LYCEUM

The Soul in the Explanation of Life: Aristotle Against Reductionism
Steven Baldner

Infinity and Proofs for the Existence of God
Kevin M. Staley

A Problem in Kant's Theory of Moral Feeling
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Virtue and Self-Alienation
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Plato’s Escape from Mechanism
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LYCEUM

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Consider the following quotation, taken from a contemporary textbook in biology. The quotation explains the first of the fundamental principles for modern biology.

One of the basic tenets of modern biology is that all of the phenomena of life are governed by, and can be explained in terms of, chemical and physical principles. Until early in the present century most people, biologists and laymen alike, held that life processes differed in some fundamental way from those of nonliving systems. With the vast increase since then in our understanding of chemical and physical principles it has become clear that the myriad phenomena of life, although much more complex than nonliving systems, can be explained in chemical and physical terms without postulating some mysterious vital force. The properties of living cells and organisms that at one time seemed so mysterious, now appear to be quite straightforward. Many of the complex phenomena of living systems can be reproduced in the test tube under appropriate conditions. The corollary of this belief is, of course, that if we
The authors of this passage make a strict disjunction between two types of explanation: explanation in chemical and physical terms and explanation in terms of “some mysterious vital force”. Either we regard living beings scientifically as chemical, molecular, and atomic—and as nothing more than these—or we give up science altogether and talk about the unknowable as the cause of the knowable. This strict disjunction is one that seems to dog philosophy and the philosophy of nature: either materialism or idealism; either mechanism or vitalism; either scientism or the occult. We are always forced, it seems, to make a hard choice, for tertium non datur. Since the authors of this passage are scientists, they choose the empirical, the material, or the scientifically knowable, but the implication of their choice is that to choose anything more than the strictly material (that is, more than the atomic, molecular, or chemical) is to choose what is anti-scientific.

I argue that there is a third possibility, that it makes very good sense to say that the living is something more than its chemical constituents. This “something more” is its substantial form, the very principle and ultimate cause of its being alive. But this principle of substantial form, traditionally called the soul, need not be understood in some way that is anti-scientific. With Aristotle and St. Thomas Aquinas, I think that I can make my case.

The position advanced by these authors is called reductionism: the position that more complex kinds of reality are nothing but aggregates of simpler kinds of reality. The reductionist wishes to say that the whole is not more than the sum of its parts. In biology, the reductionist's argument would be something like this. The biologist explains life in terms of what is scientifically knowable, and what is scientifically knowable is empirically verifiable.

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Nothing other than the chemical make-up of a living organism is empirically verifiable. Hence, the living organism is nothing more than its chemical make-up.

Now the biologist will not claim that only the immediately observable is real, for he will allow that it is possible to infer the existence of realities that cannot be observed from realities that can. The biologist knows about the existence of proteins, for example, in a cell by introducing radioactively labelled antibodies specific to the protein he wishes to identify. From resultant traces of radioactivity he infers the existence of proteins that he cannot directly observe. Once scientists have some evidence for the existence of a non-observable reality, they attempt to find other evidence to confirm the existence of what is not observable. The evidence must ultimately be empirical, so that it may be said that all of what is known in science has an empirical basis.

When the experimental biologist investigates living beings, he often proceeds analytically. That is, he separates and isolates, often, as in dissection, by violent means, the constituent parts of an organism. These parts may be organs or they may be chemical substances, but in either case the biologist is dealing with something that is, either actually or potentially, a substance in itself. An organ is a substance in the sense that it is a part of a substance, and a chemical within an organism is a substance in the sense that, although it does not exist as a substance in the organism, it is virtually or potentially present in the substance so that it can be extracted and when extracted made to exist actually as a substance. The substantial form, however, is not like a substantial part. The substantial form cannot be extracted from the whole or isolated analytically to be examined separately. It is the cause of the whole as a whole, and it is therefore not visible to the experimenter's methods which are analytical. The experimenter works by splitting an organism apart to see what its constituent parts and elements are; the result of such splitting never reveals some part or element called substantial form or soul. Hence, it seems that the form is irrelevant to the work of the experimental biologist.
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In one sense it is true that the substantial form or soul is irrelevant to the work of the experimental biologist. As one attempting to explain the constituents of life, he is not concerned with the question, simply, of what life is. But by focusing on the constituents of life, he is not thereby entitled to give a full answer to the question, which is properly philosophical, of what life is. He can explain what is materially required for life--he can provide the material and some of the efficient causes of life--but he cannot say what life is without appealing to the substantial form. For the practice of the biologist, then, a reductionism is justified, provided that the reduction is understood to be only for the purposes of a certain restricted discipline. The reduction, however, must not be understood to preclude the wider, philosophical question of what life is. To give an answer to that question, as I shall argue, we must appeal to the substantial form of life, known traditionally as the soul.

