

## Chapter 12

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# The Context of Practical Reason

*Reason requires the fusion of two types of life, commonly led in the world in well-nigh total separation.*

Santayana

### § 1. The Context of Life

In our discussions so far we have made reference to “life” using a number of adjectives: affective, biological, mental, objective, organic, psychic, and subjective. In doing so, reliance has been placed on the reader’s ability to gain from the context of the discussion a more or less clear idea of what these terms meant in the context in which they were used. The time has now come when we must be more specific and distinct with our terminology involving the word “life.” One reason for this is, of course, Bernard’s warning that it is all too easy to use “life” as a cover for ignorance without even recognizing one is doing this. A second reason is because we need to understand the distinction between when we use the term in the context of “organic life” vs. our use of it in the context of “mental life.” As a matter of fact, the very idea of something called “mental life” was viewed anathematically in psychology from its proper beginnings in the nineteenth century<sup>1</sup> through much of the first half of the twentieth century. In the United States, it was not until 1960 that this idea became acceptable during what is now often called the “cognitive revolution” in American psychology.

“Life” is one of those words, like “emotion”, everyone thinks he understands until a definition is called for. The dictionary lists no fewer than 17 different definitions of the word “life”; eliminating those usages that are clearly more egregious usages of analogy or slang, we can trim this to 9 definitions:

**life**, *n.* [ME. *lif*; AS. *lif*, life]

1. that property of plants and animals which makes it possible for them to take in food, get energy from it, grow, adapt themselves to their surroundings, and reproduce their kind: it is the

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<sup>1</sup> The birthday of psychology is open to some dispute. Many psychologists associate the date with the work of Professor Wilhelm Wundt and his students, Max Friedrich and G. Stanley Hall, in December of 1879. However, a case can also be argued that psychology as a science began with the work of Helmholtz in 1850 or with that of Weber in the 1830s. Helmholtz, however, regarded himself as a physicist while Weber saw himself as a physiologist. Today Wundt is regarded as the principal founder of modern psychology.

- quality that distinguishes a living animal or plant from inorganic matter or a dead organism.
2. the state of possessing this property; as, we tried to bring the drowned child back to *life*.
  3. a living being, especially a human being; as, the cyclone took a heavy toll of *lives*.
  4. living things collectively, often of a specified kind; as, plant *life*.
  5. (a) an individual's animate existence; (b) an account of this; a biography.
  6. the existence of the soul; as, the eternal *life*.
  7. something essential to the continued existence of something else; as, freedom of speech is the *life* of democracy.
  8. the source of vigor or liveliness; as, she was the *life* of the party.
  9. the period of flourishing, usefulness, etc.; period during which anything lasts; as, most fashions have a short *life*.

In view of our quote from Bernard cited in Chapter 11, it may come as no great surprise that *none* of the above definitions are used by the life sciences, although the first definition perhaps comes the closest in inspiring biology's definition of the term. This is because none of these common, everyday definitions proves useful in the life sciences. If biology, broadly speaking, is the science of living things, it seems clear enough that some workable definition of that science's *topic* is required. But the definition of a topic is not the same thing as the *doctrine* of that topic; rather, it serves to delineate what is a "biological question" from a question that belongs to some other discipline, such as physics or history. Let us begin with biology's definition.

### § 1.1 Biological Life

While most of us probably feel quite comfortable with any or all of the dictionary definitions given above, those of us who are not biologists (or specialists in particular life science disciplines) might find biology's definition of "life" either somewhat peculiar or obscurely technical and perhaps even a bit cold when we compare it with the everyday usages:

**life:** Complex physico-chemical systems whose two main peculiarities are (1) storage and replication of molecular information in the form of nucleic acid, and (2) the presence of (or in viruses perhaps merely the potential for) enzyme catalysts. Without enzyme catalysis a system is inert, not alive; however, such systems may still count as biological (e.g. all viruses away from their hosts). Other familiar properties of living systems such as nutrition, respiration, reproduction, excretion, sensitivity, locomotion, etc. are all dependent in some way upon their exhibiting the two above-mentioned properties.<sup>2</sup>

Why such a technical and obscure definition? Primarily this is because the presence of nucleic acid and enzyme catalysts can be detected in a "biological system" and, in particular, these things are present in those "systems" that correspond to "living things" in the everyday usage of definition 1 above. As you might guess, the definition of biological life given here is of relatively recent origin.

We might also ask why this definition seems to hedge its bet in reference to viruses. To

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<sup>2</sup> From M. Thain and M. Hickman, *The Penguin Dictionary of Biology*, 10<sup>th</sup> ed., N.Y.: Penguin Books, 2000.

appreciate this, let us ask ourselves a question: What makes us think of something as “alive” in the first place? For the living things we encounter in everyday life, most of us base our judgment call on more grossly observable properties such as whether or not the thing grows or appears to move by itself under its own power or whether it has the capacity to reproduce itself. This is a common-sense view that stretches back in time at least as far as Aristotle (who seems to have been the first to require a definition in terms of properties that delineates the living from the non-living in a technically viable way). However, it is also readily apparent that not everything we regard as “alive” necessarily possesses *all* these gross properties. Most plants, for example, do not have any power of locomotion although they do grow and reproduce. Grass, bushes, and trees are examples of this sort. Mules are obviously animals, but they are sterile and cannot reproduce. In view of what we learned about the amoeba in Chapter 11, we might question whether an amoeba actually moves “under its own power” but amoebae certainly *do* reproduce and few of us would deny the amoeba the title of “living thing” once we’ve studied one under a microscope.

The presence of both nucleic acid and enzyme catalysts organized in a system is found, so far as we know, in every thing on earth that everyone can agree to call “alive”, and one or both are missing or are not “systematically organized” from every thing that everyone can agree to call “not alive” (as distinct from “having died”). We can dump nucleic acid and enzymes together in a test tube, but simply mixing them together in this fashion does not result in something that is called “alive”. Thus, the definition of biological life given here is a suitable and useful functional definition – a *Realerklärung* – for “life” as viewed by the life sciences. The only thing we know of that presents a difficulty in this picture is the virus.

A virus is a thing that is systematically organized and contains molecular ‘information’ in the form of nucleic acid<sup>3</sup>, but by itself it lacks any enzyme activity. Some biologists therefore regard the virus as a thing that is *not* alive – at least not until it invades a living cell in a host. Everyone agrees that a virus is an infectious agent and a parasite. Some microbiologists prefer to characterize them in terms of their being ‘active’ or ‘inactive’ rather than “alive” or “dead.” Some hold that the virus occupies a unique position halfway between inert molecules and living organisms. If biology is “the study of living things” then the virus is the question mark of biology. Indeed, biology officially defines itself not as “the study of living things” but, instead, as:

**biology:** Term coined by Lamarck in 1802. The branch of science dealing with the properties and interactions of physico-chemical systems of sufficient complexity for the term 'living' (or 'dead') to be applied.<sup>4</sup>

<sup>3</sup> Living cells contain two kinds of nucleic acids: deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). A virus never contains both.

<sup>4</sup> taken from Thain’s & Hickman’s *Dictionary*.

To this is added the provision that viruses are to be regarded as “biological systems” but not as “organisms.” An organism thus becomes any biological system<sup>5</sup> that is not a virus.

## § 1.2 The Historical Themes of “Life”

As mentioned above, the definition of biological life is of relatively recent origin. A not-insignificant factor, although by no means the only one, in effecting the change to the new definition was the discovery in 1953 credited to James Watson and Francis Crick at Cambridge University of the double-helix structure of DNA. Of course, once biological life gained its modern definition, the definition of biology, the science of living things, needed to change in conformity. Here is a riddle for those of us who are not biologists: Inasmuch as biology is one of the oldest sciences<sup>6</sup>, with roots dating back arguably to Alcmaeon of Croton (*c.* 500 BC), what did biologists think they were doing for all that time?

This question is, of course, facetious. Biologists long had descriptions of the object of their study. Here is how *Encyclopædia Britannica* described it in 1957:

It is first essential to understand what is meant by a living organism. The necessary and sufficient condition for an object to be recognizable as a living organism, and so to be the subject of biological investigation, is that it be a discrete mass of matter with a definite boundary, undergoing continual interchange of material with its surroundings without manifest alteration of properties over short periods of time and, as ascertained either by direct observation or by analogy with other objects of this same class, originating by some process of division or fractionation from one or two pre-existing objects of the same kind. The criterion of continual interchange of material may be termed the metabolic criterion, that of origin from a pre-existing object of the same class the reproductive criterion.

The word is not used, but “a discrete mass of matter with a definite boundary undergoing continual interchange of material with its surroundings without manifest alteration of properties over short periods of time” is a phrase that can be (and usually is) abbreviated by the term **biological system**. Note that this description does not specify “life” *per se*, but rather what is to be understood by the term “living organism.” What we have here is a 20<sup>th</sup> century descendent of a view of what is to be regarded as a “living thing” that started with Aristotle (who was not the least hesitant about using the word “life”).

This description belongs to one of two broad historical “themes” by which mankind has looked at the question of “life.” We will call the theme to which this description belongs the

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<sup>5</sup> Perhaps you are wondering what a “biological system” is. Truth be told, I sometimes wonder, too. Biology, like most sciences, does not actually give the word “system” an official technical definition. We can get by well enough with Piaget’s definition, i.e., “a complex of elements in non-contingent interaction,” but it is worth our while to note that, at root, the question, “what is a biological system?” ties back to our earlier issue of what we mean by the term “individual.” See the text above.

<sup>6</sup> Biology has been around far longer than its name has been. Credit for coining the name “biology” is assigned, depending on who the historian is, to either G.R. Treviranus (1776-1837) or Jean Baptiste de Lamarck (1744-1829).

“theme of mechanism”; the other theme we will call the “theme of vitality.” The latter is the older of the two, had the greatest longevity, but is no longer a theme accepted by science. As you rightly suspect, the theme of vitality led directly to vitalism in the life sciences (although the term “vitalism” was coined in opposition to the theme of mechanism only after the mechanism theme was developed).

Broadly speaking, these two themes are characterized by how one looks at two questions. The first is: Is there an absolute break between the world of living beings and the domain of inanimate things, or is the continuity of nature preserved across the line dividing organic and non-organic matter? The second question is: Is the difference between the non-living and the living one of kind or of degree? Those who hold there is an absolute break have, historically, also tended to hold that the difference between living and non-living things was a difference in kind. This constitutes the theme of vitality. Those who hold out for the continuity of nature being preserved across the “dividing line” also have historically tended to regard the answer to the second question to be that the difference is a difference in degree. This constitutes the theme of mechanism. There is also a third theme which is most commonly associated with primitive people but, interestingly enough, was also the position held by the Roman emperor and philosopher Marcus Aurelius. This theme holds that everything is alive, that there is no such thing as a non-living body, and that everything has a “soul.” Leibniz sometimes seems to drift perilously close to this theme with his monads. This third theme, which does not concern us here, is often called “animism” or “panpsychism.”

Prior to the time of Descartes, the theme of vitality was the *only* viewpoint from which the question of “life” was regarded by science and natural philosophy. This might seem a bit strange when we remember that Lucretius was an atomist and held to a mechanistic philosophy. However, Lucretius believed that among the “atoms” there were “soul atoms” and that the difference between living and non-living things was due to the former being comprised in part of “soul atoms.” He therefore, despite his materialist position, belongs to the theme of vitality rather than the theme of mechanism.

### Aristotelian Vitality

Let us look at the oldest scientific description of “life”, namely that of Aristotle. Despite the condescending (and sometimes derisive) tone with which modern science writers often speak of Aristotle, the fact remains that Aristotle’s approach to science is much more in harmony with the modern-day view of scientific investigation than not.

Lack of experience diminishes our power of taking a comprehensive view of the admitted facts.

Hence those who dwell in intimate association with nature and its phenomena are more able to lay down principles such as to admit of a wide and coherent development, while those whom devotion to abstract discussions has rendered unobservant of the facts are too ready to dogmatize on the basis of a few observations. The rival treatment of the subject now before us will serve to illustrate how great is the difference between a scientific and a dialectical method of inquiry [ARIS8: 515 (316<sup>a</sup>5-11)].

Indeed, the history of biology owes many of its most basic ideas and viewpoints to Aristotle. He was, for example, the first to define the idea of an organism and to describe “life” in terms of basic observable properties and traits.

This does not mean Aristotle did not incorporate a “vital element” in his theory. Quite to the contrary, vitalism owes its roots to the Aristotelian theory. Aristotle’s principal treatment of the topic is contained in his *Peri Psyches* (usually translated as “On the Soul”) [ARIS9]. However, we should bear in mind that Aristotle’s word “soul” (*psyche*) bears little or no resemblance to the word “soul” in religious theology. It is rather more like our term *psyche* in the Organized Being model, although it differs from our usage in some fundamental ways. Aristotle’s *On the Soul*, despite the first impression this title may give the modern reader, is a work of physics in the Aristotelian sense. As we might expect, Aristotle describes “soul” in terms of his metaphysical ideas of potentiality and entelechy.

We have now given a general answer to the question, What is soul? It is substance [*ousia*] in the sense which corresponds to the account of a thing. That means that it is what-it-is-to-be for a body [*somati*] of the character just assigned . . . Suppose that the eye were an animal - sight would have been its soul, for sight is the substance of the eye which corresponds to the account, the eye being merely the matter [*hyle*] of seeing; when seeing is removed the eye is no longer an eye, except in name - no more than the eye of a statue or of a painted figure. We must now extend our consideration from the parts to the whole living body; for what the part is to the part, that the whole of the senses is to the whole sensitive body as such.

We must not understand by that-which-is-potentially-capable-of-living what has lost the soul it had, but only what still retains it; but seeds and fruits are bodies which are potentially of that sort . . . The body corresponds to what-is in potentiality [*dynamei on*]; as the pupil *plus* the power of sight constitutes the eye, so the soul *plus* the body constitutes the animal [ARIS9: 657 (412<sup>b</sup>10 - 413<sup>a</sup>3)].

Matter and form (*eidos*) are the two “ontological moments” of Aristotelian substance. They are what we previously described as the ‘static’ elements of Aristotle’s metaphysical system. The ‘dynamical elements’ are potentiality (*dynamis*) and actuality. Aristotle draws a fine distinction in the use of this latter term. *Entelechy*<sup>7</sup> is “actuality” in the sense of “complete actuality” – what we might loosely call “the fullness of a thing’s being.” *Enérgeia*, on the other hand, is “actuality” in the sense of “becoming actual.”

Matter [*hyle*] is potentiality [*dynamis*], form [*eidos*] is entelechy [ARIS9: 656 (412<sup>a</sup>9-10)].

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<sup>7</sup> The word entelechy derives from the Greek *en telei echein*, which translates more or less as “to hold in completion.”

Aristotle uses these concepts to define what it is for a thing to be living. First of all, he classifies “living beings” into three broad categories: vegetative, sensitive (or “animal”) and rational beings. The distinction is made on the basis of the being possessing certain attributes or properties.

Among substances are by general consent reckoned bodies and especially natural bodies [*somatos physiku*], for they are the principles of all other bodies. Of natural bodies some have life in them, others not; by life we mean self-nutrition and growth and decay. It follows that every natural body which has life in it is a substance in the sense of a composite.

Now given that there are bodies of such and such a kind, viz. having life, the soul cannot be a body; for the body is the subject or matter, not what is attributed to it. Hence the soul must be a substance in the sense of the form of a natural body having life potentially within it. But substance is entelechy, and thus soul is the actuality of a body as above characterized . . .

That is why the soul is an entelechy of the first kind of a natural body having life potentially within it. The body so described is a body which is organized [*organiku*]. The parts of plants in spite of their extreme simplicity are organs; e.g. the leaf serves to shelter the pericarp, the pericarp to shelter the fruit, while the roots of the plants are analogous to the mouths of animals, both serving for the absorption of food. If, then, we have to give a general formula applicable to all kinds of souls, we must describe it as an entelechy of the first kind of a natural organized body. That is why we can dismiss as unnecessary the question whether the soul and the body are one; it is as though we were to ask whether the wax and its shape are one, or generally the matter of a thing and that of which it is the matter. Unity has many senses (as many as 'is' has), but the proper one is that of entelechy [ARIS9: 656-657 (412<sup>a</sup>12 - 412<sup>b</sup>9)].

We may compare this with “living organism” as given in the 1957 description above. They have in common the idea of an “organized body” or “organism.” They also have in common the idea of an “interchange” between the organism and its surroundings (i.e. self-nutrition). Inasmuch as Aristotelian “growth” and “decay” do not take place in “a short period of time” but that “growth and decay” does take in “reproduction”, the two descriptions also share that attribute in common. What is strikingly different is that the 1957 description contains no mention of the more metaphysical ideas of potentiality and entelechy. The 1957 description is not a definition of “life” but rather of “living organism.”

