].

Mathematical logic is, as Quine said, a science; but this by itself neither means that its pseudo-metaphysical underpinnings are superior to Aristotle's system, nor that it is of much or any use outside the scope of the application for which it was designed. Nor does it mean that mathematical logic is *in fact* either *a priori* truth, in the peculiar sense in which it is invariably portrayed, or that its pronouncements carry with them absolute certainty. Indeed, we know today that this absolute certainty is *not* achieved – even for mathematics – and that Poincaré's objections were sound. Quine wrote:

But recent developments indicate, actually, that an exhaustive criterion of logical or mathematical truth along even these more modest lines [of an explicit formulation of the notion of proof, or theorem, such as will involve reference only to the notational patterns of statements] is impossible. Given any rules of proof which do not actually lead to falsehoods, there will be mathematical truths which cannot be proved by the rules. There will always be some demonstrably indemonstrable mathematical truths. We must content ourselves with a version of a "theorem" which covers only one or another important portion of the truths of logic and mathematics [QUIN: 6].

§ 4. Ontology and Logic Under the Copernican Hypothesis

We have engaged in the lengthy prolegomenon above in order that we might have a clear view of how the Kantian system differs from the positivist, empiricist, and rationalist systems. For Aristotle the "science of demonstration" was firmly anchored in Aristotelian ontology, i.e., in his First Philosophy of "being *qua* being." Put another way, the "primary things" come first and the science of demonstration comes second. Through this science of demonstration Aristotle claims we arrive at knowledge; thus *Aristotle's* "logic" is his system of epistemology.

In Plato's dialectic ontology merges with epistemology in the Platonic Ideas. From the Neo-Platonists to the Scholastics to the present-day logicians of mathematical (symbolic) logic, logic is an "instrument" or "organon" of reason. In the case of the Neo-Platonists and the Scholastics, the ontology is the ontology of the Ideas. In the case of the logical positivists, the word "metaphysics" is an anathema and they preferred to suppose that their "system" was free of it. In fact this is not – and cannot be – the case. What they built upon was an aggregation of presuppositions and prejudices that we might term pseudo-Platonic pseudo-metaphysics. They do in fact make ontological presuppositions; they merely prefer not to think about them or see to it

that these have been built upon a solid and organized foundation.

The situation under the Copernican hypothesis is quite different. Here all our objects must conform to one's power of cognition and, consequently, in the Kantian system *epistemology takes precedence over ontology*. Now, this statement is sufficiently unusual – and has enough of the 'feel' of somehow being an example of reasoning in a circle⁴ – that it needs some discussion. First let us remind ourselves that we are requiring our metaphysics to be a science and that a science is a systematic doctrine. Every one of us holds-to-be-true that we know some things, and these we hold-to-be-true with various degrees of certainty. This is an empirical fact and, by itself, not a science. Thus, when we ask how it is possible for this to be so, we are engaging in an inquiry about an Object ('knowledge') that is *empirically* factual and for which we are seeking a *rational understanding*. To what extent are the *objects* of our knowledge truly what we think they are? In what ways are they real? Unreal? What, in fact, do we actually know and how are we able to know it? These are questions of epistemology. The Copernican hypothesis requires us to accept the fact that we have knowledge of *objects* but suspend judgment on *things-regarded-as-they-are-in-themselves* until we have established how our knowledge is possible and what the limitations and boundaries of this knowledge may be. The Critical Philosophy follows the *unified* theme of the phenomenon of mind. Our investigations, first to last, must proceed from "that which is clearer to us" to "that which is made clearer by theory." *All sciences must proceed in this fashion to be sciences*. If the approach "feels" circular, this is not too surprising if we remember that almost all of us are in the *habit* of not distinguishing *objects* from *things*.

So, then, under the Kantian approach ontology must be based upon epistemology. What, then, is the status of Logic in this system? For Kant, and for this treatise, **Logic is the science of the necessary laws of understanding and reason** [KANT8a: 528 (9: 13)]. It is not, and cannot be, an *organon* of reason. Rather, Logic must be in one sense a *canon* of reason – a system of *a priori* principles for the proper employment of reasoning – but, more fundamentally, it must be the science of its object, namely, the phenomenon of human understanding and reason.

There is a presupposition in all of this, namely that the "mental physics" of mind can be a science that applies equally to every person. This is no small assumption. *Prima facie* it seems a reasonable hypothesis, but it is not difficult to raise doubts on this very point. Why should we accept the premise that *my* faculty of understanding and reason is the same as *yours*? The most cursory of observations shows us that some people are gifted in music, others have a "tin ear"; some people are intellectually gifted, others of sub-average intellect; some people are afflicted by schizophrenia or manic-depression, most are not; some people are hot-tempered or injudicious, others are easy-going or contemplative. Once we look for it, mental diversity is easy to find.

⁴ One might be asking oneself at this moment, "How can we have a theory of knowledge (epistemology) prior to having objects (ontology) to which the theory applies?" The key word here is "objects".

On the other hand, it is also not difficult to see that all of us have much in common, too. Anatomically we are all much more the same than we are different. As we discussed at length in Chapter 6, the mind-body division is merely a logical division; consequently, in mental physics we must view biological commonality as requiring a corresponding mental commonality, just as biological diversity must imply mental diversity. The reciprocity principle we discussed regarding the data of the senses consequently has implications for our theory of epistemology and for the ontology and the theory of Logic that follow from it, namely that their first principles be of such a form as not to deny the possibility of empirical diversity. Thus, for instance, formal “Aristotelian” logic or formal mathematical logic cannot be the basis of these first principles because, taken as they stand, neither of these systems can make room for diversity. In both cases these disciplines can with some amount of justification be called “rules for how one *ought* to reason,” but clearly fail to be “rules for how one *does* reason.”

One additional implication in this – and here this treatise departs from the usual interpretations of Kant’s position – is that we should not presuppose that Logic, in whatever form it will turn out, will be concerned solely with the *objective* factors of thinking. Put another way, if Logic is to be the science of the necessary laws of understanding and reason in general, we should not summarily rule out the possibility that the science of Logic might legitimately contain within itself subdivisions of, say, “emotional logic” or, above all, a “logic of meanings.” Reason, as we use this term in this treatise, is a power of employing judgment for understanding; that the science of this power might involve non-objective factors is too obvious a possibility to dismiss at the beginning.

With these preliminary considerations in mind, we will now undertake our examination of one aspect of our system: the ontology of the process of determining judgment. As we saw in our discussion of the faculty of pure consciousness, the process of determining judgment occupies the position of internal Relation in the 2LAR of pure consciousness. As a process, determining judgment is an *activity* of mind and we call the product of this activity *understanding*. So it is that we say the process of determining judgment can be viewed as a *logic of understanding*. From what we have just discussed above, this logic is to be viewed as a subdivision of Logic in general.

Although the Copernican hypothesis prohibits us from accepting the Aristotelian ontology as the starting point for our examination of this logic, Aristotle was quite correct in placing ontology as theoretically prior to logic. A science must have its objects as well as its first principles which apply to these objects. Thus, we must first determine what the objects of the logic of understanding are to be. These objects then constitute the ontology of the determining judgment. The deduction of these objects, clearly, requires us to first understand in more detail the faculty (i.e., the organization) of the process of determining judgment.

§ 5. The 2LAR of the Process of Determining Judgment

Viewed as an object, the process of determining judgment is an activity. Its objectivity is bound up in *what it does* (the matter) and *the manner in which it does it* (the form). In relationship to the idea of pure consciousness, the process of determining judgment plays the role of the *materia circa quam* of Nature; Nature is what is *determined by* the process of determining judgment. This process uses representations as its *materia ex qua* and produces *objective* consciousness as the *materia in qua* of its actions.

As the name implies, the process of determining judgment *makes judgments*. Specifically, it makes what we shall call a *determinant* judgment, although in this Chapter we will abbreviate this term and simply call it a “judgment.” We use the term judgment *in general* to mean the following:

A judgment is the representation of the unity of consciousness of diverse representations or the representation of their relationship⁵ insofar as they constitute a concept. [KANT8a: 597 (9: 101)].

In the abstract, any judgment unites particular representations under a general representation. When the general representation is given and the particulars are to be determined, we call the judgment a determinant judgment. This is the type of judgment with which we are concerned in the process of determining judgment. When the particulars are given and we must find the general representation, we call the judgment a *reflective* judgment.

The determinant judgment is matter for the process of determining judgment. It is also the result the process of determining judgment produces. In Chapter 5 our deduction of the faculty of pure consciousness assigned to the process of determining judgment the task of establishing the *nexus* of the various representations in the manifold of concepts, thus determining the formal *Existenz* of the manifold of representations in empirical consciousness. Let us remind ourselves that representation *with consciousness* is that type of representation we call a *perception*. Let us moreover recall that we have divided perceptions into two classifications, namely *objective* perceptions and *affective* perceptions. Our first question, then, is: Do the judgments of the process of determining judgment pertain to objective perceptions, to affective perceptions, or to both?

We have, of course, already given the answer to this question in Chapter 5 (§5.4) when we discussed Relation in the 2LAR of the faculty of pure consciousness. However, in that discussion we did not provide a demonstration or a deduction in support of the claim made there. That is what we must now remedy.

⁵ *Verhältnisses*

Let us begin by considering affective perceptions. We first introduced this term in Chapter 5 (§4.4) when we discussed consciousness and feelings. Feelings, we said, are the matter of non-objective representations pertaining to the consciousness of the state of *Existenz* of the empirical Self. Piaget described “affectivity” in terms of “energetics” and “values.” Kant expressed much the same idea when he described feelings in terms of “appetites” and the feeling of *Lust* or *Unlust*. An affective perception is always a *singular* representation. That this is so is evidenced by experience for we never experience *a* feeling as anything but a unity. I may try to understand feelings theoretically – e.g. by describing them – but *the idea of* a feeling is not the feeling. When I make a description of, for instance, feeling fear or pain or happiness, this description is always made in terms of other effects (e.g., a “knot in the stomach” or a “cold sweat”, etc.) and we can describe our feelings to each other only because affective perceptions are perceptions we all seem to experience in much the same manner *insofar as we are able to communicate them* among ourselves.

Now no making of a singular representation can be viewed as a process by which particulars are determined as standing under a general representation. This is because a singular representation is a representation without distinct parts (in the sense that the object of the representation is represented *as* a unity). Put another way, the only *conscious use* that can be made of a singular representation is one in which the representation remains undivided. The representation will “contain a manifold of representations” (as Rational Physics demands), but in a singular representation whatever parts of this manifold there may be *remain unconscious*. A singular representation *contains no conscious representation of its multiplicity* in its representation *as a magnitude*. Since such a representation cannot be viewed as the determination of *conscious* representations of particulars, determinant judgments cannot pertain to affective perceptions.

This leaves us with only objective perceptions to consider. Now objective perceptions are of two kinds, namely, intuitions and concepts. *An intuition is also a singular representation*. Therefore, for the same reason as explained above for affective perceptions, determinant judgments cannot be judgments of intuitions. Concepts, on the other hand, are “rules for the representation of intuitions” and, as such, do involve consciousness of particulars. Determinant judgments, consequently, are judgments of concepts in which a general representation is *given* and particular concepts are determined in relationship to it.