The most important source for Aristotle's thinking on life is the De anima, and we shall focus especially on the first two chapters of book II, where Aristotle gives his two definitions of the soul. The very first point that Aristotle makes is that the reality of life belongs to substances.2 We must, therefore, recognize the distinction between substance and accident, and recognize that the soul, which is the principle of life, is not an accident of living things. That is, it does not inhere in something else as in a subject.

Substance, Aristotle points out, can be taken in three senses: as matter, as form, and as the composite of matter and form. Aristotle sets his discussion of life in the context of his hylomorphic philosophy, developed primarily in the Physics. All natural substances are composites of form and matter, form as the principle of actuality and matter as the principle of potentiality, the composite being what is the existent thing. Aristotle's hylomorphism is not, I would argue, a mere theory, in the sense that it would be merely a dialectical attempt to explain phenomena not fully understood. Rather, I would contend that the

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2 De anima 2.1, 412a6-11.
hylomorphism is necessarily required in order to explain the fundamental reality of motion in all living things. I am not going to give the argument here, but the only way to deny the hylomorphic composition of natural things is to deny the reality of motion. The point I want to make is the vast importance of the doctrine for what Aristotle is trying to do in the De anima. Aristotle wishes to explain life. He has already argued for the explanatory value of form and matter. It is *prima facie* obvious to him that the explanation of life will be an explanation of the actuality, or form, of life. The question for him is, what is this form?

To put the question another way, if we already recognize, as Aristotle does, the forms of natural constituents, such as elements, why is there a need for some form that goes beyond these constituents? An atom, for example, could be said to be a substance\(^3\) and the sub-atomic particles could be said to be its matter. The atom, or more likely the molecule, is a new reality with new properties above and beyond the properties of the constituent particles. This new reality or actuality has inherent, spontaneous activity and thus must have something that is appropriate to itself as a whole—it must be a new form, in Aristotle's terms. Similarly, the particles are subject to change and could be transformed into other particles. The given form of any particle is often described, today, in terms of mass, and the potentiality for other forms is said to be energy. Mass and energy are, thus, modern analogues to Aristotle's act and potency. One could say, therefore, that there is a kind of acceptance of form and matter at the basic physical or chemical level insofar as there is an acceptance of the fundamental convertibility of mass and energy. Furthermore, many would accept that at the atomic level and again at the molecular level there are new realities, not found in the elemental constituents. But must we recognize yet another level of reality, another kind of form, to correspond to the level of life? My point at is simplest is that, if we accept the reality of non-

\(^3\) Although certain important qualifications must be made when a reality such as an atom, or its particles, is said to be a substance, for such realities do not naturally exist independently and they cannot be said to be complete in species.
living substances, what evidence is there that living substances are anything more than mere aggregates or arrangements of non-living substances. What argument does Aristotle give to show that living things cannot be reduced to non-living things?