At the risk of starting an argument, we might ask if these two ideas (potentiality and entelechy) do not lie implicit in the reasoning behind modern biology’s new definition of “life” in terms of nucleic acids and enzyme catalysts. These two factors make it into the present definition of biological life precisely because they are at the root of modern scientific explanations of biological development, growth, and evolution. The ability to explain these phenomena in terms of nucleic acids and enzymes is what makes these things of such great importance; but, we could argue, their significance is vested precisely in “what happens because of them” and this is little different in a dynamical sense from Aristotle’s idea of entelechy.

“Nutrition, growth, and decay” are the primary attributes of all living things, Aristotle tells

us, but among the variety of living things we also find additional properties by which we can make further classifications.

We resume our inquiry from a fresh starting-point by calling attention to the fact that what has soul in it differs from what has not in that the former displays life. Now this word has more than one sense, and provided any one alone of these is found in a thing we say that thing is living - viz. mind [*nous*], or sensation [*aisthesis*], or motion [*kinesis*] or rest [*stasis*] in place, or motion in the sense of nutrition and decay or growth. Hence we think of plants also as living, for they are observed to possess in themselves an originative power through which they increase or decrease in all spatial directions . . . and that holds for everything which is constantly nourished and continues to live, so long as it can absorb nourishment.

This power of self-nutrition can be separated from the other powers mentioned, but not they from it - in mortal beings at least. The fact is obvious in plants; for it is the only psychic power they possess.

This is the originative power, the possession of which leads us to speak of things as living at all, but it is the possession of sensation that leads us for the first time to speak of living things as animals; for even those beings which do not move or change their place but have sensation we call animals and not merely living things.

In the case of mind or the power of contemplation nothing is yet clear; it seems to be a different kind of soul, differing as the immortal differs from the perishable; it alone is capable of being separated. All the other parts of soul, it is evident from what we have said, are, in spite of certain statements to the contrary, incapable of separate existence though, of course, distinguishable by definition [ARIS9: 658-659 (413<sup>a</sup>21 - 413<sup>b</sup>30)].

Aristotle's three-way classification has come to be called the vegetative soul, the sensitive or animal soul, and the rational soul. *Mind* and the power of rational thinking is what sets the "rational soul" apart from the "animal soul", and this highest form of soul belongs, Aristotle tells us, to man alone. That is what he means when he says it can be set apart from the others.

One thing, however, must be made clear: Any particular living thing has only *one* Aristotelian soul, and this soul is the form that is welded with the matter to constitute the body. In other words, the Aristotelian soul and the Aristotelian body are *inseparable*; they comprise a single Aristotelian substance for which "soul" is the "first entelechy." Need it be said that Aristotle was no scholastic theologian?

Aristotle's three classes of "souls" are a hierarchy, with "plant-ish soul" occupying the lowest rung, followed by "animal soul" and, lastly, the "rational soul" as the highest form. In this progression, each successively higher form subsumes the lower properties. There are no living things which possess sensation or the power of spontaneous locomotion (*kinesis* in place) but do not possess the attributes of self-nutrition, growth, and decay. Likewise, man (the "rational soul") also is found to possess sensation, self-nutrition, etc.

Aristotle's theory goes on to contain many more considerations, which he expounds in oftentimes dreary detail. His theory, which passed on through the centuries through the works of his successors, contains a sufficient amount of obscurity to fire debates and rival interpretations



that enlivened philosophy and speculation for centuries. We will not delve into these, nor will we discuss the failures of Aristotle's biological theory (which, we will kindly remember, he had to formulate without the benefit of even such elementary instruments as the microscope). It is enough for us to know that his work set the stage of biology for centuries to come.

### Post - Aristotelian Vitality

Perhaps no man in history has been more reincarnated, re-invented, and rehabilitated than Aristotle. As we noted earlier, this process began in earnest with the Neo-Platonist and was further carried out by the scholastics, particularly St. Thomas Aquinas, in the middle ages. In this process, "soul" took on a different meaning. It ceased to be an entelechy and became instead a "power" commanding rather than "in-forming" the material body. For both the Neo-Platonist and for the scholastics "soul" gained something Aristotle had never given it, namely a religious and mystic character.

Interestingly enough, the doorway for this transformation is Aristotelian "chemistry." The Greeks recognized four "elements": Earth, air, fire, and water. In order to explain growth and decay ("coming-to-be" and "passing-away"), Aristotle modified this picture with his doctrine of four primary "qualities": Hot, cold, wet, and dry. The 'elements' were to be viewed as being composed of combinations of these. Earth was the combination of cold and dry; water was cold and wet; air was hot and wet; and fire was hot and dry [BARN: 151]. These four qualities Aristotle viewed as the "powers" (*dynameis*) operating in *kinesis*. In terms of Aristotelian dynamics, the elements are associated with Aristotelian matter, the power with *enérgeia* – the process by which a form is realized and which leads to its "completion" (*entelechy*).

For Aristotle the biologist, one of the more important phenomena that theory is called upon to explain is that of biological reproduction. Here, in a few brief and somewhat obscure remarks, he opens the door to later vitalist interpretation. The issue is this: in reproductive *kinesis* there must be a "mover" (cause) of this *kinesis*, and in plants and animals this appeared to Aristotle to be a process that required the transference and transformation of substances, e.g. from father and mother to the embryo. Now this can be viewed as a kind of process of nutrition, but what is the nature of this nutritive process?

But what does come-to-be in growth is flesh or bone . . . Such things come-to-be, then, by the accession not of a quantity of flesh but of a quantity of something. In so far as this acceding food is potentially the double result - e.g. is potentially a quantity of flesh - it produces growth; for it is bound to become both quantity and flesh; but in so far as it is potentially flesh only, it nourishes; for it is thus that nutrition and growth differ by their definition . . .

The form is a kind of power [*dynamis*] in matter [*hyle*] - a flute<sup>1</sup>, as it were. If, then, a matter accedes which is potentially a flute and also potentially possesses determinate quantity, then these flutes will become bigger [ARIS8: 527 (322<sup>a</sup>20-30)].

Aristotle held that in sanguine animals – animals that have blood – this nutritive matter is carried in the blood and that it needed to acquire the quality of “being hot” in order to realize the reproductive process<sup>2</sup>. The direct bearer of the entelechy of the offspring – it’s “soul” – Aristotle called the *pneuma* (“breath”). This is one of Aristotle’s less well-defined terms, and later Christian writers would use the word *pneuma* to mean “spirit.” Aristotle himself does not seem to confine his use of *pneuma* strictly to living organisms, and in his *Generation of Animals* he likens it to “hot air” and to the “vital heat” that warm-blooded animals exhibit.

The part *pneuma* plays in the process seems to be somewhat analogous to the role that caloric played in 18<sup>th</sup> century thermodynamics. Aristotle himself seemed to put scant effort into his *pneuma* theory, and the term itself did not enter into early Christian thought from Greek philosophy, but rather from the writings of St. Paul and St. Augustine. However, I think you can probably see the hook that has been set by this idea.

One more thing is needed to finish setting the stage for what follows, and this is the allegedly Aristotelian theory of *theos* (“god”). The principal source for this theory is Book XII of Aristotle’s *Metaphysics*. This book, we recall, seems to stand alone in the metaphysical *corpus*, and while no Aristotle scholar that I am aware of claims this book is not genuine Aristotle, it poses a number of seeming contradictions with the rest of Aristotelian theory. Indeed, what is usually called “Aristotle’s dualism” arises in great measure from this book. In brief, though, *theos* is the “unmoved prime mover” – the original cause of all other causes of *kinesis*. “God” is not, for Aristotle, a creator – that idea is alien to Greek thought – nor an individual “being.” Rather, *theos* is in the role of Parmenides’ self-sufficient Entity. All “modes of being” are merely “inflections” (not species) of this Entity [MARI: 73-74]. It seems to me that the Aristotelian *theos* has nothing at all in common with any modern idea of deity. Its nearest equivalent, if it existed, would be the idea of an absolutely first principle in physics – the “primary law” with respect to which all other physical laws would be merely “inflections.”

With all this in mind, let us now look at the developments that followed Aristotle. We will distinguish three periods: later Greek and Roman thought; Arabian philosophy and science; and the “Aristotelian period” of European thought.

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<sup>1</sup> *aulos*. Literally this refers to the musical instrument, but Aristotle is not using it this way. In architecture a groove in a shaft or column is called a *flute*, and this is the sense that Aristotle is using here. The connotation is rather like that of a duct or channel that the “power” produces in the *enérgeia* of nutrition.

<sup>2</sup> In non-sanguine animals and in plants there were analogous parts that served this function.

**A. Later Greek and Roman Thought:** The scientific and empirical character of Aristotle's school did not long survive him. Aristotle himself does not seem to have had any great interest in plants, but his successor, Theophrastus, did; his botanical works would stand for centuries as the authoritative work in this subject. However, the successor to Theophrastus, Strato the Physicist, would take the Peripatetic School in a different direction. Strato's works have been lost, but from other ancient commentators we know he held that the "forces" governing events dwell "in the things themselves" and operate by "natural necessity." Strato turned the Aristotelian "soul" into a force *inhabiting* the body, for which the brain was the organ. After Strato, the Peripatetic school turned its attentions to questions of grammar, literature, and ethics; its keen interest in natural philosophy disappeared entirely.

In the meantime, Plato's Academy was undergoing major changes of its own. Within a century of Plato's death, the Academy had been completely transformed. For centuries to come, this "New Academy" would be known for and equated with skepticism. Not until Antiochus of Ascalon (*d.* 68 BC) took over the leadership of the Academy would this change. Antiochus, Cicero tells us, held that the Academy had "lost the true doctrine of Plato." Calling the school under his leadership the "Old Academy," he turned it on a path that would make definite its transition to eclecticism.

In parallel with all this, two other philosophical schools had come into being: the Stoics and the Epicureans. Thus by the time of Cicero we find the three main schools of thought to be the Stoics, the Epicureans, and the Academics. Cicero studied philosophy under all three systems. His teachers included: 1) Philo of the New Academy; 2) Antiochus of the Old Academy; 3) Diadobus the Stoic; 4) Phædrus the Epicurean; and 5) Zeno the Epicurean. Much of what we know of the character and flavor of these schools we owe to Cicero, principally through his books *De Natura Deorum* ("On the Nature of the Gods"), *Academica*, and *De Finibus Bonorum et Malorum* ("On the Ends of Goods and Evils"). Eclecticism was not recognized as a school as such; the Eclectics, of whom Cicero is the most important example, were in a sense moderators and conciliators. The three "real schools" agreed with each other that:

- 1) the senses are the sole source of knowledge;
- 2) "matter" is the sole reality; and,
- 3) happiness depends on peace of mind.

Outside of this, they agreed upon very little else, and within this they fundamentally disagreed on the details.

The Epicureans were atomists and materialists in the present-day sense of the word materialism. Epicurus (341 - 270 B.C.) was himself an "evolutionist" and believed in natural selection. Even the gods were supposed to be beings constructed from atoms, and the Epicurean

deities paid no attention to the affairs of mankind. The universe was supposed to be purely mechanical and have no teleological end. As for the “soul”, it was supposed to be a mixture of fire, air, *pneuma*, and an “unnamable” (*akatanomaston*) fourth constituent. At death, the soul atoms “dissolve” because “they are no longer held together by the body” [ZELL: 236-237]. Perception, movement, thought, etc. are supposed to be effects of the activity of the soul. “Will” is supposed to consist in movements produced by representations in the soul and transmitted by it to the body. As such, the will is maintained to be “free” and has a character of indeterminism about it, which would seem to be at odds with the purely mechanical nature of the Epicurean universe. Logic was not a particularly strong point with the Epicureans.

All this was strongly opposed by the Stoics as well as by the Academics. The Stoics were ruthlessly logical; indeed, stoicism made important contributions to the later logic of the Western world. They, too, were materialists but not atomists. All “substances” were supposed to be corporeal, including the human soul and the deities. The Stoics drew a distinction between “matter” and “forces.” Matter by itself is without “qualities.” All “qualities” of things are derived from a “rational force” that permeates the thing. This rational force they called *logos* (literally, “the word”) and is supposed to be God – the soul, mind, and reason (*logos*) of the world. All elementary substances are supposed to continually pass into one another such that the universe is constantly in a state of change. Inorganic substances are supposed to be inorganic because the “creative *pneuma*” in them is mere cohesion. In plants, the *pneuma* is a formative force of nature; in animals it is a desiring soul; in humans, the *pneuma* is a rational soul. Consciousness is supposed to be caused by the close connection of body and soul and from this comes “self-love” and the instinct for self-preservation. The “corporeal soul” of man is derived from a “divine fire” that descends from the *aether* (i.e., from the heavenly bodies) into the body of man at birth. This “divine fire” is supposed to be nourished by the blood and is lodged in the center of the heart, from whence it puts out “offshoots” to form the senses, power of speech, and so on. At death, the soul separates from the body and returns to God (and, hence, is immortal) [ZELL: 218-219].

It would be difficult to overstate the importance of Stoic thought in the Roman empire. The Stoics themselves were uninterested in empirical science, and this attitude meshed well with the views of the thoroughly ‘practical’ Romans. Even medicine, where one would nowadays think the importance of “science for knowledge’ sake” would be obvious, the Romans regarded as wholly a practical art, needing no “theorizing.” Among the important Roman figures only Julius Caesar seems to have taken the opposite view; his assassination has been called “the heaviest blow biology suffered in antiquity.”

With regard to all this, Antiochus’ “Old Academy” and the eclecticism that arose from it was much in agreement with the Stoics in their opposition to Epicurean philosophy. The Roman eclecticism that arose from the melding of these diverse views was a system of compromises,

given mainly to the philosophy of ethics and the neglect of science. They set the stage and prepared for the last gasp of classical philosophy: Neo-Platonism.

Before we pass on to this last movement, we need to mention two men – one a Stoic, the other an Eclectic – who would prove important to what of science would be transmitted to Europe through the Dark Ages. The first is Gaius Plinius Secundus, known to history as Pliny the Elder (AD 23-79). Pliny was a soldier, lawyer, provincial administrator, a naturalist, and one of the most prolific Roman writers. He is probably best described as a “modified Stoic.” Almost all his works have been lost to history except one: the mammoth thirty-seven “book” encyclopedia *Historia Naturalis*. Pliny’s natural history is an odd and often naive compendium of classical science, drawn principally from Aristotle’s biology and Theophrastus’ botany, side by side with the most appalling myths and absurdities. Pliny covers 20,000 topics in which we find such assertions as the “fact” that “At Perpenna a spring turns to stone any land it irrigates . . . Whatever rocks the stream reaches increase in size.” Durant has called the *Historia* “a lasting monument to Roman ignorance.” Yet, for all this, Pliny’s influence was second only to Aristotle in late antiquity and middle age biology. The *Historia* was made a standard textbook in the middle ages, and Renaissance-era zoologists such as Gesner and Aldrovandi took up where he left off.

The other great figure was Galen the Physician (AD 131 - 210). Galen has been called, and deservedly so, “the last great biologist of the classical world.” In his works, we find him combining the biology of Aristotle and Theophrastus with the increasingly mystical trends of Eclectic thought. Galen revered Hippocrates and was almost violently anti-atomism. He believed in a “Creator” of the world and somehow or other knew something of the Mosaic story of creation. In Galen we find the first important and unreserved vitalist.

But nature does not preserve the original character of any kind of matter; if she did so, then all parts of the animal would be blood - that blood, namely, which flows to the semen from the impregnated female and which is, so to speak, like the statuery's wax, a single uniform matter, subjected to the artificer. From this blood there arises no part of the animal which is as red and moist, for bone, artery, vein, nerve, cartilage, fat, gland, membrane, and marrow are not blood, though they arise from it.

And what is the semen? Clearly the active principle of the animal, the material principle being the menstrual blood. Next, seeing that the active principle employs this faculty primarily, therefore, in order that any one of the things fashioned by it may come into existence, it must necessarily be possessed of its own faculty . . . And, thirdly, the shaping faculty will become evident, by virtue of which the semen first surrounds itself with a thin membrane like a kind of superficial condensation; this is what is described by Hippocrates in the sixth-day birth . . .<sup>3</sup>

It has been said that Galen’s views on the heart and the blood were an obstacle to biology for the next 1500 years.

Finally, let us turn to the Neo-Platonists. We have looked already at their views when we

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<sup>3</sup> Galen, *On the Natural Faculties*, Bk. II, iii.

discussed the evolution of logic transmitted to the middle ages. We can admire the desire to synthesize the philosophies of Plato and Aristotle, and we can marvel at the impact they had upon subsequent history; but let us not be too generous. Neo-Platonism was mysticism and sophistry, not science. The so-called “theory of emanation” that was the centerpiece of Neo-Platonism was both theosophy and theurgy. The Neo-Platonists held that one could achieve direct contact with divine principles through mere contemplation or through revelation. They held that spiritual insight was superior to empirical knowledge. Many of them professed to be able to work miracles through the intervention of spirits. When Plotinus refers to the “soul” he means it in the mystic and religious connotation that word has for us today.