We call the making of cognitions through concepts *thinking*. The process of determining judgment can therefore be seen as part of the process of thinking insofar as thinking has the character of being discursive. (In philosophy the adjective “discursive” means “going from premises to conclusions in a series of logical steps”). It is by this reason that we may call the process of determining judgment a logic of understanding.

Having settled our first question regarding the process of determining judgment, we may now deal with a second fundamental question. If determinant judgments are the matter of the process of determining judgment, what is the *form* of the process of determining judgment?

This question is easily dealt with once we understand the process of determining judgment has to do only with the judgment of concepts. A determinant judgment merely makes a representation of necessary relationships among concepts insofar as this relationship pertains to the representing of particular concepts subsumed under a given general concept. A multiplicity of determinant judgments constitutes merely an aggregation of representations. However, we require not an aggregation but a unity in empirical consciousness. The form of the process of determining judgment consequently is the necessary representation of the *nexus* of determinant judgments in a *manifold* of determinant judgments. We may justly call this *nexus* of the manifold the *state of understanding*. The form of the process of determining judgment is therefore nothing else than the representation of the state of the understanding.

We now have a 1LAR for the process of determining judgment in terms of its matter (the determinant judgment) and its form (the state of the understanding). What remains is for us to take our exposition an additional step to obtain its 2LAR structure.

§ 5.1 Quantity and the Forms of Determinant Judgments

Because the determinant judgment is the matter of the process of determining judgment, we will begin with it. For a determinant judgment, Kant tells us

Matter and form belong to every judgment as essential stockparts of it. The *matter* of the judgment subsists in the given cognitions that enter into the unity of consciousness in judgment, the *form* in the determination of the way and manner that the various representations belong, as such, to one state of consciousness [KANT8a: 598 (9: 101)].

The idea of Quantity in the process of determining judgment is the idea of the latter. We have, first, that the idea of Quantity concerns a determination and, second, that this determination is a determination of the *way and manner* (*Art und Weise*) in which the judgment “belongs” to empirical consciousness. Now, what does Kant mean by this curious expression?

The Idea of Identification in Synthetic Composition of Judgment

In the general 2LAR of representation the three ideas of Quantity are identification, differentiation, and integration. Identification denotes a “unit” of representation. Now, a determinant judgment, viewed as a representation, has with regard to its form precisely this character of identification when concepts combined in the manifold of concepts are *employed* as a

“unit.” When we discussed the making of representations in Chapter 3 (§4.1), we called the uniting of two or more distinct representations in a single representation a *synthetic* representation. When that representation is made by a determinant judgment, the form of such a *composition* of judgment can therefore be appropriately called a *synthetic composition* of judgment.

In a determinant judgment it is the given general concept with respect to which the particulars are determined, and so we can say that in a determinant synthetic composition **it is the general concept that understands the particular concepts**. Such a judgment “belongs” to empirical consciousness by virtue of its combination in the manifold of judgments taking place by way of the general concept in the judgment. The process of determining judgment in this case *begins* with the given general concept and produces a new judgment that proceeds from this general concept *to* particular concepts (which must also already be present in the manifold of concepts) to make a new representation of a distinct, “identified” *Object* [KANT8a: 569: (9: 64)]. In such a process as this we begin, so to speak, with the parts (the presented general concept and the particular concepts that will combine with it in the judgment) and proceed to make a new whole – the distinct representation of the concept of an Object.

The Idea of Differentiation in Analytic Composition of Judgment

The general idea of differentiation in our 2LAR is the idea of the multiplicity of detail in a representation. In Chapter 3 we called the making of a representation of the multiplicity contained in a representation an analytic representation. The making of a judgment by this form of composition we will call an *analytic composition* of judgment.

In the analytic composition of judgment we begin with the general concept and *extract* particular concepts *from* it. These are said to be contained in the given concept. Unlike the synthetic composition of judgment – where the general concept is attached to particular concepts regarded as already represented in the manifold of concepts prior to the judgment being made – the analytic composition begins with the general concept in the manifold and brings to it new representations of particular concepts. While synthetic composition makes a distinct Object, the analytic composition is tasked with what Kant termed *making a concept distinct*:

When I make a concept distinct . . . my cognition grows not at all as to its content through this mere analysis. The content remains the same, only the form is altered, in that I learn to distinguish better, or to know with clearer consciousness, what lay in the given concept already. As nothing is added to a map through the mere illumination of it, so a given concept is not in the least increased through its mere clarification by means of the analysis of its marks [KANT8a: 569 (9: 64)].

In the analytic composition, the “new” concepts “pulled out from” the given general concept

belong to the manifold of consciousness through their combination with the general concept of which they are the marks (characteristics). How, though, does the analytic composition belong to the manifold of concepts? Let us contrast the synthetic with the analytic composition. In the synthetic composition, it is the general concept that is “brought into” the manifold by way of its combination in judgment with particular concepts that we must take as being already present in the general manifold of concepts. In the analytic composition, the particular concepts are regarded as not being initially presented in the manifold of representations and, therefore, not present initially in the manifold of *concepts*. They enter in to the manifold of concepts, therefore, *through the general concept* – a form which is, in this topological sense, the opposite of the case of the synthetic composition. The analytic composition can therefore be viewed as an act that increases the multiplicity in the manifold of concepts without adding to the sphere of the general concept. It increases what we might call our *logical* understanding in contrast to the synthetic composition, which we can say increases our *objective* understanding.

The Idea of Integration in Anasynthetic Composition of Judgment

Analytic and synthetic compositions are the only compositions Kant discusses explicitly in his works. We have, however, one more idea of Quantity in the general 2LAR, namely the idea of integration. As we saw in Chapter 3, our idea of Quantity as the form of the matter of a representation is not complete without the idea of integration because identification and differentiation are contrary rather than contradictory ideas and consequently do not make up the whole of coordinate ideas under the general title of Quantity.

In our earlier discussion of the making of representations, we saw that the idea which completes the general idea of the making of representations of Quantity is the anasynthetic representation. We described this idea as the making of a connected structure of differentiated representations of an object that turns full circle, so to speak, and ends up where it began – i.e. united back in the general representation of the Object from which the particular representations sprang in the first place.

In the analysis of the representation of an object, the re-presentation of that object in terms of coordinate representations means the representation of a set of “parts” of that object such that this set is regarded as being contained *in* the general representation, which is now also depicted in terms of one or another of its coordinate parts. It is obvious that nothing in this idea demands that such a coordination of parts be *unique*. For example, we can represent the idea of the United States in terms of its member states; that is one way to make a coordinated representation of the idea of the United States as a country. But we might also choose to represent the idea of the United States in terms of the collection of all of its citizens and other residents; this is a second

coordinate representation of the general idea. In both cases there is no overlap among the coordinate parts but there can be (and is) overlap between the two different systems of coordinate parts (e.g., “a citizen of Connecticut”). The idea of the anasynthetic representation is thus nothing other than the representation of the unity of diverse coordinate representations *in* the general representation.

We must now ask ourselves: Does the idea of the making of an anasynthetic representation imply a third moment of determining judgment, namely the *anasynthetic composition of judgment*? As said above, Kant did not recognize this as a distinct composition of judgment although he did recognize what we have called the anasynthetic making of representations (see his quote in Chapter 3 at the end of §4.1). From one way of looking at this question, the idea of anasynthetic composition is redundant since it can be viewed as a complex of analytic and synthetic compositions joined in some fashion at the general concept.

But it can also be argued that this viewpoint carries within it the argument in favor of regarding anasynthetic re-presentation as a third form of composition of determinant judgment. When we look at judgment in its particulars the idea of anasynthetic composition is redundant; but if we regard judgment as *a representation*, is not the idea of a ‘complex of judgments’ the idea of some one object, namely the aforementioned complex? How we answer this question, it seems, depends on whether we view the idea of a “complex of judgments” as a concept belonging to the idea of a *manifold of judgments* or as a concept belonging to the idea of “judgment” as an act.¹

Here the explanation of the idea of a judgment as either “the representation of the unity of consciousness” of representations *or* as “the representation of their relationships insofar as they (the representations) constitute a concept” comes into play. The *matter* of a determinant judgment is a *concept*; but, as we have said previously, by the term concept we mean merely a rule for the re-production of an intuition. An intuition, in turn, is, from the viewpoint of the theory of representations, a *magnitude* – a ‘one’ that is regarded as the unity of a multiplicity of homogeneous parts (see Chapter 6, §3.3). The general concept, which is the starting and the ending point for what we are calling the anasynthetic composition, is the rule that corresponds to this unity represented in intuition; the particular concepts that mark the general concept stand in the place of rules of the multiplicity in the intuition.

The *form* of a judgment is, as we said earlier, “the determination of the way that the various judgments belong, as such, to one consciousness.” Now suppose we have a general concept for which the process of the determining judgment has rendered *two* sets of coordinate characteristics (through analytic compositions). (We may use our previous example of “the United States” for

¹ It is through discussions such as this one that we can develop an appreciation for Aristotle's deep and on-going attention which he paid to "homonyms" [BARN: 72-77].

visualizing this situation). As we have already noted, the particular concepts within each of these sets are coordinate with each other, but a particular concept in one of these sets is *not* necessarily (or likely to be) coordinate with a particular concept in the *other* set.

We can call such a form of a general concept *homonymous* since each set of coordinate particular representations of it are representations of the general concept in terms of characteristics that are *different in kind* and, consequently, provide different representations of the *Object* the general concept represents. Now it is quite obvious that if there is no consciousness of *this homonymity*, the representation of the general concept in terms of its coordinate characteristics is not a distinct but, rather, a *confused* representation. If, on the other hand, there is consciousness of the homonymity, this consciousness can come from nothing other than the representation of the homonymity *in the form of composition of the judgment*.

Figuratively speaking, we must “draw a dotted line” around each of the homonymous sets of analytic compositions by which we can “view” each judgmental structure as separate from the other and, by doing so, make a determinant judgment of the general concept as a concept that *integrates the diversity of its characterizations in analytic compositions*. As the differing sets of analytic characterizations are heterogeneous with regard to each other, they are homogeneous inasmuch as each is a characterization of *one* general concept. But heterogeneous representations can be represented as homogeneous only through a *synthetic* judgment; put another way, the idea of Integration in the Quantity of the process of determining judgment is the idea of the composition of heterogeneous analytic judgments *by* synthetic judgment. It is the form of such a composition that we may rightly call the form of the anasynthetic composition of judgment.

§ 5.2 Quality and the Matter of Determinant Judgment

The matter of the matter of determining judgment subsists in concepts. Concepts, in turn, are merely rules for the re-production of intuitions. Given this context, our task here is to examine how the three general ideas of Quality – Agreement, Opposition, and Subcontrarity – come into play in the matter of the matter of the process of determining judgment.

Agreement and Experiential Concepts

Intuition stands in immediate relationship with a transcendental object. The undetermined object – that is, the object whose representation involves only intuition and not a concept – can be regarded as nothing other than an appearance. The appearance of an object can be regarded as a phenomenon only when there is *cognition* of the object. Intuition by itself is not sufficient for cognition; we must have, in addition, a concept. Only when intuition and concept are taken together to constitute cognition can we say we have *experienced* the object.