Aristotle gives three ways in which the form of a living thing must be radically different from the form of non-living things. First, a living thing may be alive but not be actually performing all of the activities of being alive. Actuality, Aristotle points out, is of two sorts.4 There is the actuality of possessing an ability to operate, and there is the actuality of performing the operation. The geometer who is sleeping possesses the actuality of geometry in the first sense, but when he is actually solving geometrical problems he possess the actuality of geometry in the second sense. The actuality of life (the soul), says Aristotle, is an actuality in the first not in the second sense. That is to say, as Thomas will later point out,5 that the powers and operations of the soul are really distinct from the essence of the soul. The empirical reason for this is that living things do not perform all of the operations of being alive all of the time that they are alive. Growth, for example, is one of the operations of living beings, but there are times when a living being is alive but not growing. Sensation and self-motion are operations of at least some living things and they are intermittent operations: the animal remains alive while not always performing these operations. In this way the form of a living thing differs sharply from the form of a non-living thing. There is no distinction in the non-living thing between its possessing its substantial form and its performing its characteristic activities. As soon as something has mass, for example, it begins

4 “But actuality is spoken of in two ways, as in the case of knowledge and as in the case of the exercise of knowledge. Evidently, the soul is an actuality as in the case of knowledge; for sleeping and being awake depend upon the existence of soul, and being awake is analogous to the exercise of knowledge, whereas sleeping is analogous to having [knowledge] but not exercising it.” De anima 2.1, 412a23-26. Aristotle's On the Soul, trans. H.G. Apostle (Grinnell, Iowa: Peripatetic Pr., 1981), p. 19.

5 Summa Theologiae 1.77.1.
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to exert gravitational attraction; it does not at times exert such attraction and at other times not. It does not have the sort of double actuality (a potency for operating and an actual operating) that living things have.

Second, the form of a living thing must be the form of an organic body. That is, the body which is able to be alive (has a potency for life) must have distinguishable, spatially separate parts that serve the life the whole. The heart of a mammal or the roots of a plant have specific functions that serve the whole organism. From these specific organs we can trace the movement of the blood or the gathering of soil nutrients. But this is very much unlike the non-living. The presence or absence of protons might produce an isotope, but the protons are not really spatially distinguishable and the resultant radioactivity, say, is a property of the whole isotope. It is not an operation of some protons, as the movement of blood is the operation of the heart. Non-living matter, therefore, does not have distinct organs; it has parts in the sense that any continuous whole can be arbitrarily divided in quantity but it does not have qualitatively distinct parts. The form of the living, thus, must be the form of one organism that is a true unity of very diverse parts.

Third, the operations of living things differ radically from the activities (not really operations) of the non-living. Here Aristotle gives a partial list.

The term ‘living’ has many senses; but let us say that a thing is living even if it has in itself only one of the following: the intellect, the power of sensation, the power of producing motion and of stopping with respect to place, the power of

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6 De anima 2.1, 412a28-412b9.
7 It is on the basis of these first two points, and the other distinctions that Aristotle has made, that Aristotle gives his first definition (a sort of conclusion) of the soul: “the first actuality of a natural body which has organs.” De anima 2.1, 412b5-6 (Apostle, p. 19).
moving with respect to nutrition, that of deterioration, and that of growth.\(^8\)

Aristotle had already discussed briefly the fact that living beings must have a certain organic structure, and elsewhere he points out that reproduction is an essential operation of the living.\(^9\) Aristotle, thus, gives a list that corresponds rather well to a list that one would find in a modern textbook on biology. The authors who I quoted earlier give six essential operations of living beings.\(^10\)

**Specific Organization**--the tendency of organisms to have certain parts in a certain order (the fact that they are organic, Aristotle's terms). This would include characteristic colours, sizes, and shapes. **Metabolism** is the general term for all of the processes that serve the growth, maintenance, and repair of the organism. Metabolism is subdivided into **anabolism**, the converting simpler substances into more complex to store energy (as fats or carbohydrates); **catabolism**, the process of breaking down the complex substances for the release of energy and the using up of cellular materials; and growth, an increase in the cellular mass (usually in nitrogen and protein) and a tendency toward organic differentiation. Movement, something that applies to plants and to animals, and even applies to animals that, like sponges, corals, and oysters, move their environment rather than themselves. **Irritability** is a response to stimuli, whether we call the response sensation or some sort of plant movement. **Reproduction** is probably the most important characteristic for distinguishing the living from the non-living, for there are viruses which do not metabolize or move, yet because they do reproduce most biologists would allow that they are living. Finally, **Adaptation** is the ability of a species to survive by changing to suit the environment.