Pleasure and distress, fear and courage, desire and aversion; where have these affections and experiences their seat?

Clearly, either in the Soul alone or in the Soul as employing the body, or in some third entity deriving from both.

But if Soul and Essential Soul are one and the same, then the Soul will be an Ideal-Form unreceptive of all those activities which it imparts to another kind, but possessing within itself that native Act of its own which Reason manifests.

If this be so, then, indeed, we may think of the Soul as an immortal - if the immortal, the imperishable, must be impassive, giving out something of itself but itself taking nothing from without except for what it receives from the Existents prior to itself from which Existents, in that they are nobler, it cannot be sundered . . .

We may treat of the Soul as in the body - whether it be set above it or actually within it - since the association of the two constitutes the one thing called the living organism, the Animate [PLOT: 1-2].

It has been rightly said that with the Neo-Platonists the philosopher ceased to be a lover of wisdom and became a lover of piety. But, through its influences on Christian theology in its infancy – particularly through St. Augustine and in the Eastern Roman Empire – and through the influence their commentaries on Aristotle exercised in both the Arabian and European worlds, these are the men whose reincarnation of Aristotle would produce the traditional Aristotle of scholasticism and the middle ages.

**B. Moslem Scholasticism:** It is nothing short of remarkable how little most people in the Western world of today know of the debt we owe to the Arabian scholars of the 8<sup>th</sup> through the 12<sup>th</sup> centuries for keeping the knowledge of classical antiquity alive as Europe descended into the Dark Ages. The Arabians preserved Greek mathematics and made important contributions of their own to this field. (The word “algebra” is Arabian, and we today use the “Arabic numerals” for our number symbols). They held and preserved biology through the middle ages. And they transmitted the main *corpus* of the works of Aristotle to a re-awakening Europe.

Still, this preservation was not accomplished without distortion. Aristotle did not pass directly to the Arabian world from Greece. It went by way of Syriac translations, where Neo-Platonism held great influence and where the translators did not always take pains to distinguish Aristotle's words from those of his Neo-Platonist commentators. The Syriac translations, in their own turn, were translated into Arabic following the Islamic conquest of Syria in the 7<sup>th</sup> century. By this time the old Western Roman Empire was gone beyond recall and, while Christian Byzantium still remained, the Byzantines had little taste for science and what little "philosophy" they did engage in was theology. In Syria, however, Greek culture and knowledge was still in good health, if we ignore the Neo-Platonism that held sway there, and when Islam arrived it discovered this intriguing treasure.

By the middle of the ninth century most of the surviving Greek works in philosophy, mathematics, astronomy, and medicine had been translated into Arabic. The years from the ninth to the close of the twelfth centuries were an Islamic Renaissance in which the great Arabian scholars not only took from the best of the Greeks but made their own original advancements. Among their many accomplishments, we can credit them with the first true introduction of experimental methods in science, where the researcher takes an active role and not merely that of an observer, and the invention of chemistry as a science. It is true enough that these activities were confined largely to physics and to inorganic chemistry rather than biology; the Koran forbade the dissection of human cadavers. Yet the advances made by Arabian science were substantial and gifted much to the later development of European science.

In biology and medicine the Arabian scholars began with Aristotle and Galen but they did not confine themselves to merely taking these "authorities" as giving the final word on the subject. These men were original thinkers and added to these subjects findings and considerations that built upon their imported Greek knowledge. Yet the guise under which they did so was one which at first glance may seem rather curious, and which did have its consequences for later European thought. Durant has said, "It was the misfortune of Islam and of humanity that Plato, and even Aristotle, came into Moslem ken chiefly in Neoplatonic form"<sup>4</sup>; perhaps so, but in another way perhaps not.

For the Arabian scholars sought to reconcile Greek philosophy with Islam. In this sense, the period we are discussing has been characterized as Moslem Scholasticism. Islamic doctrine holds that the Koran is the source of all learning and contains all the knowledge that man requires. Consequently, the Arabian scholars had to tread carefully, on guard against the more extreme of the orthodox authorities, who viewed the pagan Greek writings with deep hostility. Consequently, the great Arabian scholars masked their own original works in the guise of commentaries on the

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<sup>4</sup> Will Durant, *The Age of Faith*, N.Y.: MJF Books, 1950, pp. 239-257.

works of the Greek authors. Indeed, later European scholasticism would find it difficult to distinguish what belonged originally to Aristotle, Galen, and others from what was added to their work by the makers of the Arabian Renaissance. Had it not been for the Neoplatonists' corruption, which dosed Aristotle and others with a "soul theory" that could be adapted to the teachings of the Koran, it is conceivable that the great works of classical antiquity would have passed from the world altogether.

Be this as it may, the Arabian method of "commentaries" was later copied by the Scholastics and played no small part in scholasticism's authoritarianism – the viewing of Aristotle, Galen, etc. as "the authorities" whose opinions and doctrines could be appealed to without need of any appeal to experimental science. The point here is that what gets transmitted later to Europe is not the undiluted thought of Aristotle but of an Aristotle painted over, first by Neo-Platonism then by Moslem Scholasticism. He would receive yet another coat of paint from Christian Scholasticism.

We will not, in this brief summary, neglect the substantial contributions of the Arabians. These men, too, made important and fundamental contributions to Europe's intellectual rebirth. Unfortunately, it is difficult to provide much detail here. As Walzer has noted,

It appears premature, at the present time, to embark on a history of Islamic philosophy in the Middle Ages. Too many of the basic facts are still unknown. New texts are constantly being discovered. Not all the manuscripts known are available in critical editions, or indeed published at all. Very few commentaries of any standing exist and scarcely any monographs on essential topics. Very few texts - apart from those translated centuries ago into medieval Latin - can be read in translation.<sup>5</sup>

We will limit ourselves to merely mentioning three great thinkers whose work exercised a profound and direct influence on the development of European thought. Abu Ali al-Husein ibn Sina, known to the west as Avicenna (AD 980-1037), is regarded by many as Islam's greatest philosopher and by all as Islam's most famous physician. His portrait hangs in the school of medicine at the University of Paris. According to Durant, he wrote a hundred books "covering nearly every field of science and philosophy." The most important of these, for biology, was the *Qanun-fi-l-Tibb* or *Canon of Medicine*. It deals with natural philosophy, major diseases and their diagnosis and treatment, anatomy, and physiology. Next to Galen, he was the chief "authority" in medical science – such as it was – in the Middle Ages. As seems to be the case for all the Moslem scholastics, it is laced with Neo-Platonism; Avicenna's Aristotle is the Neo-Platonist Aristotle.

Avicenna may be the most famous Arabian physician, but he is not held to be the greatest Islamic physician. That title goes to Abu Bekr Muhammad al-Razi, later known as Rhazes (AD 844-936). Rhazes' *Kitab al-Hawi* or *Comprehensive Book* is a twenty-volume treatise covering every branch of medicine. It was translated from Arabic into Latin as *Liber continens* and has

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<sup>5</sup> R. Walzer, "Early Islamic Philosophy," in *The Cambridge History of Later Greek & Early Medieval Philosophy*, A. H. Armstrong (ed.), Cambridge, UK: Cambridge University Press, 1991, pg. 643.



been described as the most highly respected and frequently used medical textbook in Europe for several centuries. His treatise on smallpox and measles was still in print in 1866.

Lastly, we come to the man who has been called by some “the Aristotle of Islam.” Abu al-Walid Muhammad ibn Rushd, more well-known as Averroës (AD 1126-1198), was the last of the great Moslem scholastics, the greatest natural philosopher among them, and, in his impact on European thought, one of the most influential figures in not only Islamic but also Scholastic philosophy. Averroës was a physician, lawyer, and philosopher. He was the first to explain the function of the retina and to recognize that survivors of smallpox were thereafter immune to the disease. He wrote an encyclopedia of medicine that was subsequently translated into Latin and used as a text in European universities. But, above all, he was known in Europe as “the great commentator” on Aristotle.

This last title, however, is more than a little misleading. Averroës’ “commentaries” go well beyond Aristotle and include much original thought. Averroës did not know Greek and so prepared his commentaries from Arabic translations of Syriac translations of Aristotle’s works. He replaced Aristotle’s extremely abstract distinction between potentiality and actuality, arguing that nothing exists potentially that does not already exist in reality, however undeveloped and unrecognized this thing may be. The Aristotelian *enérgeia* becomes, with Averroës, much more similar to our modern idea of energy. Matter becomes “universal potentiality.” Finally, he develops a rather obscure Aristotelian distinction between “active intellect” and “passive intellect.” In *On the Soul*, Aristotle had introduced the vaguely expressed idea of a *nous poietikos* or “active mind” in contrast to his “wax tablet” model of how the mind receives “impressions” of the senses. The wax tablet or “passive mind” is, in man, accompanied by the “active” capacity of man to think and reason. Unfortunately, Aristotle did not see fit to go into much detail with regard to this active mind idea. Later commentators, especially the Neo-Platonists, would seize upon this reference to transform Aristotle’s doctrine into an “emanation theory” in which “the soul” could be made immortal and immaterial. Averroës constructed from this an entire hierarchy of order and intellect ranging from God at the highest point and emanating “down” to everything else in various degrees. For Averroës, the “passive mind” is material and dies with the body; the “active mind” goes on forever.

Now, as noted earlier, these original contributions by Averroës were couched in the guise of commentaries on Aristotle. The European Scholastics seem to have not been capable of making the distinction between what was Aristotle’s and what was Averroës’ in these commentaries, particularly since most translations of Aristotle available in Europe were Latin translations of Arabic translations of Syriac translations which had contained numerous Neo-Platonic paraphrases of Aristotle’s words. This brings us to the third leg of post-Aristotelian vitality.

**C. The European Aristotle:** We have previously marked the pathways by which Aristotle re-entered medieval Europe. Likewise, we have already noted that the Scholastics were theologians first, philosophers second. Let us remind ourselves of the general state of European thought at the time of Aristotle's re-introduction. Scholasticism in its original development was Augustinian; the teachings of St. Augustine had a Neo-Platonic flavor and an utter absence of Aristotle. When Aristotle did make his re-appearance in Europe, it was first through the enthusiastically-received "new logic." It was only a matter of time before the rest of the Aristotelian *corpus*, heavily edited and commented upon in its passage from Greece to Syria to Arabia to Spain, would be translated into Latin and become available at the great new universities that had been established.

When it appeared, its impact was rather like setting a cat loose at a dog show. One aspect of this was the movement known as "Latin Averroism" that spread through large parts of Europe and particularly the universities, and which was viewed by the Church first with alarm and then with condemnation. Among its doctrines were: 1) natural laws rule the world without any intervention from God; 2) there is only one immortal soul, the "active intelligence of the cosmos" with respect to which the individual soul is a transitory form; 3) heaven and hell are fictions designed to frighten the people into obedience to the church and to behave decently; 4) the soul is corrupted with the corruption of the body; 5) God does not know individual events. These and other "Averroist heresies" were condemned and the Inquisition was set in motion.

Along with this, we can note two opposing schools of thought among the less extreme of the school men. One movement, primarily British, maintained the Platonic-Augustinian tradition and yet, strangely enough, was intensely dedicated to the cultivation of experimental science. This group has come to be known as English Scholasticism. Its most prominent figure was Roger Bacon (c. 1210-1294). Bacon was, among other things, an alchemist, historian of philosophy, and he applied mathematics to physics (such as physics was in those days). Above all, he held that science and philosophy have no meaning other than to explain the truth of the Scriptures. He was certainly no rebel against the Church and is representative of what has been called "scientific traditionalism."

However much Platonic thought might benefit mathematics, in Plato we find only infertile ground for the experimental sciences. Hence, it was only a matter of time before the more empirical theories of "Aristotle" gained ground in what little natural philosophy there was in medieval Europe prior to the time of Francis Bacon. Of considerably greater urgency to the Church was the spread of Latin Averroism. As scholasticism began splintering into diverse views, often along the lines of the various religious orders (e.g., Franciscans, Dominicans, etc.), the great mass of Aristotelian philosophy had to be confronted and understood in a way that would make its incorporation into Christian ideology possible. At the forefront of this task we find two of the

most significant figures in scholasticism: St. Albert the Great and St. Thomas Aquinas.

Albert (c. 1206-1280) was recognized by his contemporaries as a man of enormous learning and erudition, the *doctor universalis* who, in Knowles' words, "wrote with authority about everything." Roger Bacon, who seems to have strongly disliked Albert and his Aristotelianism, complained, "He is cited in the schools just like Aristotle, Avicenna and Averroës, and while still alive is counted as an authority, unlike any other man." As a natural philosopher, Albert was primarily a chemist; in his thoughts on biology he follows Aristotle – that is, the Aristotle presented to Europe via the translations of the Arabian sources. Albert set out to present to the West the whole of Aristotle with a running commentary, along the lines of the Avicennan model, while expunging the Islamic and Jewish additions when these ran counter to Christian doctrine or tradition. In this gigantic task he largely succeeded; yet Albert was not a synthesizer of systems, nor is his final product entirely self-consistent. In his doctrine of the process of knowledge and the question of "universals" he follows "Aristotle"; in matters concerning the soul he is pure Plato. In St. Albert's view,

One can be a perfect philosopher only if one knows both Plato and Aristotle; if we consider the soul in itself, we follow Plato; if we consider it as the animating principle of the body, we follow Aristotle [KNOW: 230].

The complete synthesis of Aristotle into the doctrine of scholasticism was not achieved by St. Albert; this work would fall to his greatest student, Thomas Aquinas. We have looked previously at St. Thomas in this treatise. We can perhaps best sum up this final evolution of Aristotle at his hands with the words of Dom David Knowles:

Aquinas did not merely adopt and 'baptize' or 'Christianize' Aristotle. He had, indeed, no hesitation in extending his thought, in filling gaps within it and in interpreting it in accord with Christian teaching. He also took many elements from elsewhere. But he did more than this: and Aristotle, had he been restored to life to read the *Summa contra Gentiles*, would have had difficulty in recognizing the thought as his. For indeed, Aquinas stood the system of Aristotle on its head or, to speak more carefully, supplied the lack of higher metaphysics in Aristotle by framing a conception of the deity which was in part drawn from Judeo-Christian revelation and which when proposed in Thomist terms embodied all that was most valuable in the metaphysic of Platonism. While Aristotle, the empiricist, looked most carefully at the universe of being as it was displayed to the senses and intelligence, and explored in his *Metaphysics* the veins and sinews of substance, he became imprecise when he rose to consider mind and soul, and hesitant when he looked up towards the First Cause of all things. His God is a shadow, an unseen, unknown, uncaring force and reason necessary to give supreme unity to the universe . . . With Thomism, on the other hand, the infinitely rich, dynamic existential reality is God, the creator and source of all being, goodness and truth, present in all being by power and essence, holding and guiding and regarding every part of creation, while as the one subsistent Being, the uncaused cause, the *ens a se* in whom alone essence and existence are one, He takes the place of the Platonic forms and exemplars as the One of whose Being all created being, in its essence perfected by its God-given existence, is a reflection and (according to its mode as creature) a participant. It is only on a lower level that the Aristotelian universe of being is found, but the two visions of reality are fused by Aquinas under the light of unifying principles, first proposed by the Greeks, of cause, reason and order [KNOW: 233-234].