Concepts are rules for the re-production of an intuition of an object. However, when we consider the question of the source of a concept that begets experience, it is easy to see that such a concept must first arise from actual empirical intuition. The matter *of a concept*, Kant wrote, must be either *given* or *made* [KANT8a: 591 (9: 93)]. If this matter is given, it must be given either by means of an actual empirical intuition (power of receptivity) or it must be *a priori* (power of spontaneity).

We will call a concept whose matter is given directly through receptivity an *experiential concept* because such a concept is possible only through the agreement of its matter with sensation in an actual empirical intuition. This does not mean that the concept contains the actual original sensation; that would merely be a more sophisticated version of the copy-of-reality hypothesis. However, it *does* mean that the concept, as a rule for the re-production of an intuition, contains the information necessary for the synthesis of reproduction, carried out by the process of reproductive imagination, to re-present the matter of intuition. Agreement in this context is agreement of the concept with the conditions of sensation.

Opposition and Notions

Kant's other type of 'given' concept is the concept given *a priori*. As the existence and the validity of the idea of *a priori* concepts is one of the more fundamental issues where disputes over the Critical Philosophy are centered, the transcendental requirement for pure *a priori* concepts, which we call *notions*, deserves some discussion. Let us begin by dealing with what notions are not. They are not the "innate ideas" of rationalist philosophy, which Locke argued so strenuously against and for which Plato's Ideas are often taken as the model and exemplar.

But if not these, then what? To understand this we must remind ourselves that empirical concepts are *constructed* representations – the rules for the re-production of intuitions and not "impressions" stamped into the "wax tablet" of the mind. Concepts owe their construction to the power of spontaneity and not to the power of receptivity. If concepts are constructed, however, this implies the existence of necessary and *a priori* rules that govern their construction – i.e., rules about rules. An experiential concept is an empirical rule; the rules that govern the construction of an experiential concept cannot be empirical but, rather, must be *a priori* since they are necessary for the possibility of experiential concepts.

Determining judgment is an act that combines concepts with each other in specific ways. If, however, all concepts were experiential, it is obvious that judgments could add nothing to the representation that was not already given in the intuition from which these concepts arise. Such a conclusion is none other than a fundamental premise of empiricism. But if this were the case, an insurmountable problem would arise for there is nothing given through sensation that brings to us

some very elementary constituencies of thought: the individual thing, the multitude of the many things, cause, effect, and so on. If we accept strict empiricism we must also bow to Hume's assault on knowledge and we must admit that the tree standing in the park might not exist when we are not looking at it.

On the other hand, if *a priori* notions are admitted then even supersensible concepts become possible. Determinant judgments combine concepts with each other, but we need not say – and, indeed, cannot say – that all such combinations contain nothing except experiential concepts. A notion is an *a priori* concept (a concept not givable in intuition) *subsisting in the rules that govern the construction of concepts*. A concept is the matter of the determinant judgment, but notions take their source from spontaneity rather than from receptivity. Kant called these rules the *pure notions of understanding* or *categories*.

Notions contain nothing of sensation and are by themselves incapable of direct exhibition in any intuition (which for us is always a sensuous representation). From one viewpoint notions are strictly *formal* concepts because they enter in only to the formation of empirical concepts. From another point of view, though, notions are material concepts inasmuch as it is through notions we come to know appearances *as phenomenal objects*. This latter is the *transcendental* sense of our idea of notions as concepts that are *necessary for the possibility of experience*.

We posit the *Dasein* of notions for this reason, and we understand notions as the *practical* idea of pure *a priori* rules governing the construction of concepts. We call cognition through concepts *thinking*, and notions are 'given' spontaneously in the process of thinking. The power to present through notions must therefore be viewed as a power of the process of determining judgment. Notions may therefore also be regarded as the *a priori functions* of the process of determining judgment.

Notions correspond to the idea of Opposition in the general 2LAR because a notion contains nothing corresponding to sensation. Put another way, the notion is not a concept that pertains to the matter of an intuition; rather, its relationship to intuition is strictly a relationship of form and this only inasmuch as notions provide the "framework" by which mere appearances become objects *as phenomena*.

Subcontrarity and Ideas

The experiential concept is always a concept that represents experience. The notion is a pure concept and is *transcendental* since it can never be the concept of an object of actual experience but rather is a rule necessary for the possibility of experience. These two types of concepts correspond to Agreement and Opposition in general representation.

We now come to the concept that corresponds to the idea of subcontrarity in the general 2LAR. Let us recall that we obtained the idea of subcontrarity as the synthesis of agreement and opposition in Chapter 3. The concept that is its correspondent in the context of the Quality of determining judgment must consequently be of this same synthetic character. It must, on the one hand, have something of the character of the experiential concept – i.e. have something drawn from actual experience. But this concept must *also* have something of the character of a notion, which can never be presented in empirical experience.

What we are describing in this synthesis of contraries is consequently a concept which, on the one hand, is capable of being exhibited in intuition yet, on the other hand, corresponds to no object that can be the object of any possible sensuous experience. This may seem, at first glance, to be a synthesis of contradictory rather than contrary requirements, but it is not. The description just given for such a concept does not say the concept is incapable of exhibition by means of appearances of *examples*; the description merely says that no such exhibition is sufficient to give to us a sensible cognition of the *object*. The object, in other words, is *supersensible* – a *noumenon*. We have already discussed objects of this sort and named the concept of such an object. We call a concept of this type an *idea*.¹

While the experiential concept is a concept for which the object can be presented in possible experience, and the notion is a transcendental concept to which there corresponds no object that can be presented in experience, the idea is a *transcendent* concept. It is a concept constructed from notions of experiential concepts that transcends the possibility of its object being actually experienced.² Consider, for example, the idea of something called “society.” What is a society? The usual dictionary definition of this term is, “a group of animals or plants living together under the same environment and regarded as constituting a homogeneous unit or entity; especially, a group of persons regarded as forming a single community.” This seems clear enough, does it not? If we agree this description defines “society” then we can speak clearly on, say, the society of Spartan and Athenian Greeks on the island of Pylos – at least until the Spartans surrendered and were taken prisoner by the Athenians.³ Or is there something about two Greek armies engaged in a battle that does not fit what we mean by “society”? If the fact that these soldiers were fighting each other is sufficient to deny this example the status of being a society, what shall we say about the United States in the late 1960s and early 1970s when violent clashes over the Vietnam war and racial issues erupted across the nation? Was the United States not a “society” at that time?

The point here is not to argue over definitions of “society” but to point out that “society” is the object of an idea. We describe what we mean by “society” by *examples* and alter or qualify

¹ I use the word ‘idea’ to translate *Begriff* when used in this context. The German *Idee* I translate as ‘Idea’.

² There is no sensibility of notions. A notion of experiential concepts lacks any sensational content.

³ Thucydides, *History of the Peloponnesian War*, IV., xxix.-xl.

this description as seems appropriate in the face of later events or circumstances or contexts. But we never *experience* the object called “society” as a thing. It is a *made* concept, not a *given* concept. It is likewise an *a priori* concept in the sense that we never have a fully definite experience of its transcendental object. Mathematical definitions, inertial mass, justice, honor, love, duty: all these are instances of made concepts of objects that can only be illustrated through examples but never given *per se* in experience.

The mathematicians are quite right to regard the Objects of mathematics as ideas; the Platonists are quite wrong to elevate these objects to the lofty status of a supposed higher reality of Platonic Ideas ‘existing’ in some ‘world-of-that-which-is’; the formalists are mostly wrong in declaring that, because they cannot show these objects to be true *and certain* ‘realities’, mathematics “is not about *anything* – it is just a game to be played by the rules (axioms).” It is more correct to say “mathematics *is* about anything.” Our ideas do indeed always *mean something*. That ideas are transcendent merely means that their proper and objectively valid *use* is *regulative* rather than *constitutive*. Our ideas bring homogeneity to what are otherwise heterogeneous phenomena and knit together the manifold of concepts of experience. This is the *practical regulative role* of theoretical *made constructs* in science. One’s ideas are the concepts of subcontrarity in the representation of Quality for the process of determining judgment.

§ 5.3 Relation and Inference

From the composing of determinant judgments, we now turn to the connecting of the manifold of determinant judgments and consider the form of this manifold. Since determinant judgments are the matter of this manifold, the form of the manifold considers only the manner in which determinant judgments are connected with each other. This manner of connection by the process of determining judgment constitutes the form of the form of the process of determining judgment and so we are considering the representation of Relation in this process.

The three ideas of Relation in our general 2LAR are the internal, external, and transitive. To apply these general ideas to the process of determining judgment we must first establish more clearly the additional idea with reference to which we can specialize these three general ideas to apply specifically to Relation in determining judgment. The first question we must ask is therefore: What do we mean by the phrase ‘connection of judgments’?

We find our answer to this in Kant’s idea of *Schlüsse* (“inferences”). Kant defined inference in the following manner:

By *inferring* is to be understood that function of thinking whereby one judgment is deduced from another. An inference is thus in general the derivation of one judgment from another [KANT8a: 609 (9: 114)].⁴

⁴ Determinant judgments are structures of connected concepts, the unity of which is likewise a concept.

This idea obviously speaks to the connection of judgments one to another. In *Critique of Pure Reason* Kant provided a structural description of inference:

In every inference there is a proposition that stands as a ground, and another, namely the conclusion [*Folgerung*] that is drawn from the former, and finally the argument [*Schlußfolge*] (*Consequenz*) according to which the truth of the latter [the conclusion] is connected unfailingly with the truth of the former [the ground] [KANT1a: 389 (B: 359-360)].

Inference is derivation (*Ableitung*) seen as the making of connections in the manifold of concepts. In the description given in the *Critique* we see three elements involved in this act. The “ground” and “conclusion” are judgments used as propositions. The former is taken as a “given” prior to the inference while the latter is an outcome of the act of inferring. The third element – the consequential argument – bears a closer look. Kant does not describe this *Schlußfolge* as if it were a proposition as such. Rather, it is something “according to which the truth of the conclusion” is connected to the “truth of the ground.” If this *Schlußfolge* were a judgment it would be a judgment of *judgments* since it deals with the connection of propositions rather than the connection of object cognitions. Truth is the congruence of the cognition with its object, hence is a condition of objective representation. The *Schlußfolge* pertains to the *Existenz* of this condition as it is found in the unity of the manifold of concepts. It is not an object proposition but rather the **rule of judging** by which the proposition of an objective judgment is reached. The consequence is the concept (as a proposition) in the manifold that provides the condition of the rule.⁵

Inference considered in terms of derivation addresses the “how” of the process of determining judgment. It is an idea of the forming of the *Existenz* of the manifold of judgments and therefore of the form of the process of determining judgment. It is to inference that we apply the three ideas of Relation in our general 2LAR.

The Internal and the Inference of Understanding

Each of the ideas of Relation addresses a particular “how” dealing with the *Existenz* of the manifold of judgments. Kant named the first of these “hows” an *inference of understanding* (*Verstandeschluß*):

If the inferred judgment already lies in the first one, so that it can be derived from it without the mediation of a third representation, then this is called an “immediate inference” (*consequencia immediata*); I would rather call it an inference of understanding [KANT1a: 389 (B: 360)].