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\(^8\) *De anima* 2.2, 413a22-25.
\(^9\) *De anima* 2.4, 415a24-415b8.
\(^10\) Villee and Dethier, *Biological Principles*, pp. 31-34.
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This list, with the exception only of adaptation, was insisted upon by Aristotle as the properties of life, that is, as the unique and distinguishing marks of the living from the non-living. If it is true that these properties are properties of the living, and if it is true that the properties of the living being are not the properties of physical or chemical beings as such, then there must be some actuality that is not part of the natural physical and chemical make-up of the organism. That is, the organism must be more than the sum of its physical and chemical constituents. This is the point that Thomas wishes to make in the Summa theologiae when he argues that the soul is not a body. The soul, Thomas says, is defined as the first principle of life in the living things that we know.

Now it is clear that not just any principle of vital operation is a soul, for thus the eye would have to be a soul, since it is a relative principle of vision, and the same would be true for the other instruments of the soul. But the first principle of life we call the soul. However much a body is able to be a relative principle of life, as the heart is the principle of life in an animal, nevertheless no body can be the first principle of life. For it is clear that to be a principle of life or to be living does not belong to a body insofar as it is a body, for otherwise, every body would be living or would be a principle of life. Being alive, therefore, or being a principle of life belongs to a body through the fact that it is such a body. But the fact that it is actually such it has from some principle which is said to be its act. The soul, therefore, which is the first principle of life, is not a body but the act of a body, just as heat, which is
the principle of heating, is not a body but is a relative act of a body.\textsuperscript{11}

Thomas makes two points in this passage. First, the many bodily organs are each principles in some relative way, but none of the organs of the living body can be the \textbf{first} principle of life. There must be some principle of organization that makes the whole to be an organic whole. Second, the reality of a body as such is common to the living and to the non-living. If a body is alive, it is not because it is a body, but because it has been made to be a certain sort of body. It has a peculiar sort of actuality not because of something bodily but because of something that has made the body to be what it is.

Here an objection might be brought against all that I have been arguing in the name of Aristotle and Thomas. In the light of the Thomistic argument that I have just talked about, could a materialist not seize upon Thomas' last point and claim that it is precisely the fact that the body is \textbf{such} a body, and no other fact, that accounts for the being alive of the body? There is no need to bring into the discussion a new “actuality”, “form”, or “soul”. The mere fact that the body is organized in such a way as to be alive is a sufficient explanation for the fact that the body is alive. Or, to put this another way, the fact that the organs and bodily parts exist in such and such an \textbf{order} is sufficient to explain the fact that the body as a whole is alive. Being alive, on this materialist or mechanist account, is nothing more than having a certain order among organs, or a certain order among chemical substances in the body.

This powerful objection is one that has been met by Richard Connell in his fine book, \textit{Substance and Modern Science}.\textsuperscript{12} I shall draw upon his discussion in the following. To say that the living being is alive because it possesses a certain order among parts is to say that the living being is closely