And thus we have the Aristotle of “Aristotelian tradition”: the Aristotle of commentary and interpretation – examined, re-examined, and examined again. He is the Neo-Platonic-Islamic-Scholastic Aristotle whose soul has become Soul, and whose *pneuma* has become vital force. What we are presented with is not the Aristotle read in the context of his time and understood in and as himself; we have instead “The Philosopher” read and understood in the contexts of different times, different cultures, different religions, and different agendas. For science – and scientists rarely read Aristotle; they read what others have written about Aristotle – this is the Aristotle of vitalism. In writing on the history of biology, Nordenskiöld summarizes this vitalist position in the following way:

Classical antiquity gave rise to two explanations of natural phenomena, each splendid in its own way: that of Democritus and that of Aristotle. As will be remembered, Democritus attempted to explain all phenomena in existence, both physical and psychical, by the assumption that things are composed of a mass of particles, varying in size, shape, and movement, whose mutual interrelation caused all that is and all that happens, all, in fact, that is observable or conceivable. The weakness of this theory lay in the fact that it gave no explanation of the obedience to law which experience has proved beyond any doubt to exist in all that happens in nature. It was therefore supplanted by Aristotle's cosmic explanation, which maintained just this universal obedience to law, but based it upon an assumption of a divine intelligence which governs and gives form to what is in itself formless matter, controlling the latter in various degrees - less in inanimate nature, more in the animate, and most in the celestial spheres which hold sway over the imperfect earth. In animate nature this force appears as soul, vital spirit, which creates higher forms of existence the more it overcomes matter. This cosmic theory, which, owing to its logically consistent formulation, is unique in its greatness, has been characterized as dynamic and vitalistic in contrast to materialistic atomism. It has with greater reason been called aesthetic, since Aristotle really looked upon natural phenomena from the point of view of an artist who gives form to matter; it has even been called teleological, because according to it everything in existence has a purpose which is determined by the governing intelligence. In this latter characteristic we really find that quality in the Aristotelian thought-system which has proved most fateful for that system and for man's conception of life in general.<sup>1</sup>

It is not our purpose here to defend Aristotle's philosophy; his philosophy is not the Critical Philosophy, under which we must hold Aristotle's system to be transcendent. It *has* been our purpose to show how the modern conception of vitalism came to be, for if we do not understand the errors of the past we are more likely to repeat them ourselves. I think it is also good for us to be reminded now and again that the smug and sometimes arrogant confidence we have in the thought-systems of our own time has yet to be tested by history. Aristotle was not the boob that modern day materialism would make of him. It is not uncommon to hear a scientist play at philosophy with remarks to the effect that today's scientific method is superior to the “failed system of Aristotle” or that we have learned to make modern day physics the first science because of “Aristotle's” mistakes. Neither science nor philosophy benefit from using caricatures of history to justify modern speculations. Physics can not be primigenious while psychology is outside it.

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<sup>1</sup> Erik Nordenskiöld, *The History of Biology: A Survey*, N.Y.: Tudor Publishing Co., 1936, pg. 121.

## Cartesian Mechanism

Authoritarianism smothers science. It really matters very little if this authoritarianism is enforced by the Bishop of Paris or if it is enforced by a modern day reviews editor of a scientific journal who takes upon himself the role of an archbishop of science.<sup>2</sup> As science re-awakened in post-scholastic Europe, it was perhaps inevitable that a Francis Bacon would arise to denounce the “idols” of thought and summon the Age of Reason in which the authority of “The Philosopher” would be overthrown.

The modern theme of mechanism gets its start with Descartes, whose opinion of Aristotle we have already glimpsed. Descartes’ most complete statement of his mechanism theme is to be found in his *Traité de l'homme (Treatise on Man)* published some twelve years after his death. Descartes had completed this work by 1637, but elected to not publish it after Galileo was condemned for his work. *On Man* appeared in a somewhat modified Latin version in 1662, but a French edition was published in 1664 and became the world’s first textbook on physiology.

It may seem ironic that it should have been a rationalist like Descartes who was first to come out with a purely mechanistic view of physiology, particularly so for a man whose philosophical position depended in such a fundamental way upon the agency of God, but in fact this viewpoint followed more or less directly from his dualism of the *res extensa* and *res cogitans* of human existence.

And because I likewise remembered that I had formerly made use of my senses rather than my reason, and recognized that the ideas which I formed of myself were not so distinct as those which I perceived through the senses, and that they were mostly composed of portions of these last, I persuaded myself easily that I had no idea in my mind which had not formerly come to me through the senses. Nor was it without some reason that I believed that this body (which by a certain special right I call my own) belonged to me more properly and more strictly than any other; for in fact I could never be separated from it as from other bodies [DESC1: 97].

Descartes defined “substance” as that which exists independently of everything else except God. His extended body (*res extensa*) and his Rational Soul (*res cogitans*) therefore represent a real division of substances. The dualism expressed above – that the “I” of the *res cogitans* cannot be separated from the body – would therefore seem to contain a contradiction within it. Because Descartes denies the Rational Soul to animals, says of them that they are merely machines, and

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<sup>2</sup> It has been said that a paper written in the style of Einstein's 1905 paper on special relativity could probably not get published in a scientific journal today. Being a sometime-referee for technical journals myself, I concur in this opinion. And I do know of a few such "archbishops" in our learned societies. It is even occasionally the case where a "recognized expert" in an area, called upon to act as journal referee, will pass on the manuscript to one of his graduate students to review; and if the paper disagrees with the Great Man who is his boss and holds his future in his hands, is this a novice likely to risk a position contrary to his boss' views (the Authority from whom the student obtains his own)?

yet allows that they are alive, does this mean the soul is mortal?

Descartes was challenged on this point; his reply was that he had said nothing about whether or not the soul is immortal.

Seventhly, in the synopsis of my Meditations I stated the reason why I have said nothing about the immortality of the soul. That I have sufficiently proved its distinctness from any body, I have shown above. But I admit that I cannot refute your further contention, viz. that *the immortality of the soul does not follow from its distinctness from the body, because that does not prevent its being said that God in creating it has given the soul a nature such that its period of existence must terminate simultaneously with that of the corporeal life*. For I do not presume so far as to attempt to settle by the power of human reason any of the questions that depend upon the free-will of God. Natural knowledge shows that the mind is different from the body, and that it is like-wise a substance; but that the human body, in so far as it differs from other bodies, is constituted entirely by the configuration of its parts and other similar accidents, and finally that the death of the body depends wholly on some division or change of figure. But we know no argument or example such as to convince us that the death or the annihilation of a substance such as mind is, should follow from so light a cause as a change in figure, which is no more than a mode, and indeed not a mode of mind but of body that is really distinct from mind. Nor indeed is there any argument or example calculated to convince us that any substance can perish. But this is sufficient to let us conclude that the mind, so far as it can be known by aid of a natural philosophy, is immortal [DESC4: 127].

In this “reply to objections” we find about the only mention Descartes makes of a description for what we are to understand by the term “life.” If death, the termination of life, is merely a change of “figure” – i.e. a change in the mode of being – it would seem that “life itself” is to be seen as merely a “mode of being.” Descartes, however, avoids any straight-up definition of the word “life.” Perhaps he considered it too obvious to require a definition; if “life” is obviously just a particular “mode of being” perhaps “life” is too ‘vulgar’ a term to use in science or philosophy. We get something of the flavor of such an attitude from Descartes’ reply to the objection his animal-as-machine thesis aroused:

However, not only have I asserted that plainly the brutes do not possess thought . . . but I have given a most stringent proof of this, a proof which no one has hitherto refuted. Yet the people who affirm that *dogs when awake know that they run, and even when dreaming, that they are barking*, as if they could take up their station in the animals' hearts, really assert this merely and do not prove it. For although they add *that they do not believe that the operations of the beasts can be explained by mechanism, apart from sensation, life, and soul* (i.e. as I interpret, without thought; for I have neither denied to the brutes what is vulgarly called life, nor a corporeal soul, nor organic sense), *and that they are ready to stake anything in proving that that is both an impossibility and an absurdity*, this should not be taken to be a reason [DESC4: 226].

If this was indeed Descartes’ position on the word “life”, it is one that is consistent with Bernard’s view two centuries later.

Descartes’ physiology – and, indeed, his wider view of the physical world in general – seems to be guided in part by a kind of theory of evolution. Cartesian evolution differs from Darwin’s theory in a very fundamental way. In modern-day (that is, Darwinian) theory, the mechanism of natural selection is a causal mechanism in the “if A then B” mode. Put another way, living things

now are the way they are because they were more capable of surviving than those species that have gone extinct. Cartesian evolution, in contrast, is teleological and faintly Augustinian:

I did not at the same time wish to infer from all these facts that this world has been created in the manner which I described; for it is much more probable that at the beginning God made it such as it was to be. But it is certain, and it is an opinion commonly received by the theologians, that the action by which He now preserves it is just the same as that by which He at first created it. In this way, although He had not, to begin with, given this world any other form than that of chaos, provided that the laws of nature had once been established and that He had lent His aid in order that its action should be according to its wont, we may well believe, without doing outrage to the miracle of creation, that by this means alone all things which are purely material might in course of time have become such as we observe them to be at present; and their nature is much easier to understand when we see them coming to pass little by little in this manner, than were we to consider them as all complete to begin with [DESC3: 55-56].

In other words, if “corporeal living things” develop in accordance with natural laws from embryo to infant to child to adult, why should we not think that God set this same scheme for the material universe as a whole? This does not “do outrage to the miracle of creation” but merely to the literal interpretation of Genesis with its six-day schedule. Descartes’ theory has an Augustinian flavor.

It is conformity to natural laws that lies at the root of Descartes’ theme of mechanism. He uses mechanical analogies, such as that of a clock with its wheels and counter-weights, to describe the idea of mechanism in his physiology (although, of course, when it comes to this physiology in particular, he introduces more specific descriptions of how the organism works).

Yet, not to pass over the matter altogether, I should point out that the chief thing to note appears to me to be that motion is impossible alike in our bodies and those of the brutes, unless all the organs or instruments are present, by means of which it can be effected as a machine. Hence in our very selves the mind (or the soul) by no means moves the external limbs immediately, but merely directs the subtle fluid styled the animal spirits, that passes from the heart through the brain towards the muscles, and determines this fluid to perform definite motions, these animal spirits being in their own nature capable of being utilized with equal facility for many distinct actions. But the greater part of our motions do not depend on the mind at all. Such are the beating of the heart, the digestion of our food, nutrition, respiration when we are asleep, and even walking, singing and similar acts when we are awake, if performed without the mind attending to them. When a man in falling thrusts out his hand to save his head he does that without his reason counseling him so to act, but merely because the sight of the impending fall penetrating to his brain, drives the animal spirits into the nerves in the manner necessary for this motion, and for producing it without the mind's desiring it, and as though it were the working of a machine [DESC4: 156].

There are two ideas buried in this quotation that require our attention. The first is this idea of “animal spirits” that constitute a basic element of Descartes’ physiology; the second is the dualism of mind and body that is the central principle of the Cartesian theory.

We can take care of the latter quickly enough. Although corporeal “life” is the mode of being of a “substance” altogether distinct from mind (to which Descartes seems to not impute “life” but merely existence), God has, according to Descartes, wedded these two together.

Nature also teaches me by these sensations of pain, hunger, thirst, etc., that I am not only lodged in my body as a pilot of a vessel, but that I am very closely united to it, and so to speak so intermingled with it that I seem to compose with it one whole. For if that were not the case, when my body is hurt, I who am merely a thinking being, should not feel pain, for I should perceive this wound by the understanding only, just as the sailor perceives by sight when something is damaged in his vessel . . . For all these sensations of hunger, thirst, pain, etc. are in truth none other than certain confused modes of thought which are produced by the union and apparent intermingling of mind and body [DESC1: 99].

Inasmuch as the *res cogitans* is supposed to be a “substance” without the property of extension or divisibility, the contradiction that seems to be present in this “intermingling theory” is one of the weakest points in Descartes’ philosophy, and one that was most open to attack by his opponents. Descartes tried to explain elsewhere that the “contact” between body and mind takes place in the brain, specifically in the pineal gland. However, he never did successfully resolve all the issues that his dualism raised.

As for the “animal spirits”, these are, for Descartes, entirely material “fluids” devoid of any “spiritual” connotation. His description of these, given briefly in “Discourse on the Method” and more fully in *Treatise On Man*, bears a strong analogy to Aristotle’s *pneuma*, although not to the supernatural twaddle Neo-Platonism made of this idea. The “animal spirits” are supposed to be like “a very subtle wind or a flame that is very pure and very vivid” – such a subtle fluid, in fact, that it verges on the edge of immateriality. None the less, they are supposed to be extended, and therefore material, “substances.” Descartes thought the nerves were hollow and that these subtle fluids flowed through them to the muscles; they were supposed to mingle with the blood and by “dilating the brain” enabled it to receive impressions. The pineal gland was “the primary reservoir of animal spirits” and it was here that the mind could exercise control over the body. The mind was likened to “a fountaineer who has to take his place in the reservoir whence all the different tubes of the machine proceed whenever he wants to start them, to stop them, or to change them in any way” [DESC3: 58-59]. This is, of course, nothing else than a description of the Cartesian homunculus.

Descartes used Harvey’s demonstration of the “mechanical nature” of the circulatory system as an element in his physiology (although he did disagree with Harvey on certain points). While the specifics of Descartes’ theory of physiology are quite wrong, his general principles gained wide acceptance, especially among the 18<sup>th</sup> century scientists who developed chemistry into a science (as opposed to alchemy) and who studied and developed plant physiology. Perhaps the strongest point in Descartes’ physiology was the emphasis it placed on the nervous system with its power of coordinating various bodily activities.

Among the most immediate of Descartes’ followers in his theme of mechanism were Giovanni Borelli (1608-1679), who was a pupil of Galileo and whose 1680 *De motu animalium*



founded the science of muscular mechanics, and Hermann Boerhaeve (1668-1738), a physiologist whose 1708 *Institutiones medicae* largely displaced Descartes' physiology textbook. The advent of modern physiology was marked by yet another researcher, namely the Swiss botanist, anatomist, and physiologist Albrecht von Haller (1708-1777). Von Haller's *Elementa Physiologiae* (1759-1766) immediately replaced Boerhaeve's book as the textbook for physiology.

Descartes' theory also aroused some passionate opposition, not merely by the Church but by other naturalists as well. Vitalism as a term had its start with this opposition. Among the first of Descartes' opponents was Georg Ernst Stahl (1660-1734), who promoted vitalism in his 1707 book *Theoria medica vera*; Stahl was also the man who introduced the idea of phlogiston into chemistry. The phlogiston theory stood for most of the 18<sup>th</sup> century before the work of Priestley and, even more so, Lavoisier did away with it. A somewhat compromise position was taken by Friedrich Hoffman (1660-1742), who accepted Descartes' idea of the body as a machine but who also followed Leibniz' theory of monads and held the supposition that bodily activities are executed under the influence of properties that are peculiar to organic matter.

It would take nearly two centuries, and a mounting tide of experimental evidence from chemistry and botany, for the theme of mechanism to finally put down vitalism. In the course of this development, the idea of "life" as a scientifically meaningful term would lose its currency. It would not regain an acceptable definition until well into the twentieth century.

### § 1.3 Mental Life

With the exception of present-day biology's definition presented earlier, the preceding "definitions" of "life" cannot be considered definitions at all. Aristotle, of course, provided a reasonably concrete "operational" definition: life expressed in terms of nutrition, growth, and decay. His various "souls" merely serve to differentiate the "entelechies" of plant, animal, and human life forms. After Aristotle and up to Descartes, "life" becomes entwined in spiritualist connotations that direct attention away from the scientific consideration of its character and properties.

We now come to Kant's explanation of "life." We will see that upon first encounter Kant's explanation seems strangely restrictive and perhaps even absurd. About the first appearance of the word "life" in his writings comes in his somewhat tongue-in-cheek 1766 essay *Dreams of a Spirit-Seer*<sup>3</sup>. In it he writes:

What in the world contains a principle of life seems to be of immaterial nature. For all life is founded on the inner capacity to determine oneself according to choice [KANT21: 315 (2: 327fn)].

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<sup>3</sup> It appears to be the case that Kant did not really want to write this essay but he was pestered into doing so by inquiries from numerous friends asking what he thought of two odd "prophets" who had been in the recent public spotlight. Kant opens the essay by flatly warning the reader to expect "nothing" from it.

As for what it is that contains a “principle of life”, let us note that Kant does not say this “what” *appears* to be, much less *is*, of an “immaterial nature.” He says it merely *seems* so. Kant admits he feels inclined to assert the *Dasein* of “immaterial natures in the world” but goes on to say later that the appeal to immaterial principles is “the resort of lazy philosophy.” He tells us that he thinks Stahl, the vitalist, is “frequently closer to the truth” than the mechanists Hoffman and Boerhaeve, but that the latter two, by adhering to mechanical causes, “adopt a more philosophical method” [KANT21: 318-319 (2: 331)].

Now let us consider his statement that “all life is founded on the inner capacity to determine oneself according to choice.” This is, on the face of it, an odd-looking assertion. Are we to conclude from this that a blade of grass makes choices? Or that a blade of grass is not alive? Both conclusions seem totally absurd. But, again, we must note that Kant is not saying life *is* the capacity of a being to determine itself according to choice; what he is saying is that our *judgment* regarding what is and what is not alive appeals to this principle. What does this mean?

To gain a clearer picture of this, we must move ahead to 1786 and Kant’s *Metaphysical Foundations of Natural Science*. Here he tells us:

The inertia of matter is and means nothing else than its *lifelessness* as matter regarded as it is in itself. *Life* is called the capacity of a *substance* to determine itself to act from an *inner principle*, of a *finite substance* to determine itself to change, and of a *material substance* to determine itself to motion or rest as change of its state. Now we know of no other inner principle of a substance for changing its state except *desire*, and in general no other inner activity at all than *thinking*, together with that which depends on it, the *feeling* of *Lust* or *Unlust*, and appetite or will [KANT15a: 252 (4: 544)].