It is clear from this description why such an inference is entitled to be called the internal idea of

⁵ The reader will no doubt note that Kant’s ‘*Consequenz*’ is quite different from the usual connotation of the word ‘consequence’. *Consequenz* is not the conclusion but rather is the condition for concluding.

Relation in the process of determining judgment. The new judgment is drawn “immediately” from “within” the proposition that serves as its ground. But why call such a mode of inference an inference of understanding? To explain this, we need a clearer idea of what the word ‘understanding’ means in the Critical Philosophy.

Kant’s phrase “*der Verstand*” can be translated naturally and literally into English as “*the understanding*,” and so it is natural enough that when he refers to a *Verstandesvermögen* or ‘faculty of understanding’ we are tempted to think of “*the understanding*” as some sort of mind machine or mental computer or knowledge organ – this despite Locke’s warning not to anthropomorphize the idea of a ‘faculty.’ This temptation is made all the sweeter by Kant’s various statements to the effect that “understanding does this” and “understanding does that.” However, if we keep three things in mind we should be able to resist this tempting but faulty interpretation of the idea of ‘understanding.’

The first of these we have discussed previously. *Vermögen* is “faculty” only in the context of the form of an ability to do something and, as Kant describes it, is merely the idea of the possibility of this capacity. Thus if we speak of a ‘faculty of understanding’ we are better off to think of this as the ability to understand. The second point is a rather minor matter of translation. In German we often find *der* preceding many nouns for which the correct English usage omits the article “the” in the translation (e.g. *der Schmerz* – “pain”) according to context. Take “pain” as an example. In English we speak of “pain” without a “the” when we are speaking of it in a general sense, e.g. “pain is consciousness at once intense and empty”⁶; we speak of “the pain” when we are speaking of some *specific* pain, e.g. “the pain in my leg.” Similarly, we can speak of “the understanding of a mathematical proof” but when we are dealing with understanding as a general idea we should simply say “understanding” and not “*the understanding*.”

The third point is provided by the various usages of “*Vermögen*” by which Kant describes “understanding”:⁷

We have above explained understanding in various ways: through a spontaneity of cognition (in contrast to the receptivity of sensibility), through a capacity to think, or likewise a power of comprehension, or also of judgments - which explanations, if one looks at them properly, amount to the same thing. Now we can characterize it as the *faculty of rules*. This distinguishing mark is more fruitful, and comes closer to its essence. Sensibility gives us forms (of intuition), but understanding gives rules. It is always busy peering through appearances with the aim of finding some sort of rule in them. Rules, so far as they [interpret *Existenz* as necessary]⁸ (and thus necessarily pertain to the knowledge of objects) are called laws. Although we learn many laws from experience, these are only particular determinations of yet higher laws, the highest of which (under which all others

⁶ George Santayana, *Reason in Common Sense*, first edition.

⁷ In the quote that follows I have eliminated those “the” articles I think to be superfluous. The word *Vermögen* is rendered as capacity (to think), power (of comprehension), faculty (of rules), all according to the specific contexts of its usages within Kant’s explanation.

⁸ Inserted in Kant’s copy of the first edition, [AK23: 46].

stand) come *a priori* from understanding itself and are not borrowed from experience, but rather must provide appearances with their lawfulness and by that very means must make experience possible. Understanding is thus not merely a capacity to make rules through the comparison of appearances: it is itself the legislation for nature, i.e. without understanding there would not be given any nature at all [KANT1a: 242 (A: 126)].

Here we see ‘understanding’ *described* (not ‘defined’) in terms of the various manifestations by which understanding – as a *mental phenomenon* – makes its appearance in one’s self-reflection on empirical consciousness. The phenomenon of understanding is an *ability* that grows out of the process of determining judgment as an *effect* of the latter.

We are now in a position to examine Kant’s ‘inference of understanding’ and to see why it is so called. In his *Logik* – as edited by Dr. Gottlob Benjamin Jäsche, one of Kant’s former students – we find the following remark:

The fundamental character of all immediate inferences and the principle of their possibility subsists simply in a change of the *mere form* of judgments, while the *matter* of the judgments, the subject and predicate, remains *unaltered, the same* [KANT8a: 610 (9: 115)].

Here we have the combination of concepts in the inferred judgment as a mere alteration of the representation applied to concepts already contained in the initial judgment serving as the ground for the inference. The propositional judgment provides the concepts and the process of determining judgment merely has to proceed from these to a particular limitation placed on the combination. This is a task requiring no additional regulation of the process of determining judgment and the rules by which it operates. The process of determining judgment need call upon no other powers of reasoning to effect this judgment. Because the manifestation of this effect is made immediately to the form of the manifold of concepts, the appropriateness of calling such an inference an inference of understanding is quite reasonable.

Clearly the representation of the particular judgment inferred from the proposition must differ in some fashion from its ground. If it did not the inferred judgment would be indistinguishable from the proposition and we would have no occasion to even speak of the particular judgment as taking place. This distinction may be one of Quantity (in which case the inference is, using the scholastic terminology Kant adopted, an inference *per judicium subalternata*); the distinction may be one of Quality (*per judicium opposita*, either as *per judicium contradictorie opposita*, *per judicium contrarie opposita*, or *per judicium subcontrarie opposita*); the distinction may be one of Relation (*per judicium conversa sive per conversionem*); finally, the distinction may be one of Modality (*per judicium contrapositionem*) [KANT8a: 610-614 (9: 116-119)]. The particular details of these distinctions need not concern us at this time, although a full treatment of them is necessary for a doctrine of the Logic of meanings.

The External and the Inference of Reason

The external is our second general idea of Relation in the 2LAR of representation. Kant named the inference that corresponds to this idea the inference of reason (*Vernunftschluß*). Now, the idea of external Relation is an idea that always involves the *nexus* of two or more representations. In the inference of understanding a single proposition – the ground – is sufficient for the process of determining judgment to render its verdict. An inference that corresponds to external Relation must, in contrast, be an inference in which *two* separate judgments are required for the inference to take place.

Kant's *Vernunftschluß* meets this requirement:

In every inference of reason I first think a rule (the *major*) through understanding. Second, I subsume a cognition under the condition of the rule (the *minor*) by means of the power of judgment. Finally, I determine my cognition through the predicate of the rule (*conclusio*), therefore *a priori* through reason. Thus the relationships between a cognition and its condition, which the major premise represents as the rule, makes up the various kinds of inferences of reason. They are therefore threefold - as all judgments in general - so far as they are distinguished in the way they set forth the relationships of cognition in understanding, namely: *categorical* or *hypothetical* or *disjunctive* inferences of reason [KANT1a: 390 (B: 360-361)].

In reading this description the similarity is quite evident between: Kant's inference of reason; what Aristotle called a *sullogismos* or "deduction" [ARIS3: 40 (24^b18-20)]; and what logicians call a syllogism. Most English translations of Kant in fact render *Vernunftschluß* as "syllogism" (this is the case in [KANT1] and [KANT1a] for example). I do not follow this practice. There is, in my opinion, a problem that comes from rendering Kant's term as "syllogism" for much the same reason that translators no longer render Aristotle's *sullogismos* as syllogism, preferring the rendition "deduction." Robin Smith explains this issue quite well:

A comment is in order on the word "deduction." The Greek word Aristotle uses is *sullogismos*, which in ordinary usage can mean "computation" or "reckoning." Plato uses it and its associated verb of the drawing of a conclusion. The English word "syllogism" is its historical descendant, and in fact the line of descent is not just from Greek but from Aristotle. However, this very history makes "syllogism" a bad translation of *sullogismos* in Aristotle. Logicians normally use "syllogism" to *mean* one of the specific forms of valid argument Aristotle discusses in [*Prior Analytics* I.1-6], but Aristotle's definition of *sullogismos* comprehends a much wider class: pretty much any valid argument, or at least any argument with a conclusion different from any of its premises. If we translate *sullogismos* as "syllogism" the broad scope of this definition is obscured, and with it the nature of some of Aristotle's logical theorizing [BARN: 30].

The same is true, and for much the same reason, of *Vernunftschluß* and syllogism. Indeed, the German language *has* a word, *Syllogismus*, for "syllogism." Kant rarely uses it.

To appreciate what sort of inference the inference of reason is, let us first recall that at its root the inference is concerned with the connection of the *truth* of the concluding judgment with the truth of the general premise or “ground” – ‘truth’ being the congruence of a cognition with its object. As an example of an inference of reason, let us suppose I have two concepts – call them *M* and *P* – connected in a judgment *MP*. Let us further assume that I have a third concept, *S*, connected in a judgment *SP*. *If it is possible* for me to now form a third judgment, *SM*, then we say I have “subsumed” the concept *S* under the *rule MP*. The *truth* of judgment *SP* is now grounded in the truth of judgment *MP*; if *MP* is categorically true, then by this fact *SP* must also be categorically true. If *MP* should be discovered to be false,⁹ then *by inference* either the truth of *SM* or the truth of *SP* will fall with it.

A logician will make abstraction of all “material” content of the *M*, *S*, and *P* concepts, will ignore the path by which judgments *MP*, *SM*, and *SP* are developed, and will write the outcome of the process described above as: *MP* and *SM*, therefore *SP*. He will then call this arrangement of formulae a “syllogism in the first figure” and conclude that his work is done. This is, I contend, a distortion of what is meant by an inference of reason in the process of determining judgment. Among other things, it gives the impression that the sequence of argumentation must be: first *MP*, then *SM*, finally *SP*. While this is a logical (or, better, *logician’s*) progression, it is certainly *not* necessarily the progression in all inferences of reason or even in most actual instances of inferences of reason. We must distinguish the difference between a “line of argumentation” (the logician’s view) and *the making of the judgments* and the inference.

The inference of reason belongs to the process of determining judgment because: 1) the matter of the representations involved are concepts; and, 2) the presence of the major judgment (*MP*) prior to the making of the inference is presumed, thus making the inferential process one in which the “general concept” (*MP*) is given and the “particular concept” (*SM* in the case of our example) is found. The distinction among Kant’s three types of inferences of reason – the categorical, the hypothetical, and the disjunctive – is a distinction that stems from the way in which the truth of the conclusion is connected to the truth of the ground and the manner in which the truth of the ground itself is judged.

The distinctions among the three aforesaid kinds of inferences of reason lies in the major premise. In *categorical* inferences of reason the *major* is a categorical, in *hypothetical* it is a hypothetical or problematic, and in *disjunctive* a disjunctive proposition [KANT8a: 617 (9: 122)].

We will discuss what is meant by categorical, hypothetical, and disjunctive judgments in due course. For now it is enough for us to be aware that there are such distinctions among the forms of judgments and that these play a role in inference.

⁹ Falsity is incongruence of the cognition with its object.

Having described the sort of inference that corresponds to external Relation for the 2LAR of the process of determining judgment, let us briefly discuss why this deserves to be called an inference of *reason*. Like ‘understanding,’ Kant uses the term ‘reason’ in a variety of ways. How are we to understand ‘reason’ in the context of the process of determining judgment?