\textsuperscript{11} \textit{Summa Theologiae} l.75.1.
analogous to a machine. A machine does something greater than what its parts can do, for it is a whole that is greater than the sum of its parts, and a machine only can perform its function if its parts have just such an order. In some ways, it is true, the machine is analogous to the living organism, but in some crucial ways the two cases are not analogous. For one, there is a great difference between the organs of a living being and the mechanical parts of a machine. Organs are produced simultaneously with the whole, for they develop while the whole organism is developing, but mechanical parts are made separately from the whole machine and may be made temporally before or after the rest of the machine. As well, an organ cannot perform its function apart from the organism, as the eye, for example, cannot see apart from the living animal. Mechanical parts, however, can perform their functions apart from the whole machine. Or again, organs' functions are determined by the whole organism, whereas the functions of mechanical parts are determined independently of the whole. Second, machines are passively moved by some motor, agent, or fuel that is outside of them. This source of motion, whether it is a motor or agent or fuel, can be separated from the machine or can be replaced with some other source, even a source of a different kind. An automobile can be powered by a gasoline engine, but it can just as well be powered by an electric engine, and if so it would still be an automobile and would perform the same essential function as a gasoline powered automobile. A living being, by way of contrast, takes in its nutriments from the environment in such a way as to make the formerly non-living materials into a non-separable part of itself. Anabolism is not a process of storing some material, as fuel is stored in a gasoline tank, but is rather a process of transforming matter. Third, the coming to be of a machine does not bring into existence new properties (physical or chemical) that were not already present in the parts. A machine constructed out of hard or malleable parts will be hard or malleable as a result, but the existence of living organisms does entail the new existence of physical and chemical properties. A vivid example of this is given by Connell. Most cells are primarily aqueous, and as such ought to have the physical properties of water. They ought to be shaped like drops, for
example. In fact, however, many cells do not have the drop-like shape; nerve
cells, for example, are long and thin. But when they die they tend to resume a
drop-like shape that would be appropriate to an aqueous substance. The point is
that new physical properties come into existence with the coming into existence
of the organism--something that does not occur at all with machines.

The inadequacy of the machine as metaphor for the living can perhaps
be seen most clearly when we think of reproduction, even in its simplest form,
cell division. There are two major ways in which reproduction differs from
mechanical operation. First, reproduction does not serve as a tool or instrument
for something else. Machines, by their very meaning, are tools or instruments
for human purposes. A machine does not have any intelligibility apart from its
use by some human or at least intelligent agent. It also makes perfectly good
sense to say that a machine designed and made for one end is used by the owner
for some other end (as I regularly use my slotted screw drivers for chisels). We
could thus think that the activity of a machine only makes sense in terms of the
purpose given to it by its user. Living organisms, by contrast, do not function
for the purposes of some other agent. If some purpose is to be ascribed to
reproduction, it is simply the survival of the species. Even if we could make
self-replicating machines, we would naturally wish to know who or what was to
make use of the second and third generations of machines; we should wish to
know their purpose in a way that we would not about living species.

Second, the most basic kind of reproduction, that of cells, occurs by
division, but a self-replicating machine does not replicate by dividing. A
machine would use outside materials and mechanical means to replicate,
whereas the cell divides with inner materials and by mostly non-mechanical
means. The machine operates on outward parts, and for a machine to divide
something would be for one active part to act upon another passive part. Now
to some degree there is mechanical activity in cell division, for the
chromosomes, for example, are separated by the spindle fibres of the centrioles,
which pull the chromosomes apart. But the chromosomes do not themselves
duplicate in such a mechanical way--their mitosis occurs within themselves. And the organelles, except for the mitochondria, duplicate by disintegrating in the cytoplasm and by reforming in the daughter cells. Hence, the division of a cell is a mixture of different sorts of activities. Some parts reduplicate themselves, some parts are acted upon by other parts in a quasi-mechanical way, other parts disintegrate and are reformed. The division of the cell is an activity of the whole cell; it is only partially the mechanical activity of one active part upon another passive part.

Connell makes one further comment on the uniqueness of cell division in comparison to the activities of the physical and chemical constituents of the cell:

A physical change terminates in the modification of a property or properties, whereas a chemical change terminates in a new compound with a new set of properties. Cell division, however, terminates at neither. The two daughter cells resulting from mitosis are qualitatively alike and individual members of the same species. The activity whereby this effect is brought about is what is at issue, and it is *sui generis*. There is nothing like it in the categories of physical change and chemical change.\(^{13}\)

I have attempted to give here an argument against a reductionism, against the reduction of life to the physical and the chemical. I have done so for two reasons, one that I do not think that any satisfactory doctrine of human nature can be formulated unless we first meet the challenge of this reductionism. For if reductionism is granted as true, then human attributes can only be introduced by postulating a soul that is one substance entirely separate from the body which is another substance. In other words, if reductionism is not refuted,

\(^{13}\) Connell, *Substance and Modern Science*, p. 115.
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we are forced to accept a dualism or to abandon such human characteristics as intelligence and will. My other reason is that I do not think that the reductionism is fair to biology itself. If reductionism is true, then there is no science of biology, for there is no true biological reality. Biology would have to be a branch of physics or chemistry. But the plain empirical facts of the matter, known long ago to Aristotle and St. Thomas, and given much richer meaning by modern scientists, is that life is irreducibly unlike the more basic levels of material reality.