This would seem to be a vitalist position, or at least an appeal to Leibniz’ monad theory, *unless* we bring Kant’s Copernican hypothesis into the picture. There are two parts to the quote just given. Let us take these in turn.

First we have the issue of the “lifelessness” of physical matter. When we look at matter regarded as it is in itself (*Materie an sich selbst*<sup>1</sup>), there is nothing in our physical idea of this matter that includes the idea of “life.” When we consider “the living cell” (the significance of which was not yet known to biology during Kant’s lifetime), we are *not* looking at “matter regarded as it is in itself”; rather, we are looking at a *systematic arrangement* of matter, the *unity* of which is our idea of the cell. Regardless of whether our idea of “matter regarded as it is in itself” is the idea of Boyle’s corpuscles or the modern day atom, “matter” so regarded is “matter” *as physics and chemistry see it*, and “life” is not an idea of physics nor of chemistry.

“Life” is, of course, a property Leibniz endowed to his monads, but the idea of Leibniz’ monad is not objectively valid. The monad, we recall, was supposed to be a kind of “immaterial

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<sup>1</sup> Kant’s frequent phrase *an sich selbst* is an elliptic for the phrase *an sich selbst betrachtet*. See Lewis White Beck’s remarks in [KANT3: xxvii-xxviii].

atom.” It is generally accepted that Kant was sympathetic to the idea of monads, and the Wolffian school of philosophy in which he received his education was openly monadist. Some of Kant’s own early papers are on the subject of monads. However, it was precisely this philosophical position that Kant moved away from in the Critical Philosophy. In short, we cannot look to “physical matter” *regarded as it is in itself* to find an objectively valid *Realerklärung* of life regarded as *it is in itself*.

Regarded as a *Kantian* substance, life is the object of a supersensible idea – a *noumenon*. Recalling what we said in Chapter 11 about the idea of the individual and about the role of Self-consciousness (the representation of one’s own *Existenz*) in the formulation of our ideas of other objects as individual things, we come back to one fundamental ground for our idea of life: Whatever else may “possess life” and whatever life *per se* may be, I know that I myself am alive. The “sense of aliveness” we call the *I* of transcendental apperception is, for each of us as individual beings, the prime standard by which we *infer* life in other beings *as a character of their state of Existenz*, or else deny an object this character of being. But because “life” is not itself a sensible object, this attribution of life is owed to an inference of judgment by analogy. Even looking back as far as Aristotle, the role of analogy is plainly seen in the making of the judgment call that a thing is “alive.” It is also easily seen in the animism of young children.

When one infers the presence of life in some Kantian substance other than one’s own Self, it is this Self which stands at the most elementary levels of our maxims of thinking as the compare against which the inference of analogy is made. But this compare is itself an idea of a substance (because it is not the *Dasein* of the *I* but the *Existenz* of the Self that is represented as the compare object), and so it is from the appearances subsumed as accidents under the *notion* of this substance that we obtain characteristic marks by which we judge another object to “have life.” As we saw in Chapter 11, the empirical evidence supports the finding that at the root of the formulation of the real division made between the Self and the not-Self is an idea of agency, i.e. the idea of a substance having the capacity to act as cause of an effect. For the idea of the Self, this type of causality is that which Piaget termed “psychological causality” and this idea of causality is grounded in the notion that the Self is self-determining.

This is what Kant means when he says life *is called* the capacity of a substance to determine itself. Before we can begin to build a biological theory of the Nature of life and life processes, we must first have identified the objects of such a theory. Biology’s present-day definition of “life” could not have been formulated if this science had not already had in its possession a classification of things divided along the lines of “living” and “non-living” things. A great scientific accomplishment of modern biology is the discovery that all things falling into the “life” classification share in common, so far as we know, the material constituents (nucleic acids and enzyme catalysts) and systematic organization cited in that definition.

It also accounts for the ambiguous status of the virus in this overall picture. Isolated from a host cell, a virus appears to be little else than a large molecule and to be inert (“inactive” in present-day terminology). It is only when the virus comes into contact with a host cell that it begins to exhibit in appearance traits in common with other things we call living. Does this make the virus alive or does it make the virus merely a dangerous molecule that alters the biochemistry of the cell it “invades”? The principal reason for thinking of the virus as a living thing is that it causes its living-cell host to produce more of it – and reproduction is an empirical character of most “life forms.” Yet the virus cannot do this by itself and what it appears to “determine” with regard to this reproductivity is not itself but rather the host cell. From this point of view, a virus regarded as it is in itself is no more a living thing than a molecule of ATP, similarly regarded, is a living thing. The virus merely appears to be more “organized” and less “transitory” than a molecule of ATP. As mentioned earlier, biologists today tend to sidestep the question of viral life.

Seen in this way, the idea of life is not properly regarded as the idea of any such thing as a “force” or a “vital energy” or a “soul” or any of the other objectified *noumena* in the history of science, philosophy, or religion from Aristotle to the present day. The objective validity in the idea of life is grounded in regarding the idea of life as the idea of a principle for the making of a disjunctive judgment as a real division of the things in Nature in terms of “living” and “non-living” things. Life is not an object in the sense of a *Sache*-thing; it is rather the case that life is to be properly regarded as an *Unsache*-thing (a “happening”). **The idea of life is that of a practical function for bringing unity to appearances of sensible effects in Nature that, collectively, are subsumed under the idea of a class of objects called “living organisms.”**

It seems to me there is an irony somewhere that Aristotle’s definition of life should turn out to have precisely this practical and functional character. The weakness of Aristotle’s theory, from the viewpoint of science, is not in his definition so much as in understanding the “material elements” of his biology. The present-day biological definition of life is also of this functional character, but our understanding of the “material elements” in the biochemistry and biophysics of living organisms is tremendously better than Aristotle’s. If Kant were alive today, I think he would approve of present-day biology’s *Realerklärung* with two exceptions. I think he would be likely to object to subsuming the virus under the class of living organisms, and I think he would likely say that the definition is limited in scope inasmuch as it applies to sensible objects but not to intelligible objects. After all, at the foundation of all judgment calls of living vs. non-living things is the inference of analogy made with respect to the Self, and the objectification of the Self is tied up with psychological, not physical, causality.

It is along this dividing line between sensible and intelligible objects where we can make a logical division of the idea of life in terms of *biological* life and *mental* life. The former pertains to the *Realerklärung* of the principle of an organism from the theoretical Standpoint. The latter

pertains to a principle of Organized Being from the practical Standpoint. In making such a division, biology's definition of life serves the former Standpoint. What we still require is a *Realerklärung* for mental life.

This brings us to the *Realerklärung* of "life" as Kant stated it in *Critique of Practical Reason*:

**Life** is the capacity of a being to take action in accordance with the laws of appetitive power [KANT4: 8fn (5: 9fn)].

If we tried to view this definition from the theoretical Standpoint, it would be pure nonsense. We do not, for example, say that a blade of grass has "appetites" or "desires" that it acts to try to satisfy. Recalling Kant's earlier statement about "choice" (which we will later see enters in to this idea of a *Begehrungsvermögen* or "appetitive power"), we do not say that an amoeba makes choices and acts on them. However, the theoretical Standpoint is not the Standpoint from which the definition given above is taken. Rather, this definition can be viewed strictly and only from the *practical* Standpoint. Life *per se* is a *noumenon* taking its real ground from the transcendental Subject. Theoretical (biological) life is defined by marks contained in objects already deemed "living" by judgments that draw upon the practical Standard of the Self for empirically defining characteristics. *Noumenal* life is *practical* life, and is grounded by the idea of "mental life."

Of course, without knowing what is meant by this idea of an "appetitive power" the Critical *Realerklärung* doesn't help us very much. But, quite frankly, if we did not know what a nucleic acid or an enzyme catalyst is, the definition of biological life would be equally opaque. For us to make progress from here, we must turn to some other aspects of the context of practical Reason.

## § 2. Appetite, Desire, and Appetitive Power

In everyday usage the nouns "appetite" and "desire" are often taken as synonyms. To the degree that a distinction is drawn between them, appetite is commonly subordinated to desire as a sort of species of desire. We can see this from the following dictionary definitions:

**appetite**, *n.* [M.E. *appetit*, Fr. *appétit*, appetite; L. *appetitus*, a passionate longing or desire, from *appetere*, to seek for].

1. a natural or habitual desire for some gratification, either of the body or of the mind; as, sexual *appetite*.

2. a desire for food or drink; as, dining with a good *appetite*.

3. strong desire; longing; as, a vulgar *appetite* for the sensational.

4. the thing desired [Archaic].

5. appetency [Obs.].

**syn.** - passion, desire, propensity, proclivity, inclination, appetency, want, craving.

**desire**, *n.* [M.E. *desire*; L. *desiderium*, desire, longing, appetite].

1. an emotion directed to the attainment or possession of an object; a wish or craving.
2. a request; a petition; as, a *desire* for aid.
3. that which is desired; an object of longing.
4. sexual appetite; lust.

**syn.** - wish, longing, appetency, hankering, inclination, craving, eagerness.

Our modern-day subordination of appetite as a particular kind of desire is the opposite of how Aristotle viewed their relationship.

Now of the powers of the soul which we have mentioned, some living things, as we have said, have all, others only some, and others again only one. Those which we have mentioned are nutrition, appetite, sensation, motion in place, and thought. Plants have nutrition only, but other living things have sensation, too. But if for sensation then also for appetite; for appetite consists of desire, inclination, and wish . . . desire is an appetite for what is pleasant [ARIS9: 659-660 (414<sup>a</sup>29 - 414<sup>b</sup>6)].

The Aristotelian significance of appetite (as well as the other “powers of the soul”) comes from its role as an efficient cause of *kinesis*.

These two, then, appetite and mind, are clearly capable of causing movement if, that is, one regards imagination [*phantasian*] as some sort of thinking process; for men often follow their imaginations contrary to knowledge, and in living creatures other than man there is neither thinking nor calculation, but only imagination. Both of these, then, mind and appetite, are productive of motion in place. But the mind in question is that which makes its calculations with an end in view, that is, the practical: it differs from the theoretical as to the end. And every appetite is directed towards an end; for the thing at which appetite aims is the starting-point of the practical mind, and the last step of the practical mind is the beginning of action. So these two, appetite and practical thought, seem reasonably considered as the producers of movement; for the object of appetite starts motion, and as a result thought gives rise to motion, because the object of appetite is its beginning. Imagination, too, when it starts a motion, never does so without appetite [ARIS9: 688 (433<sup>a</sup>10-22)].

Such fine-cut distinctions faded in the centuries following Aristotle. By the time of the Romans, we see the blending of “appetite” and the connotation of “desire” in the Latin word *appetito*:

**appetito**: 1. the action of trying to reach or grasp; stretching out for.

2. a desire, appetite, *a* (spec.; also w. *naturalis* or *animi*) a natural or instinctive desire; appetite (for), impulse (towards); *b* (spec.) a voluntary or rational desire; seeking or aiming at as a matter of choice.

Thus, for example, Cicero tells us:

There is a further difference in causes in that some effect their work as it were without any mental appetite [*appetitione animi*], without desire [*voluntate*], without opinion; for instance, the rule that everything that is born must die. Others work through desire, or mental agitation [*perturbatione animi*], or disposition [*habitu*], or nature, or art, or accident . . .

But of the causes which are not uniform in operation, some are evident and others are concealed. Those are evident which affect our appetites or judgment; those that are controlled by fortune are concealed.<sup>2</sup>

For Aristotle, appetite was a “power of the soul” and a cause of motion. We can see that for Cicero this distinction has been blurred.

We should also be on our guard with respect to the ideas of appetite and desire because of the connotation of emotion the latter has in English. We see this from the dictionary definitions above. As we have mentioned a couple of times previously, the word “emotion” does not have a distinct and universally agreed upon definition in psychology. The same is true of the ideas of drives, needs, motivations, etc. To properly understand the context of practical Reason, we cannot leave such subjective factors to the accidents of language.

## § 2.1 Appetite

Kant drew a technical distinction between appetite and desire in his use of the words *Begierde* and *Begehren*. The former he tied to the Latin *appetitus* and I translate it here as “appetite.” The latter I render as “desire.” Not surprisingly, considering the subjective character of these terms, Kant’s views went through a slow evolution that we can follow in his lectures on Anthropology from 1772 to the publication of his *Anthropology from a Pragmatic Point of View* in 1798. Oddly enough, the *Anthropology* treats the topic rather lightly compared with Kant’s lectures.<sup>3</sup> His mature statement of appetite as given in the *Anthropology* is:

*Appetite (appetitus)* is the self-determination of the power of a Subject through the representation of something in the future as an effect of the same. Habitual sensuous appetite is called *inclination*. That desire without application of power to production of the Object is *wish*. These can be directed at objects for whose production the Subject feels himself incapable, and is then an *empty* (idle) wish. The empty wish to be able to eradicate the time between the desire and the acquisition of the desired is yearning. The undetermined appetite (*appetitus vaga*) in consideration of the Object which only drives the Subject to get out of his present state, without knowing what he will come to, can be called the *peevish* wish (the not gratified) [AK7: 251].

More than a few people find the explanation of appetite stated above to be less than lucid and clear. The first sentence contains both a statement of the what and the how of the object we call “appetite.” This is, in a way, an expression of its *Dasein* and something of the character of its *Existenz*, as a practical Object, all rolled into one. The “essence of its character,” in a manner of

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<sup>2</sup> Cicero, *Topica* xvi. 62-64.

<sup>3</sup> Kant wrote the manuscript for *Anthropology* in 1796-1797. By this time his health, and perhaps his preoccupation with his unfinished philosophy we know only from the *Opus Postumum*, reduced his labors on the *Anthropology* to not much more than a compilation of his lectures on the subject. It was the last of Kant's works published "from his own pen." *Logik* was prepared for him by Jäsche from lecture notes.

speaking, is that appetite is a *self-determination*, that is, a determination of the Subject by the Subject himself. We will see a bit later that the power being determined is the capacity of the Subject to arouse himself to activity in order to effect something (as an agent). Here the Kantian distinction between *Kraft* and *Vermögen* is particularly important. A *Vermögen* is “power” only in the sense of being a “potential power” – something of which the Organized Being is capable without necessarily acting upon this capability. *Kraft*, on the other hand, is “dynamical” power – i.e. the possible capacity set into action. A *Vermögen* that is undetermined is a power seen as merely possible. Only when it is determined to some specific and concrete activity does a *Vermögen* become a *Kraft*. The potential capability being determined in our present context is the *Begehrungsvermögen*<sup>4</sup> or appetitive power (“capacity of desiration”; see footnote 4).

As for the *Existenz* of this self-determination, appetite is a self-determination effected by means of the Subject’s *representations*. These will be both affective and objective representations. It is important for us to note that appetite is not the same as the representations. The self-determination we call appetite is *effected* through representation.<sup>5</sup> When we consider the manner of determination in terms of the types of representations going into the effecting of self-determination, we can broadly classify appetites with regard to Kant’s idea of their transcendental place. He provided a description of this sort of classification in one of his lectures delivered in the 1775-1776 academic year:

The appetites can be divided into sensuous appetites and appetites of understanding. The sensuous appetites are appetites of sensation and of impression. Appetites of understanding are appetites of the effect of deliberation, and these are appetites going to appetite in general. Whereupon it follows that it makes of the totality of appetites in us one agreement; it goes not as to the state of agreement, but to the harmony of all our appetites in general [AK25: 578-579].

During Kant’s “silent decade” of the 1770s, he does not yet seem to have come to the full implication of his “critical turn” that began with his Inaugural Dissertation of 1770. In particular, he had not yet worked out a clear distinction between “feeling” (*Gefühl*) and other subjective factors. We can see this in his 1777-1778 lectures:

On the Appetites. It is a feeling in regard to the future. However, the effect of representation of the future on our feeling brings activity in us. The feeling of the present rouses no activity, whatever it is called, that will continue it, but will quickly rouse activity . . . All our appetites are properly none other than the activity to move in *Lust* or *Unlust* [AK25: 795].

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<sup>4</sup> In pre-twentieth century German there is a distinction between *Begehren*, *Begehr*, and *Begehrung*. The latter two of these have become more or less rare nowadays. The flavor of *Begehrung* is that of demand, requisition, solicitation, covetousness, or desire of or for. It is in this sense not merely a desire made specific but also actively demanded, i.e. “desiration”. *Begehr*, on the other hand, goes more toward the idea of the demand as an object, while *Begehren* points more toward the subjective connotation of affect.