If we were to venture a general exposition of the phenomenon of Reason at this point we would both run the risk of incurring the censure of Baconian adherents, for cutting loose the lead weights Bacon demanded we attach to prevent human understanding from flying off into possible fantasy, and be ignoring our own plan to proceed, as Aristotle would have it, from that which is clearer to us toward that which is clearer “by its own nature.” Let us, then, proceed in smaller steps by looking at what Kant had to say regarding the relationship of reason with the inference of reason:

Can we isolate reason, and is it then a peculiar source of concepts and judgments that spring solely from it and thereby refer it to objects; or is it only a merely subordinate capacity to give given cognitions a certain form, called logical, and through which alone cognitions of understanding are subordinated to one another, and lower rules are subordinated to higher ones . . . as far as this can be effected through comparing them? . . . In fact the manifold of rules and the unity of principles is a demand of reason, in order to bring understanding into continual context with itself, just as understanding brings the manifold of intuitions under concepts and through them into connection. Yet such a first principle does not prescribe any law to Objects, and does not contain the ground of the possibility to know and to determine them as such in general, but rather is merely a subjective law of housekeeping for the provision of our understanding, so that through comparison of its concepts it may bring their universal use to the smallest possible number, without justifying us in demanding of objects themselves any such unanimity as might make things easier for our understanding or help it extend itself, and so give objective validity to maxims as well. In a word, the question is: Does reason as such, i.e. pure reason *a priori*, contain synthetic principles and rules, and in what might these principles subsist? [KANT1a: 390-391 (B: 362-363)]

Kant found that Reason does *not* pertain to the objects of understanding. Rather, the object of pure speculative Reason is the state of understanding. Just as we said earlier that the construction of concepts requires rules for carrying out this construction (pure notions of understanding), so also does the possibility of the construction of the *nexus* of determinant judgments call for another sort of rule or “blueprint” for judging that *regulates* the process of determining judgment. The possibility of making an inference of reason presupposes as a ground principles that govern the ‘what’ and ‘how’ of connecting two otherwise independent judgments in a united manifold *of* judgments.

It is clear that the individual judgments involved in an inference of reason do not contain in themselves the ground for their connection; if they did, the inference would be an inference of understanding – the idea of internal Relation. More importantly, the ‘nature’ of a principle that regulates the construction of a manifold of judgments is that of a principle which addresses the representation of judgments and not the representation of objects.

First, the inference of reason does not operate on intuitions, to bring them under rules (as does understanding with its categories), but rather on concepts and judgments. If, therefore, pure reason also works on objects, it yet has no immediate reference to them and their intuition, but to only understanding and its judgments, which apply *directly* to the senses and their intuition in order to determine their object . . .

Second, reason in its logical use seeks the universal condition of its judgment (of consequents), and the inference of reason is nothing but a judgment mediated by the subsumption of its condition under a universal rule (major premise). Now since this rule is once again exposed to this same attempt of reason, and the condition of the condition thereby has to be sought (by means of a prosyllogism) as far as we may, we see very well that the proper fundamental principle of reason in general (in its logical use) is: to find the unconditioned for conditioned cognitions of understanding, with which its unity will be perfected.

But this logical maxim cannot become a principle of pure reason unless we assume: when the conditioned is given, then so also is given the whole series of conditions subordinated one to the other, which is itself unconditioned [KANT1a: 391-392 (B: 363-364)].

Put less elegantly, the striving of the process of determining judgment to construct the *nexus* of determinant judgments is illogical unless there is ‘a reason’ for why determining judgment should act in this way. But since inferences of reason only seek to establish the connection of the truth of one judgment with a ‘more general truth’ in another, ‘the reason’ for the actions of determining judgment cannot be sought in the objects the concepts represent. Instead, this ‘reason’ must pertain only to ‘right formation’ of the *nexus*. If we presume that this ‘right form’ is exhibited by the subsumption of a particular concept under the rule of a more general concept (and experience indicates that this is indeed the case), then the principle that underlies the actions of the process of determining judgment must presume that for every particular judgment there must be a ‘higher’ concept that serves as its condition; this higher concept, involved as it is in judgments of its own, must itself have yet a higher condition and so on in an indefinite *series* of ascending connections (the prosyllogism). ***The inference of reason is the Relation of determining judgment to Reason.***

Now the truth of this deduction can never be *given* in experience. Hume was right when he pointed out that external Nature does not provide us with grounds for concluding such an order in Nature is objectively valid. This principle of the prosyllogism is, consequently, an *acromantic* principle – i.e. a **synthetic fundamental principle of the phenomenon of mind** necessary for the possibility of inferences of reason. This principle does not (directly) serve to recognize *objects*; it is, rather, a principle at work for the achievement of *unity in empirical consciousness* insofar as this consciousness is *objective*. Kant called such a principle a **transcendental Idea**.

From this instance we get our first glimpse of the nature of that phenomenon we call the power of Reason. So far as and only to the extent that Reason pertains to objective thought, its effect is a manifestation of a system of *regulative principles of judgmentation*. As these principles do not pertain to objects but, rather, are necessary for the possibility of *objective thinking* (from which alone cognitions arise), these principles of Reason must be pure and *a priori*.

The Transitive and the Inference of Judgment

In a determinant judgment the general concept is always “given” and the judgment proceeds to the determination of the particular concepts. Likewise, in both inferences of understanding and inferences of reason the judgment that is to serve as the ground for the inference must first be “given” before the process of inference can proceed. In all of these cases the general term is used as the representation that unites the particular representations in consciousness and its role is that of the transitive factor of Relation in the process of determining judgment.

This at once raises the question: How is the general term “given” for the process of determining judgment? It is clear this is not done *through* a determinant judgment for such a judgment always proceeds from the general to the particular. At the same time, determinant judgments are the sole matter of the process of determining judgment. It follows that the “giving” of a general term, from the perspective of the process of determining judgment, must be a formal, not material, factor of the process of determining judgment and must lie within the power of judgment in general. This idea we call the *inference of judgment*.¹

Inferences of the power of judgment are certain modes of inference to come from particular concepts to general ones. They are not functions of the determining, then, but rather of the reflecting power of judgment; hence they also do not determine the Object, but only the mode of reflexion² on it, in order to gain cognizance of it [KANT8a: 625-626 (9: 132)].

We distinguished between the process of determining judgment and the process of reflective judgment when we discussed the faculty of pure consciousness in Chapter 5. Reflective judgment, unlike determining judgment, is concerned with affective perception rather than objective perception. We cannot, therefore, suppose that the inference of judgment is itself solely an act of the process of reflective judgment because we are here dealing also with concepts and judgments for which concepts are the matter of the judgment. This might seem contrary to Kant’s statement quoted above, and so we must examine what the description given by Kant implies.

It is a function of the process of reflective judgment to secure the concordance of the form of understanding with the *purpose* of the representation. In Chapter 5 (§5.) we named the principle of this conformity: **the principle of formal expedience of Nature**. All inferences of judgment have their ground in this *a priori* principle.

¹ Kant’s term is *die Schlüsse der Urtheilskraft* - literally, inferences of the power of judgment.

² Kant distinguishes between reflective judgment (*reflectirenden Urtheilskraft*, reflecting power of judgment) and the mode of reflexion (*die Art der Reflexion*) in his theory. We mentioned this distinction in Chapter 3 when we discussed the three *Verstandes Actus* or “acts of understanding.” Our present discussion is where this distinction becomes important.

However, it is quite clear that the possibility of procuring the concordance of understanding with purpose by the process of reflective judgment must necessarily presuppose the ability or power of reflective judgment to affect the process of determining judgment and *vice versa*. The idea of a purpose is an idea grounded exclusively in pure Reason, while determining judgment and understanding are solely concerned with the representation of objects. The function of the process of reflective judgment is to be the “bridge” between these two heterogeneous aspects of empirical consciousness. ***The inference of judgment is transitive Relation between determining and reflective judgment.***

The objective representation in an inference of judgment is not *made by* reflective judgment. Rather, reflective judgment sets the determination of a *mode* of inference as an *effect* registered in the process of determining judgment as a consequence of reflective judgment. This effect is what we have called the mode of *reflexion*, which is an “act of understanding” as we discussed in Chapter 3. Reflexion is the “going back over” of different representations to determine “how they can be comprehended in one consciousness.” Reflexion is the link between representations and the powers of judgment that present determinations of these representations.

Viewed from an objective perspective the inference of judgment is the determination of which concepts are to be *brought to objective consciousness* in determining judgment and of the rules of determining judgment that are to be applied by which these representations are brought into consciousness. This *act*, in its instantiation, belongs to the process of determining judgment since reflective judgment has no direct dealings with *objective* perception.

Can this act properly be called an *inference*? Going back to our earlier description, an inference is in general the derivation of one judgment from another. This description of inference in general does not specify that all the judgments involved must be determinant judgments. In the inference of judgment the *ground* of the inference does not belong to the process of determining judgment but, rather, to that of reflective judgment. Affective perceptions are the matter of reflective judgments, and so we must say that an inference of judgment is an inference grounded in a representation that is merely *subjective* rather than objective. The derived judgment, on the other hand, is objective because this judgment must always pertain to concepts. Reflexion, as an act of understanding, is an act grounded in the merely subjective representation of reflective judgment but it is productive of objective representations. We can identify two manners by which objective representations may be produced from merely subjective grounds.

The first objective mode of reflexion in an inference of judgment is called *induction*.

Induction thus concludes from particular to general (*a particulari ad universale*) according to the principle of *generalization*: *What belongs to many things of a kind belongs to the remaining ones, too* [KANT8: 136 (9: 133)].

It is obvious this principle is one by which general conclusions may be drawn but that such conclusions are not absolutely *universal* conclusions nor do they contain *necessity*. This is a principle of *empirical* (rather than logical) judgment, as we would expect from the subjective nature of the ground for the inference. The inductive inference of judgment is contingent and liable to being overturned in later empirical experience. It infers, from a limited base of experience, a conclusion held-to-be-true of *all* experience but it lacks in this holding-to-be-true the objectively sufficient ground necessary for its inference to be held-to-be *objectively certain*.

The second objective mode of inference of judgment is called *analogy*.

Analogy concludes from *particular* to *total* similarity of two things, according to the principle of *specification*: Things of one kind which we know to agree in much also agree in the remainder as we know it in some of this kind but do not perceive it in others [KANT8: 136 (9: 133)].

Like induction, inference by analogy draws conclusions that can never be other than contingent. Induction “expands the empirically given from particular to general with respect to *many objects*; analogy . . . expands the *given properties* of a thing to divers properties of the *very same thing*” [KANT8: 137 (9: 133)].

It is here in the inference of judgment that we see for the first time in our developing theory the possibility of *errors in judgment*. The inference of understanding and the inference of reason, confined as they are to concepts and operating as they do within the strict *a priori* rules by which Nature, our world model, is constructed, do not admit the possibility of error. Yet we are all quite familiar with the existence of errors in our judgments and mistakes in our reasoning. In the inference of judgment we easily see how this becomes possible. The *general* empirical concept (the general premise) in empirical objective judgment is contingent – a “provisional” judgment true at the time of its making *so far as one knows* – and can claim only a subjectively sufficient ground. The source of the possibility of error does not lie in the *a priori* foundations of objective judgments but *in the subjectivity of the general empirical concept*. From the inference of judgment we obtain *opinions*, and while the subjective ground is supported by uncontradicted experience of an empirical and affective nature, the judgment constitutes a *belief*. But only for those concepts where we have both an objectively as well as a subjectively sufficient ground can we proclaim our concept to be one of neither mere belief nor opinion but of *knowledge*.