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Infinity and Proofs for the Existence of God

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In the Spring 1991 issue of this journal, Ronald Tacelli argued for the thesis “that an eternal or everlasting world entails an actual quantitative infinite.”¹ Tacelli’s argumentation shows that he is principally concerned with a world which is everlasting because its past is without beginning--he has not much to say about the future. So, as I understand it, his thesis can be put in the form of the following conditional: if the world is without beginning, then the series of past events is an actual quantitative infinite.

This is a significant thesis, for, coupled with a claim about the impossibility of there existing or having existed an actual infinity of anything (books, days, dogs, etc.) in reality, it makes for a powerful argument for the claim that our universe has had a beginning in time. The argument looks like this: If the world is without beginning, then there has been an actual infinity of past events. But an actual infinity of past events is impossible. Therefore, the world is not without beginning. (modus tollens) One need only add another premise that whatever has a beginning must be caused by something other than itself (a version of the principle of sufficient reason), in order to complete an argument for the existence of God, i.e., of a first cause of the universe.

The impossibility of an actual infinity of anything in reality can be made intuitively obvious in a number of ways. While it is true that mathematicians are quite comfortable talking about actually infinite sets of numbers, some philosophers are uncomfortable talking about actual infinite sets of real, extramental objects. For example, a mathematician is apt to say that the set of positive integers is actually infinite, as well the set of negative integers.

That is, each set contains an actual infinity of members. But note that the union of these two sets also contains an actual infinity of members as well; there are infinitely many positive and negative integers. This leads to the mathematical curiosity that in the case of infinite sets, a part can equal the whole: The set of positive integers contains just as many members as the set of positive and negative integers. But while one might be dazzled by this mathematical curiosity, one is soon confounded if one thinks that there can be an actual infinity of non-numerical, extramental objects as well.

Consider a library with infinitely many books. One morning the librarian checks his holdings and is pleased to see all is in order; no books have been lost. The library still contains infinitely many books. That night, however, a thief makes her way into the library and steals all the even numbered books. The next morning our cautious librarian checks his holdings again, and is relieved to find that he has just as many books as he had the day before. Even though the thief took infinitely many books from the library, infinitely many books remain. This strikes many as counter-intuitive. No matter what sense can be made of the actual infinite in mathematics, when it comes to libraries it makes no sense at all. If a thief takes infinitely many books out of the library, then, indeed, the library ought to have fewer books than before her clandestine operation.

Similar counter-intuitive results follow from a universe which contains an actual infinity of past events. It would seem, for example, that if the past is without beginning, then the universe can never be any older than it already is. For even if another ten million years should pass, the universe will have existed an infinite number of days before that passage of that ten million years as well as after it. Just as one cannot diminish the number of books in a library that has infinitely many of them, one cannot add one day to a universe the past of which is infinite.

What is happening in these examples; why do the proposed extramental, actual infinities strike us as impossibilities? In each case, one looks at the books in the library or the past days of the universe as elements of a
set. The set itself is understood to be a certain kind of whole or totality. We then discover something odd about these totalities; they do not meet our ordinary expectations about wholes and parts. We expect wholes to be greater than their parts. But it turns out that a whole which has infinitely many members is equal to certain of its parts. We expect wholes to get bigger when we add something to them, but infinite totalities remain the same size, infinite, no matter how much we add to them. We understand mathematicians when they speak this way: We can readily see that the even numbers can be put in one-to-one correspondence with the set of even and odd numbers. If, on this basis, the mathematician wants to say there are as many even numbers as there are even and odd numbers, so be it. But we don't want librarians to speak this way because it violates our ordinary experience with parts and wholes in the physical world. We know that when we take even one book from the library, there are fewer books remaining within the library. We know that with each passing day, we are really one day older.