<sup>5</sup> In contrast, biological growth is also a form of self-determination in an Organized Being. In this case, we regard *soma* rather than *nous* as “doing the determining.” Such a kind of self-determination is not appetite.



We can see that this is moving toward Kant's mature position in the *Anthropology* but that it is not there yet. Note, though, that appetite involves *activity* moving according to *Lust* or *Unlust*. Kant goes on to catalog different types of appetites and to discuss other ideas closely related to them. First, he makes a refinement on his earlier division of the appetites.

The appetites are 1) rational, 2) sensuous; rational [appetites] are: 1) according to matter [*Materie*], where the object is an object of Reason; when it is but an object of sense, then this is accordingly the sensuous capacity of matter. 2) according to form; when the manner all of us represent the object to ourselves is merely a congruence of Reason, the object may be whatever we please. To the sensuous appetites belong: 1) propensity, 2) instinct, 3) inclination, 4) affect, 5) passion [AK25: 796].

Recall that an "object of Reason" takes its transcendental place from understanding. Such an object is not being presented by some immediate sensible experience but by the action of one's own process of thinking and productive imagination. A material appetite expresses what we call an *interest*. The formal appetite, on the other hand, is something far more subjective, i.e. where the object is something of interest because of something other than itself. An example of such an appetite could be the self-determination to intervene to stop a crime in progress "because it is the right thing to do."

As for the sensuous appetites, here we see the first blossoms of distinctions that will later become more clearly defined in the mature theory. Kant goes through some descriptions of his five ideas belonging to sensuous appetite.

*Propensity* [*Hang*] is from different actual appetites. It is what is possible to desire, and is a predisposition of the Subject to appetite [AK25: 796].

*Instinct* is a blind appetite: [it] is an appetite we have where we still do not know the object itself. It also goes to the appetite for the cognizance of objects . . .

*Inclination*. It is an enduring subjective movement. The effect of instinct is an instant, but inclination is enduring.

*Affect*. It does not properly belong to the appetites but rather to feeling. Passion belongs to inclination and to the appetites. Affect has its effect in an instant; it does not endure. But passion can endure throughout all of life . . . Passion proper stirs not the mind, but rather it is an inclination in so far that it lifts the equilibrium of the appetite . . .

Affect proper is a higher degree of feeling, and passion a higher degree of appetite [AK25: 797].

We see from this that Kant has only three proper sensuous appetites in his list. Affect and passion differ from the rest inasmuch as affect is not appetite but feeling – we can note the inconsistency between this remark and Kant's earlier remark about appetite being a "feeling in regard to the future" – and passion ascribes to appetite an intensive magnitude.

By 1781-1782, we can see Kant's anthropology lectures closing in on the mature position.

Customary appetites go by the name of inclination; appetites that would not be regarded as habits

are called instincts. Every sudden developing of appetite, unless it has an ingrained propensity to an object, one calls instinct. Without these appetites we can act upon nothing.

All appetites have reference to activity, to realize the object of the appetite. They presuppose that the object must be within our mastery; for otherwise the activity is vain when we have it not in our power [AK25: 1109].

We can note the similarity here with Aristotle's view of appetite quoted earlier. This similarity, making allowance for the Copernican perspective, is even more clearly expressed in the Mrongovius lectures of 1784/85, where Kant is now explicitly talking about appetitive power:

Appetitive power presupposes feeling *Lust* or *Unlust* and recognition of this. Something can please and yet the *Existenz* of the same be of indifference to us . . . Appetite is the satisfaction<sup>1</sup> in regard to the *Dasein* of the object. It often causes an effort as regards the *Dasein* of the thing and is likewise cause of an act so far as the thing is in my power. - Not all satisfaction is accordingly appetite. One also calls desire the volition. The different manners of our satisfaction will conform with either our Reason or our inclination [AK25: 1334].

Here Kant seems to be equating appetite with a satisfaction. However, we must bear in mind his other statement that appetite is always future-directed. Therefore we must take Kant to mean here that appetite is not the satisfaction *per se* but is a self-determination to *realize* (make actual) an anticipated satisfaction, either by bringing about the actual *Dasein* of the object or by either maintaining or abolishing its *Dasein* in actuality. The self-determination of appetite is a necessary presupposition of any activity taken in pursuit of such a goal, regardless of whatever may be the object of this activity. Such is the meaning of the definition of appetite given at the beginning of this section.

## § 2.2 The Appetitive Power

Appetite is the self-determination, by means of representation, of a power of the Organized Being. The power so-determined is called the appetitive power (*Begehrungsvermögen*).

As we might well expect, considerations of the transcendental character of the appetitive power do not properly belong to anthropology but, rather, to metaphysics. In the Vigilantius notes from Kant's 1794/95 lectures on metaphysics we find:

All representations refer to the object as Object of knowledge, but they can also be regarded as acts, and then the ground of the production of the same Object lies in the representation. Herewith then corresponds the *capacity of the soul to become, through the representation of an object itself, the cause of the actuality of the object*, = and this is the appetitive power, which one can just as validly determine as *causality of the representation in regard to its Object*. That act of the soul in general, through which the representation seeks to attain the actuality of its Object, is in general appetite and desire, which is sensuous or intellectual [KANT19: 482 (29: 1012-1013)].

This is, by Kantian standards, a reasonably clear statement; even so, it is worthwhile to untangle

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<sup>1</sup> *Wohlgefallen*.

it a bit. First of all, after our discussion of §1 we need fear no supernatural connotation attached to Kant's use of the word "soul"; this is merely being used as a synonym for the life of the Organized Being. More important is the idea that we can regard representation either as a representation *per se* or we can regard it in a different context, namely a representation viewed as an *act* of the Subject. It is the latter viewpoint we must take in the practical Standpoint.

When we examined the *Realdefinition* of the categories of understanding from the logical and transcendental perspectives we saw that the categories of Modality involve a connection in relationship to affective perception and a connection in relationship to the meaning the cognition holds for the Subject. We said that a judgment of Modality is not a judgment of the object but, rather, a judgment of a judgment. When we look "outward" at the object in the theoretical Standpoint, the representation is the representation of an object of appearance, and here the Object of representation *per se* is cognition. But when we regard the representation as an act, the Object of the act must instead be something subjective – that is, it must be something relating to the representing Subject. In this regard the distinction between affective and objective perceptions undergoes a role reversal for we are no longer looking at representation as it pertains to appearances but, rather, as it pertains to the Subject.

When we observe a behavior, we can always draw a distinction between the act of the Subject *per se* and the action. (This does not mean the acting Subject can or does so, e.g. in the case of an infant; we are speaking here as observers). In those cases we call intentional acts, we can likewise usually distinguish between the action (as means) and its result (as an end). This is even more the case when the Subject one observes is one's Self because in this case we each have access to the knowledge of our private thoughts and motives. However, this view necessarily presupposes a Relation between the representation and the behavioral action. This is what Kant means when he says the representation is the causality of the act, because without the representation we can infer no intentionality to the action itself.

Now, all this falls to the ground unless we presuppose the Subject *is capable* of doing this. Whether we choose to make this inference in terms of the motivational system of neuroscience or in terms of it being a mark of the phenomenon of mind makes no difference to the necessity of making this presupposition. The transcendental idea of the appetitive power is the idea of a capacity of the Subject necessary for the possibility of acts we call intentional from the practical Standpoint. We have already examined the objective validity of the idea of psychological causality. The idea of the appetitive power – the capacity of an Organized Being to act on the grounds of its representations to produce the object in actuality – is nothing other than the idea of the capacity for such a kind of causality made more specific.

This examination does not establish an identity between the appetitive power and what we earlier called the causality of freedom. We have merely linked it to causality, but nothing in our

theory thus far justifies attaching to this causality the idea of “freedom.” This is not due to a deficiency in our inference of the *Dasein* of the appetitive power. Rather, it is due to a deficiency in our evaluation of the idea of “freedom” and what objectively valid meaning this idea can hold. This part of the discussion we will postpone until later. We should also remind ourselves that causality and cause are not the same thing. Causality and cause as Objects are both Relational ideas, but the latter is the idea of an object thought under the notion of a substance whereas the former is the idea of a Relation between substances thought under the category of causality and dependency. When we speak of appetitive power, we are speaking of it as an *Unsache*-thing.

Causality is the determination of a cause through which it becomes a cause, or the determination of the relation of a thing as cause to a determined effect. Thus cause is always to be distinguished from causality . . . The capacity to produce Objects through one's representations is the appetitive power. The appetitive power rests on the first principle: *nihil appeto nisi quod placet, nihil avertō nisi quod displicet*<sup>2</sup> [KANT19: 261 (29: 893-894)].

The cause immediately determined from appetitive power is appetite. In terms of our general 2LAR of representation with regard to Modality, appetitive power stands as the determinable, appetite as the determination. Thus we view appetite as taking the role of cause, appetitive power as the capacity for *making* a determination of this cause. The effect produced by appetite is an activity. However, this still leaves open, for now, the question of what constitutes the determining factor by which appetitive power comes to determine an appetite.

### § 2.3 Desire and Satisfaction

The idea of desire is another of those ideas with which philosophy rarely deals in a definitive manner. Kant is no exception in this. Everyone agrees that desire or desires – terms that mean different things depending on whether one is talking about desire *per se* or an object of desire – are in some way constituents in the determination of appetite and action. Beyond this, one finds very little agreement.

For Aristotle desire (*epithumia*) was merely a particular kind of appetite. Epicurus tried to break down the idea of desire in a three-way classification:

Of our desires some are natural and necessary; others are natural, but not necessary; others, again, are neither natural nor necessary, but are due to illusory opinion. (Epicurus regards as natural and necessary desires which bring relief from pain, as *e.g.* drink when we are thirsty; while by natural and not necessary he means those which merely diversify the pleasure without removing the pain, as *e.g.* costly viands; by the neither natural nor necessary he means desires for crowns and the erection of statues in one's honor.)<sup>3</sup>

To this Cicero provided the Stoic's reply:

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<sup>2</sup> "I seek nothing but what seems good, turn aside from nothing but what displeases."

<sup>3</sup> Diogenes Laertius, *Lives of Eminent Philosophers*, vol. II, X. 149.

But how says our philosopher [Epicurus]? 'The desires are of three kinds, natural and necessary, natural but not necessary, neither natural nor necessary.' To begin with, this is a clumsy division; it makes three classes when there are really only two. This is not dividing but hacking to pieces. Thinkers trained in science, which he [Epicurus] despised, usually put it thus: 'The desires are of two kinds, natural and illusory [*inanes*]; natural desires again fall into two subdivisions, necessary and not necessary.' That would have rounded it off properly. It is a fault in division to reckon a species as a genus.<sup>4</sup>

Locke, on the other hand, wrote that desire is "uneasiness":

That desire is a state of uneasiness, every one who reflects on himself will quickly find. Who is there that has not felt in desire what the wise man says of hope, (which is not much different from it), that it "being deferred makes the heart sick" [LOCK, Bk II., 32].

He goes on to say that "the uneasiness of desire determines the will" and that "this is the spring of action" because "the removal of uneasiness is the first step to happiness."

Good and evil, present and absent, it is true, work on the mind. But that which *immediately* determines the will, from time to time, to every voluntary action, is the *uneasiness of desire*, fixed on some absent good: either negative, as indolence to one in pain; or positive, as enjoyment of pleasure [LOCK: Bk II, 33].

This is that which successively determines the will, and sets us upon those actions we perform. This uneasiness we may call, as it is, *desire*; which is an uneasiness of mind for want of some absent good . . . For desire being nothing but an uneasiness in the want of an absent good, in reference to any pain felt, ease is that absent good; and till that ease be attained, we may call it desire . . . Besides this desire of ease from pain, there is another of absent positive good; and here also the desire and the uneasiness are equal. As much as we desire any absent good, so much are we in pain for it [LOCK: Bk II, 31].

Leibniz gleefully retorts that, rather than being a "suffering" as Locke concludes,

I would prefer to say that a desire in itself involves only a disposition to suffering, a preparation for it, rather than suffering itself . . . So this is another case requiring our doctrine about perceptions which are too minute for us to be aware of them; for if what goes on in us when we have appetite and desire were sufficiently amplified, it would cause suffering [LEIB1a: 164].

Far from such disquiet's being inconsistent with happiness, I find that it is essential to the happiness of created beings; their happiness never consists in complete attainment . . . but in continual and uninterrupted progress towards greater goods. Such progress is inevitably accompanied by desire or at least by constant disquiet . . . That is what a healthy man's appetite does, unless it amounts to that discomfort which unsettles us and gives us a tormenting obsession with the idea of whatever it is we are without. These 'appetitions', whether small or large, are what the Scholastics call *motus primo primi*,<sup>5</sup> and they are truly the first steps that nature makes us take [LEIB1a: 189].

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<sup>4</sup> Cicero, *De Finibus Bonorum et Malorum*, II. ix. 26.

<sup>5</sup> Literally, "very first motions." Leibniz is referring to Aquinas' doctrine of "the movement of the appetites which is so fundamental as to be involuntary."

For the Greeks, desires are always tied up with things of one sort or another. With Locke and with Leibniz we see a turn in interpretation in which desire is viewed more primarily with regard to the Subject and where the object of the desire assumes a more accidental role. Put another way, desire becomes more “psychological” than the realism of the Greeks fixed it. Both men’s views are somewhat negative in the sense that desire “stirs the will” to relieve “uneasiness” or “pain” in some way or another.

If, as the saying goes, Locke makes desire “flee the stick”, Kant allows it to also “pursue the carrot.” Vigilantius recorded in his notes:

One expresses the feeling of *Lust* or *Unlust* through *voluptas et taedium*.<sup>6</sup> Both however are merely sensible: according to Mr. Kant it can be determined more generally by means of *complacentia et displicentia*<sup>7</sup> and on this the idea of desire can be grounded, namely as *complacentia respectiva actualitatis objecti*,<sup>8</sup> i.e. *the representation of the Object which is connected to the satisfaction in its actuality, and which is the ground for producing it.*

Satisfaction [*Wohlgefallen*] in the intuition of the Object differs from desire for it in that the latter concerns that relationship of the representation to the Object so far as it can be the cause of its actuality [KANT19: 482 (29: 1013)].

There is, of course, one thing wrong with what Vigilantius has recorded here. Desire, being linked in some way to appetite, is future-directed. Consequently, desire cannot itself be grounded in the representation of the satisfaction in the actuality of the Object but, rather, in the representation that is connected with the *anticipation* of satisfaction in the Object. We have encountered the idea of the state of satisfaction earlier, in our discussion of the third idea of sensorimotor Modality. A desire is that which contains the conscious representation (in an affective perception) of the possibility of this state-of-being on the condition that the possible Object be made actual (in the case of *Lust*) or the actual Object be negated or cancelled (in the case of *Unlust*).

The representation of affective perceptions in the unity of a *nexus*, which is an act of reflective judgment, makes it possible for *subjective affects to be made into the representation of an appetite*. This *unity* in affective perception is **Desire** properly so called. (We will shortly see the distinction to be made between ‘desire’ and ‘Desire’).

At this point we must recall that appetite can be either sensuous or rational (i.e. intellectual) according to its transcendental place. Both can in turn be subdivided as material or formal appetite – a structure which, allowing for the Copernican hypothesis, recalls the Stoic division stated earlier by Cicero. In either case, the idea of appetite presupposes the feeling of *Lust* or *Unlust*, as Kant commented earlier. If we try to equate *Lust* with pleasure and *Unlust* with pain, as

<sup>6</sup> Delight and aversion.

<sup>7</sup> The state of causing satisfaction or dissatisfaction.

<sup>8</sup> The state of satisfaction with respect to the actuality of the object.

most English translations of Kant seem to presume, or if we equate these solely with *voluptas et taedium* as a few other translations seem to do, it is difficult to see how we could regard appetite as anything other than sensuous. *Lust* and *Unlust* have a broader connotation than merely these sensuous interpretations (as we will discuss in detail in Chapter 15).

We earlier described the feeling of *Lust* as denoting a kind of “motivated wanting.” This leads us to ask: If this is so, in what way would the idea of *Lust* differ from the idea of desire? Kant explained the situation to his students in the following way:

One cannot define *Lust* or *Unlust* if one does not presuppose the appetitive power. The faculty of knowledge is combined with the appetitive power through the feeling of *Lust* or *Unlust*. The author<sup>9</sup> calls it *voluptas et taedium*. This is false because this is true only of sensuous satisfaction. - For understanding often can have dissatisfaction for that which best pleases the senses. One must name it *facultas complacentia et displicentia*. One can properly name this *sensum internum* [internal sense] because it goes to our own state, although no one has properly developed the idea of it yet. Feeling of *Lust* is the capability of my power of representation to become determined through a given representation to its maintenance and promotion or to the avoidance of the same. By *Unlust* we offer up our entire capacity to hinder the representation from further penetration into the mind. All that arouses feeling of the promotion of life arouses *Lust*. (The capacity of a subject is called appetitive power so far as through *Lust* in an object it is determined to produce this object.) . . . *Lust* is therefore the consciousness of the congruence of an Object with the productive power of imagination of our soul [KANT19: 258-259 (29: 890-891)].