It takes no great foresight to see the implications this has for the ideal of Absolute Truth. Our knowledge of Nature is inextricably tied to our ability to generalize from experience (in seeking higher concepts), and to specify from that which experience has shown us to obtain concepts of the object which pertain to that which experience has not yet shown us (the possible experience). But this sort of objective knowledge comes to us through the contingent inferences of judgment, and the nature of that source of cognition is *innovative* rather than apodictic.

This property of judgment is fundamental to James' pragmatic view of truth.

The truth of an idea is not a stagnant property inherent in it. Truth *happens* to an idea. It *becomes* true, is *made* true by events. Its verity *is* in fact an event, a process: the process namely of its verifying itself, its *verification*. Its validity is the process of its *validation* [JAME1: 89].

Here James touches on, but does not quite grasp, an essential factor in the character of the truth of an idea. He agrees that the truth of an idea is the congruence of that idea with its object. However, by making his description of 'truth' a time-dependent and evolving thing, he seems to suggest that truth is 'out there somewhere' as a kind of state-of-achievement. What he actually describes is not the *acquiring* of truth in an idea but, rather, what we will call the process of the *perfection* of concepts. Put another way, James mixes the idea of 'truth' with the idea of 'certainty.' Every empirical concept at the time of its construction is true *insofar as its truth is inferred from a ground*. The Jamesian dynamics of truth described above does not describe 'truth' *per se* but, rather, the variation of degree in our *holding-to-be-true*. But this discussion takes us from the topic of Relation in the process of determining judgment to the topic of Modality.

§ 5.4 Modality and the Matter of Truth

The manifold of judgments – which is given its *nexus* by the process of determining judgment – takes the form of this *nexus* from inferences. We must now turn to the matter of the form of the manifold constructed by the process of determining judgment. We begin by asking: What is the *matter* of connection for a manifold formed by inferences?

Looking back at our earlier structural description of inferences, let us direct our attention to the role of the argument (*Schlußfolge*) in an inference. The argument is that according to which the truth of the conclusion is connected unfailingly with the truth of the first proposition (the ground of the inference). Now this argument is *not* the minor premise of an inference of reason. If it were it could not be common to *every* inference because it is only the inference of reason that includes a minor term in its structure. Equally, the argument is not to be taken for either the ground or for the conclusion. What, then, *is* the argument?

Given this examination of what it is *not* – namely, any element of the structural *form* of an inference – it is nonetheless clear, since the argument “makes a connection,” that the argument is something subsisting ‘in’ an inference and, thereby, ‘in’ the manifold of judgments. But aside from the form, there is nothing ‘in’ the *nexus* of the representation of a thing other than its matter. Accordingly, it is the argument that supplies the *Modality* of the process of determining judgment. The connection it makes, Kant tells us, is the connection of the truth of the conclusion with the truth of the ground. However, this raises a question of possibly greater difficulty than the one we started out with, namely: *What is ‘truth’?* For if we cannot obtain a clear answer to this

question, we cannot hope to explain the matter of the *nexus* in determining judgment.

We have previously stated, more than once, that ‘truth’ is the congruence of the cognition with its object. This explanation seems to be generally accepted by most philosophers today and, as far as it goes, is rather uncontested. However, as Kant himself was quick to point out, the explanation suffers from the defect that it is, as Kant put it, “a mere nominal explanation.”

Now I can only compare the Object³ with my cognition *by re-cognizing it*. My cognition shall thus endorse itself, which is not by a long way sufficient enough for truth. For since the Object is outside me and the cognition in me, all I can ever pass judgment on is whether my cognition of the Object agrees with my cognition of the Object. The ancients called such a circle in explanation a *diallelon*. And actually the logicians were always reproached for this mistake by the skeptics [KANT8a: 557-558 (9: 50)].

The issue and the problem is to find something capable of serving as a *criterion* for the *judgment* of truth. To put it another way, “What is an argument that unfailingly connects the truth of one judgment to the truth of another?” How and in what way do we *recognize* ‘truth’ in a judgment so that we can say the cognition is congruent with its object?

The question here is, namely: whether and in how far there is a criterion of truth that is sure, general, and useful in application. For that is what the question, *What is truth?* means [KANT8a: 558 (9: 50)].

Note carefully Kant has not said it is truth that is to be “sure, general, and useful in application.” He has said these things of the *criterion* by which we evaluate whether or not a judgment is held to be true. Kant’s “argument” term is nothing else than a criterion of truth.

The Determinable and Empirical Truth

Let us first examine the possibility of finding a criterion of truth regarding the idea of the determinable as Modality in the general 2LAR. In all representations it is the matter of representation that represents the *Dasein* of what is determinable. For the process of determining judgment this matter is the determinant judgment itself, and within such a judgment it is the concept that gives us the matter of composition. These concepts are of three types: experiential, notion, and idea. Of these three, the notion is a pure and *a priori* concept – a part of the system of rules for the construction of rules in conformity with which the other two types of concepts are represented. Notions are *primitives* and of them it is without meaning to inquire if they are “true” because the representation of truth (even by criteria) is itself an idea and ideas are composed using notions. If the primitive notions of understanding are not held to be true *de facto*, then the very idea of truth is incapable of any explanation of its meaning whatsoever.

³ Kant is speaking here of comparing the transcendental object (matter) with its representation (form).

The situation is quite different with regard to experiential concepts and ideas because these have a transcendental object, immediately in intuition and mediately as the object of appearance. We call sensation the matter of intuition and call the matter of an appearance that which in appearance corresponds to sensation [KANT1: 48 (B: 34)]. We are, therefore, straight-away faced with the question of which of these matters – the concept, the sensation in intuition, or the matter of appearance – we are to regard as that of which the argument is made in the process of determining judgment. Which is it to be?

The answer to this question becomes clear at once if we keep in mind that the real explanation of ‘truth’ is congruence of the *cognition* with its object. Cognition always involves both intuitions and concepts (a concept being merely a rule for the re-presentation of intuitions). We are making no inquiry here regarding the matter of a concept⁴ for this would be tantamount to a criterion of truth that would be precisely a criterion aimed at discovering if the cognition agreed *with itself* – the *diallelon* of which Kant spoke. Consequently, we seek a criterion in which it is truth in regard to the object of appearance that is the determinable argument.

Is it possible to find some criterion by which we can say “the judgment of the object is true”? It seems the answer to this must be “yes.” But can we find a *universal* criterion of this sort? Is there a universal material criterion of truth? Here we are forced to admit there cannot be such a thing.

For as a *universal*, valid for all Objects in general, it must abstract fully from all differences among Objects, and yet at the same time, as a material criterion, it would have to work precisely on this difference in order to be able to determine whether a cognition agrees with just *that* Object to which it refers and not just any Object in general - in which case nothing would really be said . . . For a cognition which is true in regard to one Object can be false in reference to other Objects. Hence it is absurd to demand a universal material criterion of truth, which should abstract and at the same time not abstract from all differences among Objects [KANT8a: 558 (9: 50-51)].

The idea of a universal *material* criterion of truth is self-contradictory.

If a universal (and, hence, *a priori*) material criterion of truth cannot be found, perhaps instead we must consider whether an objective *formal* criterion can be universal.

If the question is about *universal formal* criteria of truth, however, then here it is easy to decide that of course there can be such a thing. For *formal* truth subsists merely in the harmonization of cognition with itself, in complete abstraction from all Objects whatsoever and from all difference among them. And the universal formal criteria of truth are accordingly nothing other than universal logical marks of the congruence of cognition . . . with the universal laws of understanding and reason [KANT8a: 558-559 (9: 51)].

Now this idea of “formal” criteria sounds very much like the “truth-value” viewpoint adopted in formal logic (either traditional or symbolic). If it is indeed the same, how can such a criterion apply to sensible objects? If it is not the same, in what way does it differ?

⁴ The object of a concept is the intuition.

Let us start with the question of how a criterion that “subsists merely in the harmonization of cognition with itself” could apply to transcendental objects of appearance. Here the key point to the discussion lies in the adjective “transcendental.” We recall that we use this word “transcendental” to apply to that which *a priori* is necessary for the possibility of experience (in this case for things we “know from experience” to be facts). Now, one of the most fundamental of all formal logical principles is the principle of contradiction and identity. In his first purely philosophical work Kant expressed this principle in the following fashion:

Principle of Contradiction and Identity: There are two absolutely first principles of all truths. One of them is the principle of affirmative truths, namely the proposition: whatever is, is; the other is the principle of negative truths, namely the proposition: whatever is not, is not. These two principles taken together are commonly called the principle of identity [KANT21: 7 (1: 389)].

If your first reaction upon reading this is, “Why this is nothing but a worthless tautology!” this reaction is justly excusable. Without further elucidation it is difficult to see how anything worthwhile might be contained in this “absolutely first principle of all truths.” Let us remember, though, that the argument in inference is a kind of analysis, and analysis, ultimately, expresses itself in elegant tautologies. With this in mind, let us examine Kant’s elucidation of the principle of identity that directly followed the above in his text.

Once more I appeal to the two ways of demonstrating truths, namely the direct and the indirect. The first way of arguing arrives at the truth by appealing to the agreement of the concepts of the subject and the predicate and it always has as its foundation this rule: whenever a subject, whether it be viewed in itself or in a connection, either posits those things which embrace the concept of the predicate, or excludes things which are excluded by the concept of the predicate, it must be concluded that the predicate belongs to the subject. To express things a little more clearly: whenever an identity between the concepts of the subject and the predicate is discovered, the proposition is true . . .

If you inquire about the indirect way of arguing, you will in the end discover that it is founded on the same twin principle. For appeal is always made to these two propositions: (1) everything of which the opposite is false is true, that is to say: everything of which the opposite is negated must be asserted; (2) everything of which the opposite is true is false. From the first of these two propositions affirmative propositions follow, and from the second there follow negative propositions [KANT21: 7-8 (1: 389)].

In examining the “indirect way” discussion above, we see stated a “principle of contradiction” (or, rather, a “principle of noncontradiction” as Palmquist prefers to call it [PALM1: 79]). “Opposite” in this case means *contradictory* opposite. In his later works Kant would come to call the “twin principles of identity” the “principle of contradiction and identity” and this name has been assigned to the statement of the “twin principles” above.

Now, these purely logical principles obviously deal only with concepts and their combinations with each other. How can this pertain to *objects*? To see this, we must bring into the picture the most fundamental of all acroamatic principles in the Critical Philosophy, namely the

across of transcendental apperception. For each of us the knowledge of one's own *Dasein* is the most fundamental of all the powers of knowledge. That which we call the empirical world is known to us through the process by which, from this knowledge of one's *Dasein*, is made the representation of one's *Existenz*. This we call the emergence of empirical Self-consciousness.