I would agree, then, that a real, actual infinity of past events is impossible. I do not think, however, that the conclusion that the universe must have had a beginning in time follows; for I do not think that a beginningless past necessarily entails that there has been an actual infinity of past events. That is to say, I think Tacelli's thesis “if the world is without beginning, then the series of past events is an actual quantitative infinite” is wrong. I want to argue that a beginningless past entails only that there has been a potential infinity of past events. I order to make my case, I wish first to discuss the meaning of the key phrases in this debate, actual infinity and potential infinity.

These are misleading phrases. We ordinarily take the term ‘actual’ to refer to something which is really existing or which is a determinate part of reality, and the term ‘potential’ to refer to what can exist or can be a part of reality, but is not yet a part of that reality. Given our ordinary use of these terms, some have argued that it is wrongheaded to consider the past actual, since it no longer exists. They would rule out the past's being an actual infinity on this basis alone; for how can there be an actual infinity of non-existing past
events? But others have responded that it is equally wrongheaded to consider the past as some sort of potential, for surely the past is no longer a mere possibility which can be, but is not yet.

I think that it makes sense to speak each past event as actual even though past events no longer exist in the present, for I think actual can mean something more than existing in the present. A past event is actual in the sense that it has really occurred; it is a definite and determinate part of reality which, once it has occurred, can never be otherwise. But even though I think it makes sense to speak of the past as actual in this way, I still do not think that the past events of a beginningless universe constitute an actual infinity.

The term ‘actual’ in the phrase ‘actual infinity’ means something more than “having really occurred” or “being a determinate part of reality.” Fr. Tacelli’s paper gives us a valuable insight into what the term ‘actual’ means in this context. He states that by ‘actual quantitative infinite’ he means “a limitless many which nevertheless comprise a completed set.” So the actual quantitative infinite is infinite because it is limitless; it is quantitative because it speaks of the many; and it is actual because it is a completed set.

Tacelli’s use of the terms ‘actual’ and ‘complete’ in this context mirrors that of William Lane Craig, whom Tacelli cites on the first page of his article. According to Craig, the characteristic feature of an actually infinite set is that it constitutes “a determinate whole actually possessing an infinite number of members.”2 Tacelli’s completed set is Craig’s determinate whole. What both uses of the term ‘actual’ have in common is that they speak of the infinite as some sort of totality which is all together, whole or complete. Thus, when one speaks of the set of natural numbers as an actual infinity, one must envision all of the natural numbers collected together as a whole at once and immediately, with no number lying outside of this collection so that it is inconceivable that any other natural number should be added to the set. The set of natural numbers

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is like a well-made chair. No part is missing; it is an integral whole. Yet it is unlike the chair inasmuch as it has infinitely many parts.

What then is a potential infinite? An example will be useful here. Suppose that matter, a Thanksgiving turkey for example, is infinitely divisible. Suppose also that an immortal master carver exists, who is so skilled in his craft that he is capable of cutting any slice of turkey, no matter how thin, in half again. On Thanksgiving morning, he is slicing turkey and placing these slices in a pile on a platter. He cuts a nice thick slice, and he cuts it in half. He places one half of the slice on the platter, and cuts the remaining half in half again. He places this half of the half on the platter, and slices the remaining half in half again. He continues in this fashion for eternity.

Note that the original slice is infinite inasmuch as an indefinite number of slices can be taken from it. The pile of slices on the platter is infinite in the sense that the number of slices it contains is increasing indefinitely, even though each new slice is getting thinner and thinner. But neither the original slice nor the pile of slices is actually infinite, though for different reasons.

The original slice is not actually infinite because it is a whole with determinate limits; it has a finite magnitude. The original slice is only potentially infinite, inasmuch as indefinitely many slices can be taken from it without end. The pile is at any given moment actually finite as well, since at any moment it will contain only finitely many slices of turkey. However, it is potentially infinite in the sense that it can continue to grow indefinitely without end. But from this point of view it is not a completed whole. Rather, it is a whole always in the process of being completed.