From this we can see that the feeling of *Lust* is an affective perception that expresses the subjective congruence of an Object with a state of satisfaction, and, on the other hand, *Unlust* expresses congruence of the Object with a state of dissatisfaction. However, the feeling of *Lust* or *Unlust* alone does not suffice to determine the appetitive power. For the feeling to join with the appetitive power in the determination of an appetite requires them to be combined, and such a combination must be called a judgment, although such judging does not belong to the process of determining judgment (which is concerned only with the representation of objects as phenomena).

In our 2LAR of consciousness we have only two other processes of judgment in Relation of consciousness: reflective judgment and practical judgment. The representations of affective perceptions belong to the process of reflective judgment, and judgment of desire takes us to the judicial Standpoint. *Demand* for a desire, as the representation of a combination of an act of reflective judgment with appetitive power, belongs to the process of *practical* judgment. Thus *Lust* and *Unlust* are distinguished from desire through the distinction between the processes of judgment by which they become represented.

As an affective perception, a feeling of *Lust* or *Unlust* belongs to internal sense but is not necessarily sensuous. Sensuous feeling originates from the power of receptivity; the feeling of

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<sup>9</sup> Kant refers here to Alexander Gottlieb Baumgarten, a Wolffian philosopher who wrote the textbook Kant used in his metaphysics course.

*Lust* and *Unlust* can also arise from the power of spontaneity. The association of affective perceptions with the objective intuition – which is an aesthetic association – we make through the function we earlier called an aesthetic Idea. The aesthetic Idea is, I submit to you, the transcendental basis for what Greenspan called the “dual coding of emotion and cognition” and we may understand through this the ‘inner nature’ of Greenspan’s idea.

The judgment of Desire, on the other hand, makes possible a relationship between affective perception and the power of pure Reason, which is the power to regulate the spontaneity of an Organized Being. The matter of this judgment is *Begehren* (desire) properly so-called. On the other hand, Kant uses a different word, *Begehrung* (desiration), for the *form* of this judgment – i.e. connection to the expressive capacity of an Organized Being. The totality of this combination is what Kant called the *Mannigfaltige Begehrungen*, which I render here as Desire or, synonymously, the “manifold of Desires.” We can represent Desire properly so-called symbolically as the combination

*Begehren + Begehrung* → Desire.

It is this reflective judgment of Desire that stands as the *determining factor* in the *presentation to* appetitive power of possible appetites.

### § 3. Choice and Will

There is ample reason for us to infer that the synthesis of appetite produces multiple appetites more or less concurrently. We drink coffee while reading the paper; we listen to the weather report or the news while driving the car; we walk around the mud puddle while carrying on a conversation with a companion. More significant still are those experiences where we are faced with appetites that conflict with each other. The student wants to ask a question but does not want to risk embarrassment; a professor wants to finish analyzing a new collection of laboratory data but does not want to be late for his class; a child is afraid to strike back at the bully but does not want other children witnessing the event to think he is a coward. These and other common, everyday practical conflicts of appetite lie at the center of behaviors and experiences from which we can infer the *Dasein* of something called *choice*.

What is choice? The dictionary gives no fewer than eight separate definitions of the word:

**choice**, *n.* [ME. *chois*, *choise*; OFr. *chois*, *choix*, choice, from *chosir*, to choose].

1. the act of choosing; the voluntary act of selecting or separating from two or more things that which is preferred; the determination of the mind in preferring one thing to another; selection.
2. the right or power of choosing; option; as, he had the *choice* of two evils.



3. care in selecting; judgment or skill in distinguishing what is to be preferred, and in giving a preference.
  4. the person or thing chosen; that which is approved and selected in preference to others; selection.
  5. the best part of anything; that which is preferable and properly the object of choice.
  6. a variety of things from which to choose.
  7. a supply that is well chosen.
  8. an alternative.
- syn.** - election, option, preference, selection.

Insofar as choice is regarded as some sort of power or voluntary act, it is probably true that most people regard choice as a property or quality they themselves possess as a power of the mind. However, inasmuch as choice and will are two ideas that are closely interrelated, not everyone holds with this opinion.

### § 3.1 Views Opposing the Idea of Choice

We will look briefly at two viewpoints in which the existence of choice as “an actual thing” or a property of mind is regarded as a false idea. The first of these viewpoints is religious, the second mechanistic.

During the Reformation many Protestant leaders believed in and championed a doctrine that is known as predestination. In his *De servo arbitrio* (AD 1525) Martin Luther wrote against the idea of free will (and, by implication, free choice):

The human will is like a beast of burden. If God mounts it, it wishes and goes as God wills; if Satan mounts it, it wishes and goes as Satan wills. Nor can it choose its rider . . . The riders contend for its possession . . . God foresees, fore-ordains, and accomplishes all things by an unchanging, eternal, and efficacious will. By this thunderbolt free will sinks shattered in the dust.

Like Luther, John Calvin and many other important figures in the Reformation championed a doctrine of predestination and held that what most people regard as the self-evidence of free will is but an illusion. The justifications for their views were typically taken from one or more selected Bible passages, e.g.: “For He saith to Moses, I will have mercy on whom I will have mercy and I will have compassion on whom I will have compassion” [Romans, ix., 15].

Inasmuch as the basis for the theology of predestination takes the uncritical faith in what is written in the Bible as the first principle, it is clear that predestination stands on nothing but faith and lacks objective validity. Indeed, theologians opposed to the doctrine of predestination have little trouble finding other Biblical passages that contradict predestination doctrine. The point here is this: predestination in this religious sense has no place in determining the objective validity of the ideas of choice and will.

A more serious challenge to these ideas is mounted by adherents of scientific materialism under the name *determinism*. The doctrine of determinism also holds that choice and will,

regarded as powers of the mind, are illusory. One of the earliest leading spokesmen for determinism was the great 19<sup>th</sup> century mathematician Marquis Pierre Laplace. In his *Essai philosophique sur les probabilités* (1814), Laplace wrote:

We must envision the present state of the universe as the effect of its previous state, and as the cause of that which will follow. An intelligence that could know, at a given instant, all the forces governing the natural world, and the respective positions of the entities which compose it, if in addition it was great enough to analyze all this information, would be able to embrace in a single formula the movements of the largest bodies in the universe and those of the lightest atom: nothing would be uncertain for it, and the future, like the past, would be directly present to its observation.

Laplace's first sentence is held to be true, from the theoretical Standpoint, by the Critical Philosophy. It is, indeed, merely a different way to express the cosmological transcendental Idea. Where determinism departs from the Critical Philosophy is in what follows this sentence. Determinism, in the form it takes under scientific materialism, ultimately draws its rational ground from the atomic hypothesis as quoted from Feynman earlier in this treatise. From Descartes we have inherited a legacy of Cartesian dualism in which the *res cogitans* (or "soul" or homunculus) must in some sense be regarded as one of the "forces of the universe" and it is precisely this immaterial object that is denied real existence (*Dasein*) by the atomic hypothesis. It follows from this denial that all neural activity takes place in accordance with strict and thoroughly deterministic "laws of physics" according to physical causality as this is viewed in quantum mechanics.

The problem and the *saltus* in this argument has already been pointed out by Margenau earlier in this treatise. Physical causality in science can only be defined in relationship to the form of mathematical equations – specifically, those differential equations in which objective time does not appear as a coefficient – and in the context of a *complete* state-space description of the system. If the first of these requirements is not met, we do not obtain the temporal "if A then B" sequence that is defined as a causal physical sequence. If the second condition is not met, we are left with "partial causes" and cannot obtain a single and unique B to follow the given A. Without uniqueness of effect that follows a given cause, Laplace's determinism loses its meaning.

Now we have at present no such complete and systematic formulation as a mathematical description of behavioral phenomena, nor do we have any sure guarantee that we will ever obtain one. Indeed, we have reason to suspect, from the exposition of the transcendental Ideas and the power of speculative Reason, that we might never obtain such a complete model. However, there is an even more serious problem with the atomic hypothesis of scientific determinism. The most fundamental principles of the atomic hypothesis are those of quantum mechanics and quantum electrodynamics, and here we find ourselves faced with a consequence which strikes at the heart of classical determinism.

The things predicted through the quantum theory (its “observables”) are regarded under the paradigm of quantum physics as “expected values” – i.e., as averages. Physics predicts, at least in principle, merely the most likely effect to follow from some given quantum-mechanical state. The theory implicitly (and, in the laboratory, explicitly) allows for unpredictable variances to occur from the predicted mean values of its observables. Put another way, the quantum theory is a probabilistic theory. Quantum theory allows, for example, that all the water molecules of a lake might “spontaneously” leap into the air and rain back down to earth somewhere else; this possibility is *allowed* but its *probability* of actually occurring is vanishingly small.

Physicists have gotten used to this state of affairs, but in the early days of the development of the quantum theory this non-determinism was the occasion for great consternation. The great champion of the probabilistic interpretation of the mathematics of quantum theory was Niels Bohr; its great opponent was Albert Einstein, who turned his back on the quantum theory with his famous remark, “I do not believe God plays dice.” In its application (that is, in the technical usefulness and fecundity of the theory), the quantum theory is one of the great triumphs of human intellectual activity. But it entirely cuts the legs out from under the doctrine of scientific determinism as Laplace, Einstein, and many non-physicists viewed that doctrine.

One problematical way of rescuing scientific determinism, with regard to the ideas of choice and will, could be to make a virtue of the variances allowed by the quantum theory. We could say, “Neural activity is deterministic in the sense that it obeys physical causality in the quantum mechanical sense. Those instances where behavior appears to have a teleological character can be explained in terms of expected fluctuations from the expected mean in the actual neural activity.” This is, of course, merely a polished way of saying that there is actually no such thing as a power of choice and no such thing as “willpower” in the sense of either of these being regarded as a fundamental “force of nature” or a special “form of energy” different from the “four fundamental forces of nature” (gravitation, electromagnetism, the strong force, and the weak force). From the theoretical Standpoint, *the Critical Philosophy entirely agrees* that we have no objectively valid ground for regarding choice or will in terms of such forces or energies. The objective validity of “choice” and “will” is nothing other than a *practical* objective validity. Where the Critical Philosophy departs from scientific determinism is this: the *denial* of “reality” to choice and will is as much without objectively valid foundation as is the assertion of “reality” to them as forces, energies, or “vital spirits.” To deny assertorically and categorically differs from affirming assertorically and categorically only in Quality – i.e., ‘not A’ asserts the opposite of ‘A’, which is just as much a transcendental assertion as the assertion of A. The *only* objectively valid Standpoint from which to view these ideas is the practical Standpoint.

### § 3.2 Practical Choice and Practical Will

So, how are we to view the ideas of choice and will in the context of practical Reason? We have seen that the determination of appetite involves in its process all three of the processes of judgment (and their matters) in the ideas of Relation in our 2LAR of pure consciousness. The appetitive power is the capacity of an Organized Being to determine its actions by means of its own representations. Viewed from the practical Standpoint these representations are seen as the ground for the production of the Object and therefore as causal factors in the synthesis of appetite.

Now these representations can be logically divided into two classes differing from one another in terms of the transcendental place of their origin. Kant tells us:

That which is the cause of appetite is *causa impulsiva*<sup>1</sup> or *elater animi*<sup>2</sup>. Now if they arose from sensibility then they are called *stimuli* and their effect [is called] *appetitus per stimulus*<sup>3</sup> or sensuous appetite. Otherwise they spring from understanding; consequently they are called *motiva*<sup>4</sup>, their action *appetitus per motiva* or intellectual appetite [KANT19: 262 (29: 895)].

This is the place to make a remark that pertains to the idea of determinism. In the determinism doctrine applied to neuroscience, it is the entire biological system of the brain that is regarded as the “physical seat” of phenomena we characterize as choice-like or will-like. However, it is only a part of the brain that appears to be directly and immediately involved in processing the sensory modalities and which a mental physics would correlate with sensibility. These neural structures include such structures as the visual cortex, the primary somatic sensory cortex, the primary auditory cortex, and so on. Receptivity – the capacity of the Subject to be affected through the senses – is properly correlated with such structures as these. There are other neural structures, such as the association cortices, that are also involved in the phenomenon of perception but these structures are not viewed as *immediate* structures for representations arising from sensuous stimulation. They *do* appear to be involved in “imaginative perception” but appetites falling under this origination belong to the idea of intellectual appetite. Consequently, the logical division of transcendental place described above is no Cartesian mind-body dualism even when we are considering only the representation of the *soma*.

From this logical division of the transcendental place of appetite we get Kant’s famous explanation of the two forms of choice:

The capacity to desire practically, or *facultas appetitionum practicarum*, is *arbitrium*. *Arbitrium*,

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<sup>1</sup> "Impulsive cause".

<sup>2</sup> "Driver of the mind".

<sup>3</sup> "Stimulated appetite".

<sup>4</sup> "Motives".

or choice, is either *sensitivum*, which represents things to us that are agreeable to the senses, or *intellectuale* - things that understanding approves. However, dividing *arbitrium* into *brutum* and *liberum* is better. *Brutum* is that which is bound or necessitated by *stimulis*, and *liberum* that bound through *motiva*; animals have the former, human beings the latter, hence it is also called *humanum*. Man can as well be affected by stimuli but not be necessitated [by it] for he is autonomous of *stimulis* [KANT19: 263 (29: 896)].

We will let pass Kant's comment about animals, which reflects a millennia-old speculation holding that animals do not think, as irrelevant to the subject at hand. What is more important is Kant's division along the lines of "brutish choice" and "free choice." The logical division of the idea of choice along the lines of sensitive choice (*sensitivum*) and intellectual choice (*intellectuale*) is a division that follows quite clearly along the lines of the transcendental place of origin for the appetite. What, though, does his distinction between *arbitrium brutum* and *arbitrium liberum* mean?

Starting with the former, let us pay close attention to the idea that such choice is "bound or necessitated" by sensuous stimuli. Kant's word for "bound" – *determinirt* – means "determined" in the sense that the sensuous stimulation is a sufficient ground for the act of choosing. Necessitated means *made necessary*. These are ideas of Relation and Modality, respectively, and therefore pertain to the *form*, rather than the *matter* of choice. As for what we are to view as the matter of the idea of choice, Kant elsewhere tells us:

Choice . . . means to make something the object of one's appetite, which animals, who have choice but no will, can do as well; they can make no representation of a thing that they desire, still less of a purpose, why they want or do not want something [KANT19: 349 (28: 589)].

It might seem at first encounter that brutish choice is nothing other than simple determinism via the senses. If that were so, brutish choice would be no choice at all, merely reaction to stimuli on par with the motion of an amoeba. But this is not what Kant is saying. The idea of necessitation differs from that of necessity in that the latter implies that the very same stimuli will always produce the very same reaction. Necessitation, on the other hand, means that the reaction to the stimulus contains some factor that we often call the "mental state" of the Organized Being who is "exercising" brutish choice. A hungry dog will react one way to the sight of an offered piece of meat; a sated dog will respond in another way.

The second part in the description of brutish choice is the idea that the choice is *bound* by the stimulus. This means that no other non-sensuous factor – particularly, no element of reasoned comparison involving different possible ways the Organized Being *might* react to the stimulus – enters into the synthesis of the appetite. We have no ground to suppose that a hungry dog offered a piece of meat entertains thoughts such as, "Maybe I shouldn't eat that. I could get fat." Brutish choice is indicative of a most uncritical *realism* in an extreme Piagetian sense of that word.

To be *bound* by stimuli in the synthesis of appetite means that the immediate sensation and concepts immediately associated with the perception of that sensation are all that go into the making of the appetite. Here is an example. I was once acquainted with a dog that always attacked the paperboy. The dog did not attack other kinds of human visitors to his yard (although he would bark at them in a threatening manner). The dog's owner told me that once there was a paperboy who hit the dog with a rock. From that time on, even after the original paperboy no longer worked that route, the dog always attacked and tried to bite the paperboy. He would only stop his charge and wheel away (to return seconds later) if the paperboy raised his hand as if to throw a rock. (It did not matter whether or not the paperboy was actually holding a rock in his hand). The dog would even attack a paperboy who was merely riding by the house, in the street, on his bicycle. These are behaviors exemplary of *arbitrium brutum*.

With free choice (*arbitrium liberum*) the situation is different. Here the synthesis of appetite depends in whole or in part on non-sensuous representations – thinking that contains some factor not given in the immediate data of the senses or concepts immediately associated with that data. With free choice there enters into the synthesis of appetite constructs of thinking from which we infer a property of practical appetition we call *will*.