The first and most fundamental act of Self-consciousness consists of the division of all representations into two general classes: the Self and the not-Self. The elaboration of objects – specific limitations marked out in Reality as we discussed in the Metaphysics Proper of Rational Theology – is therefore *grounded* ultimately in transcendental apperception. The acts of representation by which this elaboration takes place comprise a slow process (in human development), but nonetheless are, at root, outcomes of the “subject-predicate” inferences (to use the vocabulary of logic) described above. Now, whatever cognitions may arise that are invested in the not-Self, the fact remains that the elaborated Self and the elaborated not-Self are always coexistent in (subjective) time. As coexistents, the Self and not-Self come under the legislation of the principle of community, which we discussed in Rational Physics. This principle dictates the necessity of a thorough-going reciprocity in the determination of coexistents; in this case, this reciprocity applies to the determinable object and the determination of the cognition of the object. This means that the connection between cognition of an object and the transcendental object itself is a necessary connection and, consequently, that which contradicts the cognition of the object contradicts the object as well.

However, the principle of contradiction and identity, while a universal criterion of truth, is at root a negative principle. Noncontradiction is a *sine qua non* of truth, but the absence of a contradiction does not imply the cognition is *apodictically true* of the object. In the case of the idea of the determinable in the Modality of the process of determining judgment, we are always open to the possibility that a cognition we hold to be true now might be refuted later in experience. The possibility of a future refutation does not mean that “the truth in” a phenomenal cognition is *entirely* negated by an actual refutation in experience; that would be tantamount to saying the criterion of contradiction and identity is not a criterion of truth at all and that it is only an excuse for illusion. It *does* mean we cannot be certain that the limitations placed on the object – which distinguish the object in Reality – are sufficient and not over-generalized. The truth in the cognition of an object of experience is *contingent*.

An example will help clarify this. Consider the following judgment of experience: *Immanuel Kant wrote Critique of Pure Reason*. Now this is a true statement; how can we possibly consider it to be contingent? Let us suppose that, having made this judgment, we later come to discover there was *another* Immanuel Kant. For the sake of discussion let's suppose he was a baker living in Munich from 1750 to 1825. Kant the baker is not the Kant who wrote *Critique of Pure Reason*.

The original judgment has to be modified by this new knowledge to become: *Immanuel Kant the philosopher wrote Critique of Pure Reason*.

Let us consider a second example: *Achilles slew Hector*. So long as we understand the objects of this judgment are to be thought only as characters in *The Iliad* this is certainly a true judgment. But did an historical Achilles actually live and did he actually slay Hector? At least some of the ancient Greeks believed this to be so and there were some who regarded Homer's epic poem as history rather than legend. However, the Achilles of *The Iliad*, in addition to being the greatest of the Greek warriors at Troy, was also given to be the mortal son of a sea goddess. Once we know there are no sea goddesses, we also know *The Iliad* is mythology at least in part. But are there parts of *The Iliad* that are historically true? Present day opinion holds that the answer to this question is yes. The problem is we don't know *which* parts. Was there "really" a man named Achilles, a man named Hector, and if so did Achilles slay Hector? We do not know. We can establish for a fact only that part of the judgment for which we have direct phenomenal experience (namely, by reading *The Iliad*; if you have not done so, how can you be sure I did not simply make up this story just as I invented Kant the baker?). The *historical* truth of Achilles and Hector will remain beyond our grasp barring some new and unforeseen discovery by some future archeologist unearthing additional evidence in the matter dating back to around the twelfth century B.C. (the time when the Trojan war is thought to have taken place). In the absence of such a development we have only Homeric legend to go by, and this is not factual evidence.

When the agent-patient Relation of the sensorimotor idea places *nous* in the role of the patient, the reciprocity principle of Rational Physics is the objectively sufficient reason that establishes the truth of the *Dasein* of the external object. The truth of the *Existenz* of that object, however, lies with the cognition of the object and here the agreement between cognition and object has only the principle of contradiction and identity as its criterion. This criterion, while a *sine qua non* condition of truth, is still merely a negative criterion by which disagreement between cognition and the universal laws of understanding and reasoning can be found. It lacks the positive character required for apodictic certainty of the truth. It establishes the truth of the cognition as merely a limitation placed upon the sum total of experience and is always subject to the possibility of being contradicted by possible future events. Our cognition of the *Dasein* of a transcendental object is assertoric, but our cognition of the whole *Existenz* of this object is problematic. For this reason we call the Modality of the determinable in the 2LAR of the process of determining judgment the criterion of *empirical truth*. Its acroamatic condition is the principle of *conformity of cognition with understanding*, namely the principle of conformity to law.

It is this aspect of truth that William James and the pragmatists focus upon. In *The Meaning of Truth* James wrote:

What pragmatism contends for is that you cannot adequately *define* the something if you leave the notion of the statement's functional workings out of your account. Truth meaning agreement with reality, the mode of agreeing is a practical problem which the subjective term of the relation alone can solve [JAME3: 224].

What James sets out to attack is “the great assumption of the intellectualists . . . that truth means essentially an inert static relation” [JAME1: 88]. Recalling that James rejected the Lockean model of “ideas” in favor of his stream-of-thought model, the pragmatist philosophy is bound to consider “intentions”, “feelings” and, in short, the whole of mental life in any context where knowledge is involved. But James could not entirely let go of the influences of positivism:

Pragmatism, on the other hand, asks its usual question. "Grant an idea or belief to be true," it says, "what concrete difference will its being true make in any one's actual life? How will truth be realized? What experiences will be different from those which would obtain if the belief were false? What, in short, is the truth's cash-value in experiential terms?"

The moment pragmatism asks this question, it sees the answer: *True ideas are those that we can assimilate, validate, corroborate and verify. False ideas are those we can not.* That is the practical difference it makes to us to have true ideas; that, therefore, is the meaning of truth, for it is all that truth is known-as [JAME1: 88-89].

Although this view is not far from being correct, it suffers from one flaw that becomes evident upon careful study. James tends to move back and forth between talking about “truth” as a *noumenon* and “truth” as a criterion. “Truth” as an abstract thing can most likely find no better description than we have already given: the congruence of the cognition with its object. What James fails to do in his pragmatic theory is to distinguish the argument of inference in terms of its three ideas of Modality. The consequence of this is that the pragmatic position becomes hardly distinguishable from the idea of truth as nothing other than a state of mind; in such a picture, what role is left for the object?

This is the question other philosophers hurl at the pragmatists. The starting point for their criticism of the pragmatic theory is rooted in the “intentional” doctrine of James’ position, i.e., that “truth” has for its only criteria “assimilation, validation, corroboration, and verification” set in accordance with “what we choose to attend to” and the purposes which underlie this choice.

Let us begin, first, with the pragmatic theory of perception upon which the theory of truth largely depends. The pragmatist . . . regards experience as a continuous flux or stream from which the mind selects certain aspects according to the interests of the perceiver, and then proceeds to work them up into the tables and chairs of everyday experience.

But if experience is really an indeterminate flux or blur, as void of distinction, say, as a sheet of white paper, it may be asked why the mind should carve out of it certain objects rather than others. Why, for example, should my mind carve out a chair instead of a rhinoceros as the object upon which I am now sitting, unless there is some distinctive mark or feature in reality itself in virtue of which I do in fact say "chair" and not "rhinoceros"? Is it not, then, necessary to assume, as most philosophers have assumed, that reality is not wholly featureless, not wholly without differentiation, but contains within itself certain rudimentary distinctions which form the basis upon which mind builds the structure of the world known to science and common sense? [JOAD: 457-458].

I think this criticism is not fair to James' philosophy because it takes a too-simple view of James' doctrine and invokes a copy-of-reality. On the other hand, James *did* invite this criticism in a way. He was willing to let philosophy and science be partners in the search for knowledge, but it was not an equal partnership. James never allowed philosophy to be the "ground" of science; rather, science goes its own way and occasionally calls upon philosophy to ask it, "What do you think of *this*?" when particular puzzles and quandaries arise. Philosophy was to dust the furniture, straighten the portraits and then, like a good servant, withdraw from the room. He never quite allowed a real connection of *nous* and *soma* (in his view, mind and body), and this agnostic disconnect is the crack through which other philosophers could drive the point of their criticism.

The Determination and Logical Truth

While the object is referent for the determinable criterion of truth, it is the cognition that is referent for the determination. Here our inquiry becomes simpler because we are dealing with nothing more than the principles of understanding. Understanding, in other words, becomes the object of the criterion of truth in the argument.

Here, as in empirical truth, the first condition is the principle of contradiction and identity. This, as we have already discussed, is merely a negative criterion of truth and speaks, in the case of determination, to logical possibility. However, unlike the case in empirical truth, we can summon up a positive criterion as well. In every inference there is a concept that serves as a ground for the conclusion. (There might, of course, be more than one grounding concept, in which case the judgment of the inference follows on a synthesis). This is the second criterion for the truth of the inference.

But, in addition to this, the judgment arising from inference must also satisfy a third criterion: *it must not have false consequences*. Now, what does this mean? Put simply, it is not enough that the conclusion not contradict its ground; Relation and Modality address the *nexus* (connection) of a *manifold* of judgments and concepts, and the conclusion of an inference *must not consciously contradict other conclusions in this manifold*. This requirement flows from the criterion of *the principle of the sufficient reason* [KANT8a: 559 (9: 51-52)].

Now, what do we mean by "contradiction" in this context? Experiential concepts and ideas are rules for the reproduction of intuitions. We can justly call them "rules of understanding" since the process of determining judgment comes to concepts through the act of making determinant judgments by subsuming particular concepts under given general concepts. Now any concept, once it has been constructed by judgment, may in its turn become the general concept in a subsequent determinant judgment. If inference, acting from one such judgment as a ground,

reaches some particular conclusion, while a second inference, acting from another such ground reaches a conclusion which negates that of the first under conditions where *both* conclusions must apply to the *same* appearance, we have a **real contradiction**.

Note that the appearance enters this consideration in the singular, i.e., both inferences apply to one and the same intuition in a single moment in (subjective) time. Since every concept is mediately a characteristic of the transcendental object of its intuition, the presence in a single intuition of two contradictory opposite concepts negates the possibility of reproducing the intuition. Consequently, no cognition is *possible* in this case.

We will call the condition in which the reproduction of an intuition is possible the condition of *conformity to the laws of understanding*. Note that this principle, conformity to the laws of understanding, does not state that the condition is conformity of experiential concepts or ideas with the notions of understanding; conformity of the rules constructed by the process of determining judgment with the rules for the construction of rules (the categories) is a *sine qua non* of determining judgment itself and, hence, no violation of these *a priori* rules-governing-rules is possible in an act of determining judgment. We can say that determining judgment makes ‘rulings’ according to *a priori* ‘laws’ or ‘functions’ of judgment and these functions, viewed within their strict and proper province, are *absolute*.