Will is thought as a capacity to determine oneself to acting in conformity with *the representation of certain laws*. And such a capacity can only be found in rational beings [KANT3: 44 (4: 427)].

The “laws” referred to here are practical representations *constructed through practical judgment and reasoning* that can be applied objectively in the determination of appetite. The object of such a representation as this can be called a *maxim of acting*. A behavioral example of this is “look both ways before crossing the street.”

Let us suppose that I sprain my ankle while doing something. If nothing occurs to me to do other than to drop what I am doing and writhe around on the ground in pain, my choice is brutish choice. The sensation of pain in my ankle is “all that matters to me” and I act accordingly. On the other hand, if I get up and “walk off the sprain,” my choice is to act according to *arbitrium liberum* because I am responding to the old coach's maxim that walking it off is the best thing to do for a sprain. In the first case, my action was determined through sensuous appetite alone. In the latter, even though it hurts more to walk on a sprain and my action is aimed at the purpose of relieving the sensation of pain, it is determined by a maxim of what is best done for a pain of this kind, and such a representation is intellectual rather than sensuous.

That we desire to escape pain is certain; its very definition can hardly go beyond the statement that pain is that element of feeling which we seek to abolish on account of its intrinsic quality. That this desire, however, should know how to initiate remedial action is a notion contrary to experience and in itself unthinkable. If pain could have cured us we should long ago have been saved. The bitterest quintessence of pain is its helplessness and our incapacity to abolish it. The most intolerable

torments are those we feel gaining on us, intensifying and prolonging themselves indefinitely.

This baffling quality, so conspicuous in extreme agony, is present in all pain and is perhaps its essence. If we sought to describe by a circumlocution what is of course a primary sensation, we might scarcely do better than to say that pain is consciousness at once intense and empty, fixing attention on what contains no character, and arrests all satisfactions without offering anything in exchange . . . In itself it has no resource; its violence is quite helpless and its vacancy offers no expedients by which it might be unknotted and relieved.<sup>5</sup>

It is perhaps important to mention for this example that a maxim to act in such a manner as this need not be the result of some previous *sensuous* experience. For example, I might have acquired the maxim of “walking off a sprain” through the experience of seeing another person sprain his ankle and hearing a coach tell that person to “walk it off.” Intellectual representations of maxims always arise from experience, but that experience is not necessarily sensuous-in-kind.

Will is not necessarily an attribute of free choice. Suppose I am hungry and am told I can have a hamburger or I can have a piece of chicken but that I cannot have both. Assuming that I like both hamburger and chicken, will my selection be determined from general maxims, i.e. “laws” I have constructed for myself? I can’t speak for you, but in my case the answer most of the time is “no.” I might act first – perhaps smelling the aroma of both (or imagining these aromas), inquiring if they are “hot” or “cold leftovers” and so on – but in the end I will simply pick the one I “most feel like having.” This is not brutish choice because I acted first to consider factors both present and absent in the determination of the choice; but in the end the selection is made (but not bound) on the basis of sensuous factors. This is free choice but does not qualify as “will.”

Granted, this distinction is not the typical one we use in everyday language. The non-technical usage of the word “will” – e.g. “the act or process of volition” – would call my choice in this example a “willful choice” merely because I could have chosen otherwise. From the practical Standpoint, the idea of will is an idea that contains the idea of a determining ground based on maxims that establish the object of Desire on non-sensuous grounds. Put another way, the ideas of choice and of will both pertain to appetitive power as ideas of the *Modality* of its determination. Loosely speaking, these ideas are “whys” rather than “hows.”

Appetitive power in conformity with concepts, so far as its ground of determination for the act falls in itself, not in the Object, is called a capacity *to do or to refrain as much as one likes*. So far as it is combined with consciousness of the ability for its act to bring forth the Object, it is called *choice*; if not combined with this same deed the act is called a *wish*. Appetitive power whose inner ground of determination falls within the reason of the Subject . . . is called *will*. Will is therefore the appetitive power considered not so much in regard to the act (as choice is) but rather in regard to the ground of determination of the choice to act, and has itself no proper prior ground of determination as such, but rather is practical reason itself so far as it can determine choice [KANT9: 13 (6: 213)].

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<sup>5</sup> George Santayana, *The Life of Reason*, vol. I: *Reason and Common Sense*, 1<sup>st</sup> ed., pp. 224-225, N.Y.: Dover Publications, 1980.

Mental life is the capacity of an Organized Being to take action in accordance with laws of appetitive power. Appetitive power is the capacity of the Organized Being to be, through its representations, the cause of the actuality of the objects of these representations. We can now see that choice, will, and even wish are merely ideas of the Modality of this idea of appetitive power, and hence of Modality in the spontaneity of mental life. In the transcendental Logic of spontaneity, wish is the merely possible determination of spontaneity; choice is actuality of this determination; will is its practical necessitation through the *executive* power of pure Reason. In the connection with appetitive power, they are, at the level of a 2LAR, the matter of the form of spontaneity from the practical Standpoint.

Choice and even mere wish can be contained under will so far as reason can determine appetitive power in general. Choice that can be determined by *pure reason* is called free choice. That which is only determinable through inclination (sensuous impulse, *stimulus*) would be animal choice (*arbitrium brutum*). Human choice is by comparison one such that is certainly affected but not determined by impulse, and is consequently not pure in itself (save for acquired proficiency of reason) but can still be determined to acts out of pure will. *Freedom* of choice is that autonomy of its *determination* because of sensuous impulse; this is the negative idea of the same [freedom]. *The positive* is: the ability of pure reason to be in itself practical [KANT9: 13 (6: 213-214)].

This brings us to freedom.

#### § 4. The Idea of Freedom

We introduced the idea of the causality of freedom as the idea of an intelligible object. This was the idea of a non-physical cause of the apparent spontaneity of the actions of an Organized Being. What we argued previously was that such an idea does not conflict with the category of causality and dependency because, as a *noumenon*, an intelligible object is not bound by the conditions of sensible intuition, i.e. the transcendental schema of the pure intuition of time. For all objects of appearance, cognition requires that every appearance be viewed as the effect of some previous state and as a cause or partial cause of the state of appearance which follows. Thus, every appearance is thought as a cause, must itself have a cause, and that cause must have its cause, and so on in an endless series. For a *noumenon*, however, the situation is different because a *noumenon* is not an object of any possible appearance. Therefore there is no contradiction with experience in thinking a *noumenal* cause that does not have a prior cause.

From the theoretical Standpoint we can go no further than to establish such a cause problematically by showing that its idea does not contain a contradiction. That we must think a cause for the apparent spontaneity of an Organized Being's behavior (that is, we must infer the *Dasein* of such a cause) is a requirement of the category of causality and dependency applied to the appearance of the Organized Being as a phenomenon. If, however, we are to regard the



Organized Being as the cause of its own spontaneity, and therefore as including within itself the causality of this spontaneity, we are regarding the Organized Being as a *noumenon* and such an idea can have only practical, not theoretical, objective validity.

The explanation of those observable behaviors we call intentional led us to *define* the idea of the appetitive power of an Organized Being. Recalling that causality is the determination of a change according to a general rule, we can see that appetitive power fills this role of causality for the spontaneity of an Organized Being. In this we must recognize the appearance of the Organized Being as a unit whole, i.e. as {unity, reality, substance, actuality}, grounded in the transcendental apperception of the noumenal *I* (which is, for each of us as an individual, the only *noumenon* for which our holding-to-be-true of its real *Dasein* is absolute). When we speak of the appetitive power of this Organized Being we are going beyond what is available for our perception in actual experience and representing a merely intelligible object – a *noumenon* – as an explanation of a factor in the manner of *Existenz* of the Organized Being. This we can do only with practical objective validity and only *with reference to* experience in actual appearances of behaviors. As a result, our theory of this subjective aspect of the phenomenon of mind is, to borrow Feynman’s phrase, bound in a strait-jacket of limitations so far as our theorizing about its supersensible nature is concerned.

Our considerations of various experiential behaviors led us to make a logical division between actions whose appetites we called sensuously determined and those that we call intellectually determined. It was in conjunction with the latter that we defined the “negative idea” of freedom as the ability of appetitive power to be determined autonomously through Reason alone, meaning that the *ground* of its determination can be independent of sensuous conditions. We saw that there are, in fact, experiential behaviors from which we can infer the *Dasein* of freedom in this negative connotation (i.e. that the determination of the act can be not-because-of sensuous conditions). We further saw that this idea, when properly so-defined, does not contradict the appearance of the *soma* because we do know that there are particular brain structures that, while involved in perception, do not participate in the *originating* of sensuous perceptions in receptivity (although they *do* appear to be involved in imaginative perceptions; however, this is not receptivity but spontaneity).

We can call the negative idea of freedom by the name *practical freedom*. A *positive* idea of freedom, on the other hand, we must call *transcendental freedom* because such a positive idea is the idea of “freedom itself” – a *noumenon* – and cannot be the idea of an object of any possible experience. The quote taken above from Kant’s *Metaphysics of Morals* presents the idea of transcendental freedom as established. This establishment was the principal task he undertook in *Critique of Practical Reason*, and it is probably clear to you that we have not yet talked about this establishment of transcendental freedom in this treatise. We will begin this task in Chapter 13. In

the present Chapter we will merely examine why it is necessary for us to concern ourselves with this *noumenon*.

When we reviewed Piaget's studies of the child's conception of causality we saw that there is an objectively valid criterion by which behavior can be called *intentional* behavior. The psychologist-observer can infer the actuality of intention when: 1) there are a number of intermediary actions that have to be taken between the stimulus of the action and the final result; 2) these actions are necessitated by the principal act; and 3) this series of intermediate actions must be ascribed to consciousness of desire, this consciousness being exhibited through the infant's adaptations in continuation of the pursuit of (or, in Piaget's words, the direction of) accomplishment of the primary act. Piaget called this a "reversing in the data of consciousness" (Chapter 11, §5.3). This presents us with *empirical* evidence that the behavior is *goal-directed* rather than, as neuroscience views it, merely the appearance of a "goal-directed quality of" behavior.<sup>1</sup>

Now, in order to say that behavior is (or can be) goal-directed we must also say the Subject makes for itself representations of possible *actions* that can be exhibited concretely in sensible intuition and sensible affective perception. We call such representations *maxims*. The negative idea of practical freedom, which has practical objective validity, is the idea that these representations can have a ground in pure reason even though the determination of the representation itself must call upon experience for its cognition. Reason, however, is the power of regulating the non-autonomic spontaneity of the Organized Being and this power is not concerned with the representation of sensible objects except indirectly, through its employment of the power to understand. Therefore it is invalid for us to say that the "objects themselves" can enter in to the grounding of intellectual determinations of choice. To say so would, in fact, be in violation of the Copernican hypothesis. It follows that the idea of practical freedom must necessarily presume the possibility of a power of *pure* Reason to be executive in the determination of appetite and action.

Such a presupposition, necessary for the possibility of practical freedom, is the Idea of the ability of pure Reason *to be practical*. Kant calls this Idea the positive idea of freedom, i.e., the Idea of transcendental freedom. Reason supplies regulative principles of understanding, but can

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<sup>1</sup> When one says the appearance of behavior "has a goal-directed quality" rather than simply saying the behavior *is* goal-directed, this is really nothing more than physical science striving to avoid the introduction of "teleological causes" into its theory. As a science based on biology, neuroscience must follow a paradigm dictating that its theories be based on what can be studied using the accepted methodology of that science. Neither goals nor desire nor intention are observables within the limits of the topic of biology. This is true also of thoughts, feelings, and the other proper objects of the phenomenon of mind. Neuroscience posits its "motivational system" as an idea of a cause of the appearance of "goal-directedness" in behavior but views this as a "quality" because it is not possible for us to look at neurons, hormones, etc. and discover within these biological objects something we can point to and say, "There! *That* is a goal." Psychology, outside the topic of psycho-physics, is not bound by this same paradigm. It has different objects of study and follows a different methodology of investigation.

Reason supply regulative principles *to itself*? This is the fundamental question in the *Critique of Practical Reason*. Transcendental freedom cannot be established through experience; only practical freedom can be so established. It follows that if the Idea of transcendental freedom is to have objective validity, we must seek an *a priori* ground for this objective validity.

Our understanding of the phenomenon of mind from the theoretical Standpoint finds itself facing two contradictory yet equally possible ideas. On the one hand, we can think of the phenomenon of mind in terms of a systematic *organization* of representations. The particular representations themselves are contingent since these they are derived from the cognition of experience. But the *systematic character* of their organization from *rules* is *not* contingent *with regard to the manner in which* the manifold of representations (including the manifold of Desires) *takes form*.

On the other hand, it is equally possible, from the theoretical Standpoint, that there actually is no underlying system of organization for the form of the *manifold* of representations. This form might be just as contingent as the matter of representation. (This does not apply to the form given to cognitions under the categories of understanding because these determinant judgments apply the categories to the thinking of appearances). After all, we have reason to suppose that each of us thinks about things in particular a little differently in each individual case. We can infer from our experiences that there is such a thing as human diversity in our mental makeup, just as there is in our physical makeup. And there are certainly some people who we see as “out on the fringes” of the distribution of mental diversity - dangerous criminals, psychotics, extreme neurotics, and, yes, even geniuses. Perhaps the appearances that could make us think there is some underlying and non-contingent systematic organization to the phenomenon of mind is merely a statistical illusion of the dialectic of speculative Reason.

Thus, from the theoretical Standpoint, we have both conflicting possibilities. This situation is merely a particular instance of a more “cosmological” antinomy of speculative Reason that Kant discussed in *Critique of Pure Reason*. Kant posed two conflicting propositions: 1) Causality in accordance with laws of nature is not the only one from which the appearances of the world collectively can be derived. It is also necessary to assume another causality through freedom to explain them; 2) There is no freedom, but everything in the world happens solely according to laws of nature. Kant was able to argue, from strictly the theoretical Standpoint, that both these hypotheses were true. He did so by a method frequently used by mathematicians, namely to assume the opposite of the hypothesis and then show this leads to a contradiction. By the principle of the excluded middle it logically follows from the contradiction that the original hypothesis must be held to be true [KANT1a: 484-489 (B: 472-479)]. He went on to show that the transcendental illusion present in *both* arguments comes from regarding appearances as things-in-themselves and failing to take proper note of the distinction between sensible and

intelligible objects.

This and the other antinomies of speculative Reason are what lead us to the necessity of taking the practical Standpoint into account. Left all on its own, the theoretical Standpoint cannot avoid falling into skepticism because the transcendental Ideas of speculative Reason provide us with no *a priori* guarantee of the actuality of the *Dasein* of their respective Objects, yet the regulation of understanding by these Ideas tends to push the cognitive power to apply the categories beyond the horizon of possible experience to the thinking of *transcendent* objects. Any number of fantasies are possible from the theoretical Standpoint and even the ultimate objective validity of the categories of understanding can be called into question if the theoretical Standpoint is left to stand on its own.

Now the *transcendental* deduction of the categories is grounded in the transcendental apperception and this is possible only because of the apodictic manner in which the transcendental *I* is held-to-be-true. There is, for each of us, only one *noumenal* “given” in the world, and this is the “sense of aliveness” we call the transcendental *I* of pure apperception. Once we adopt the Copernican hypothesis, all else follows from this absolute ground. But in order for this to happen with *real objective validity*, and for the Copernican hypothesis to be free of internal contradiction, it is necessary that we be able to connect the *I* of transcendental apperception to the possibility of experience. Such a connection is possible only from the practical Standpoint and here the Idea of transcendental freedom is the *keystone* of the entire structure. If *pure* Reason can be shown to *be* practical – that is, if an *a priori* and *practical law* can be shown to govern pure Reason – then the Idea of transcendental freedom is established with practical objective validity, the connection is made between the *I* and the world of appearances, *and the theoretical Standpoint itself is grounded practically*.

I expect there will be some who harbor a suspicion that there is something circular in this strategy we are following in this treatise. We have, after all, been through twelve chapters and are only now raising a fundamental question upon which the validity of all we have done so far now hangs by a thread. Shouldn't we have dealt with this question straight-away and at the very beginning? To this I answer: I know of no way to present the topic of pure practical Reason in a way that makes sense if we do not know the *context* of the question. This means we must understand of what the theoretical Standpoint consists, that there is more than just this one Standpoint, and how we must look at things from the practical Standpoint. We are, in short, still following Aristotle's *dictum* and building our theory with a shovel as we continue to dig into the phenomenon of mind. All along the way we have been pulling into the light very fundamental and usually unappreciated presuppositions in our maxims of thinking and giving critical examination to these ideas through which we view Nature and ourselves. We are getting closer to the bedrock, so let us continue to dig.