The principle of conformity to laws, therefore, speaks to the congruence of these ‘rulings’ of judgment *with each other*. It is a principle for experiential concepts and ideas, not for notions. Stated as we have done here, this principle seems to be of the character of a negative principle (i.e., one in which no positive criterion of validity is to be found). However, the principle of conformity to law also yields a *positive* criterion, namely: *from the negation of one contradictory opposite to the affirmation of the other, or from the positing of one to the negation of the other, the inference is valid* [KANT8a: 624 (9: 130)]. This principle is, indeed, the fundamental principle of the disjunctive inference of reason and is commonly known as *the principle of the excluded middle*. (Note that the principle of the excluded middle is a *formal* principle; it speaks to the *inference* but not to the object).

The principles of the excluded middle and of sufficient reason are principles underlying two classical criteria of validity in formal logic:

1. From the truth of the consequence we may conclude the truth of the cognition *as ground*, but only negatively: if one false consequence flows from a cognition, then the cognition itself is false. For if the ground were true, then the consequence would also have to be true, because the consequence is determined by the ground.
2. If all the consequences of a cognition are true, then the cognition is also true. For if there were something false in the cognition, there would also have to be a false consequence [KANT8a: 559 (9: 52)].

In the language of formal logic, these criteria of truth in inference are known as the *modus tollens* and the *modus ponens*. However, the latter can never be more than merely hypothetical because one cannot know *all* possible consequences *a priori*. These criteria – and, indeed, the principles of sufficient reason and of the excluded middle – are strictly *formal* criteria. In other words, they are criteria applied to the “logical truth” in the form of a judgment. It is for this reason we will call the idea of Modality for the determination, with respect to the process of determining judgment, the criteria of *logical truth*. The Modality of logical truth pertains to universal and necessary (therefore certain) criteria for *the making of cognitions*. In this, logical truth is distinct from the Modality of empirical truth because the former applies to the form of representation in determinant judgments while the latter pertains to the *nexus* of cognition and object.

Looking back at these two ideas of Modality in determining judgment, we see that the Hegelian ideal of “Absolute Truth” cannot be achieved. Hegel recognized the validity of both of these aspects of truth but was unwilling to accept the limitation of knowledge they imply. Instead he reified truth, calling this product of his fancy ‘Truth.’ Hegel wrote:

The first question is: What is the object of our science? The simplest and most intelligible answer to this question is that Truth is the object of Logic. Truth is a noble word, and the thing is nobler still. So long as man is sound at heart and in spirit, the search for truth must awake all the enthusiasm of his nature. But immediately there steps in the objection - are *we* able to know truth? There seems to be a disproportion between finite beings like ourselves and the Truth which is absolute; and doubts suggest themselves whether there is any bridge between the finite and the infinite. God is Truth: how shall we know Him? [HEGE1: 26].

At the risk of doing an injustice to Hegel, his position seems to be that we will know Absolute Truth when, through the proper use of Hegelian dialectic, we find the synthesis that unites philosophy and religion: “The objects of philosophy . . . are upon the whole the same as those of religion. In both the object is Truth, in that supreme sense in which God and only God is the Truth” [HEGE1: 3 (§1.)]. As we have observed previously, in the introduction of the *Metaphysics Proper of Rational Theology*, the *Critical Philosophy* cannot accept Hegel’s proposal as one for which any real objective validity is possible.

The Determining Factor and Logical Perfection

The third idea of Modality in representation is the idea of the determining factor. This is, so to speak, the idea of the “why” contained in the matter of the *nexus* of representation. In looking at this idea in the context of the process of determining judgment, the “why” aspect of argument is bound up with determining judgment’s principal characteristic, namely that it is an *act* which has at its root some *a priori* ground. The question is: What is this?

The process of determining judgment is *a priori* necessary for the possibility of cognition. As a process effected by the power of mind, the acts carried out in determining judgment can have as their basis only a pure (and therefore formal) determining factor. While not objective in itself, the determining factor of the process of determining judgment must be a criterion *for* the mediate representation of objects through concepts. It is the nature of this pure and *a priori* criterion we seek to explain. In doing so, we revive an old idea of logic which, in modern times, has dropped out of sight, namely the idea of **perfection** (i.e., “making perfect”). Considered ontologically,

There is an old scholastic doctrine: whithersoever you please, being is one, true, good, or perfect. (1) Each thing is united; (2) each thing is true. To attribute truth to a thing is contrary to common usage; one better says: the knowledge is true. The ground of truth must be in the thing. (3) Each thing is perfect, i.e. each thing contains all that is required for it.

The representation of every Object contains:

1. the unity of the determinable;
2. the plurality and harmonization¹ of manifold determinations among one another;
3. the totality of the determinations, insofar as it subsists in that many determinations are taken together in one Object.

Transcendental truth, unlike the logical, subsists in the congruence of the predicates that belong to the essence of a thing with the essence itself . . . Every thing in transcendental understanding is true. Perfection, transcendently considered, is the entirety or completeness of many determinations. Every thing is transcendently perfect.

The criteria of thing and non-thing are:

1. the *unity* of the Object, which is thought in my concept;
2. the transcendental *truth* in the connection of the manifold determinations;
3. completeness or entirety.

Things can be regarded:

1. *physically*, insofar as they are pre-positd through experience;
2. *metaphysically*, insofar as they are pre-positd through pure reason;
3. *transcendentally*, insofar as they are pre-positd through pure reason according to what *necessarily* belongs to their essence.

Physical perfection subsists in sufficiency of empirical representations. Metaphysical perfection subsists in the degree of reality. Transcendental perfection [subsists] in this: that it contains all that the thing requires. One thing is metaphysically more perfect than another . . . But each thing is transcendently perfect [KANT19: 321-322 (28: 555-556)].

Looked at as a criterion of judgmentation in general, we can view this idea of perfection in a threefold manner (corresponding to the three processes of judgment in the faculty of pure consciousness). With regard to cognition,

The perfection of knowledge in general is:

¹ *Zusammenstimmung*. The word literally means “tuning together.”

1. logical;
2. aesthetical;
3. practical perfection.

Logical perfection goes to understanding and is knowledge of objects by way of them. The aesthetical goes to feeling and to the state of our Subject, namely: how we come to be affected by the Object . . . Practical perfection goes to our appetites, through which activity comes to be brought about.

The perfection of a cognition rests on four principal points.

1. For the Quantity of the cognition, as it is a universal. A cognition which serves as a rule must be more perfect than one that holds only in particular cases.
2. Quality, distinctness of the cognition. Contains the *quo modo*?² Logical perfection as to Quality is *distinctness*, the aesthetical is *liveliness*.
3. Relation, truth of the cognition. Truth is the Relation of the cognition to the Object . . . Logical perfection according to Relation is *objective truth*. The aesthetical is *subjective truth*.
4. Modality, so far as it is a certain and necessary cognition. Logical perfection according to Modality is the *necessity of cognitions according to understanding*. The aesthetical is *empirical necessity* [KANT8a: 268-269 (24: 809-810)].

Kant goes on to say:

Manifoldness and unity make up every perfection. Our power of cognition strives very much for manifoldness. But it has the need that it must have unity. Otherwise, it would not satisfy us because cognition without unity, if one and the other have not been tied together, does not increase our cognizance . . . Truth is the pre-eminent ground of unity and the most necessary and excellent part. No knowledge takes place at all without truth. In logical perfection it is the positive greatest condition . . . Logical perfection is the skeleton of our knowledge [KANT8a: 269-270 (24: 810-811)].

In this chapter, which concerns the ontology of the determining judgment by which we understand things, we will confine our discussion of perfection to logical perfection – leaving the aesthetical and practical perfections as ideas to be explored when we consider the other two ideas of judgment in the faculty of pure consciousness. It is evident from what has been given above that the idea of logical perfection is intimately tied in with the criterion of truth. But in what way?

The logical perfection of cognition rests on its congruence with the Object, hence on *universally valid* laws, and thus likewise suits itself to be judged according to norms *a priori* [KANT8: 41 (9: 36)].

These “norms” of which Kant speaks, if logical perfection is to be based on pure grounds (which, of course, it must be if it is to apply to the process of determining judgment), can be called ideals for judgment. The *nexus* of determining judgment becomes more logically perfect the closer it

² Literally, "in what way?"

approaches the *formal criteria* of logical perfection. These criteria, broadly described, pertain to the four titles of perfection named above: (1) the measure of how universal a judgment is, (2) the measure of the distinctness of a cognition, (3) the measure of truth in the judgment, and, (4) the measure of certainty in the judgment, i.e., the degree of holding-to-be-true the judgment commands.

The full description of these measures must call upon a number of properties of concepts and of the judgment of concepts. Because we have not yet undertaken to describe these properties, it is most appropriate to postpone this more detailed discussion until the groundwork has been more firmly laid. For now, it is enough for us to understand that the process of determining judgment does not act capriciously but, rather, toward the fulfillment of an ideal of understanding. This ideal, which is strictly formal in that its sole concern is with the *nexus* of the manifold of judgments as a whole, is the idea of the determining factor; we call it **the logical perfection of cognition**. Its manifestation in sensible representation is the ground of an appearance in which is exhibited the *noumenon* we may justly call “the whole truth.” With this idea, our 2LAR of the process of determining judgment is complete (at the second level of analysis). Figure 7.5.1 provides an illustration of this structure. We will next turn our attention from the ontology of the process of determining judgment to that of the determinant judgments themselves in Chapter 8.

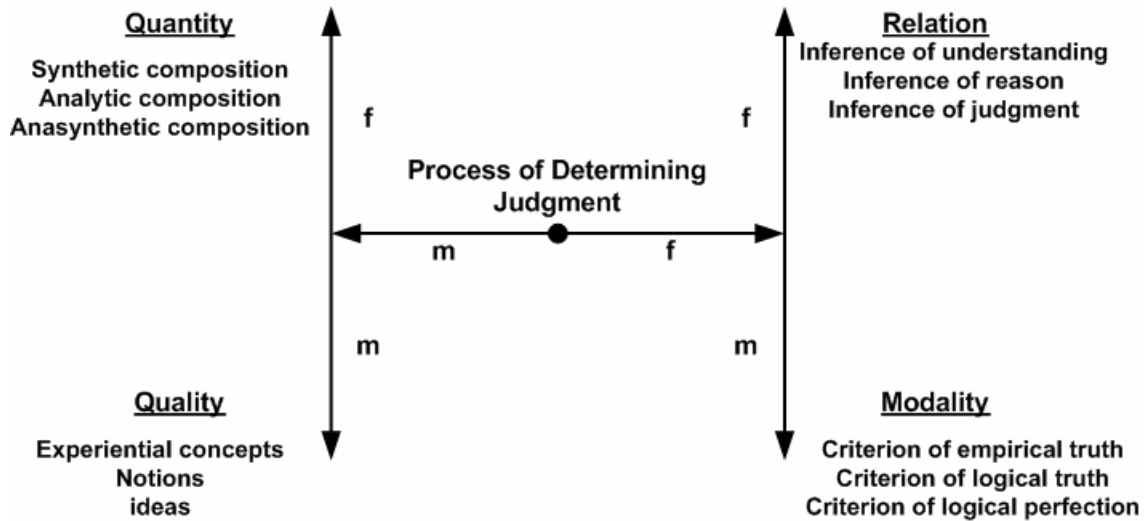


Figure 7.5.1: 2LAR of the Process of Determining Judgment