A potential infinite, then, is an indeterminate collection, which, because it is ever in the process of increasing or decreasing, fails to be a completed whole or totality. As soon as this process ceases, it finds itself to be actually finite. It is infinite only with respect to process, and this is to say, with respect to its state of incompleteness. An actual infinite, as Tacelli and Craig define it, is at once unlimited and yet is a completed whole or totality.
Now I want to take a closer look at Tacelli's argument. He points out that if the world began one year ago, then the series or set of events terminating in the present must be finite. But if the universe is infinitely old, “the set of past events--a set which terminates in what is happening now--must be in that case infinite.”3 So far, I agree with Tacelli. The real point to be established is that this infinite series is an actual infinite in the sense defined above. Tacelli attempts to establish this point by stating:

And it must be an actually infinite set--in this sense: that its infinity has already been achieved. For just as, if the universe were finite, the series of past events must have happened and been completed--must have been “gone through”--in order for the present event to have been reached, so, too, this must have happened if the universe is eternal or everlasting. But then the past must comprise a completed infinite set of events: a set which terminates in this event, and to which other events--somehow!--are being added. 4

Later, Tacelli makes the same point a little differently:

All past events must have occurred before this present event. For this present event is present not merely to remote days we may at our leisure imagine. It is ex hypothesi present to a beginningless past; and all past events must actually have happened for this present one to be.5

In each of these two passages, Tacelli seems to be making this argument: In a beginningless universe, past events--simply in virtue of their

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3 Tacelli, p. 16.
4 Tacelli, p. 16.
5 Tacelli, p. 18.
being past events--have actually occurred. Each must have been actually completed in order to get to the present. Therefore, all must have been actually completed. And since there are infinitely many actually completed past events, the set of all past events must be infinite and whole or complete, that is, must constitute an actual infinity.

My objection to this argument is as follows: It is true that each past event in a beginningless universe must have been completed, for this is what it means to say that it is past. But here complete means something like having already occurred, being finished, used up, over. In this way, one might say that a baseball game is completed when it is over. Moreover, if every event in the past is complete or over, then the series of past events must be over too; just as the baseball game is over if every inning is over. But does this mean that the series of past events is an actual infinite? It does not; for to say that an infinite set is actually infinite says something other than that each of its members is complete.

When applied to the notion of infinity, as we have seen, actual means complete in the sense of constituting some sort of whole or totality. Now I agree that a baseball game is over when all of its innings are over, but I do not consider the game to be a whole or totality simply because all of its innings are over. This is a necessary, but not a sufficient condition for speaking about a whole game of baseball. To be rightly considered as some sort of whole or totality, a series of events like a baseball game must have not only an end, but a beginning and middle as well. It must have a first and a fifth inning. Since a beginningless universe lacks a beginning and a middle, the series of events which constitute this universe cannot constitute a whole. And therefore, the series of past events is not, in this case, an actual infinity because by actual infinity, we meant precisely something which was both an infinity and a totality.

To put my argument somewhat differently, even in a beginningless universe, the past cannot be an actual infinity, that is, an infinite totality, simply because the notion of an infinite totality is an incoherent notion, analogous to the notion of a square circle. A whole or totality is that which is complete in the
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sense of having a beginning, a middle, and an end. A beginningless universe does not, by definition, have a beginning. Therefore, it cannot constitute a totality. I do not dispute the fact that the past events of a beginningless universe are complete in the sense that they have actually occurred, each and every one of them. But I do deny that taken together, they can in any meaningful sense be considered to be a kind of whole or totality, which is what the term ‘actual’ in the phrase ‘actual infinity’ means.

My position is, I think, born out by the way in which we ordinarily use the terms ‘whole’ and ‘infinite’. If one reflects carefully on those sorts of things within one's experience which one considers to be wholes of a certain sort, note that each of these wholes has certain limits and is a whole precisely in virtue of those limits. A story is a whole story because of its beginning, middle, and end. A wall is a whole wall because of its top, sides, and bottom. A wall which had no top simply would not be a whole wall. That which is infinite is that which lacks a limit, and so fails to be a whole in some respect.

Tacelli's argument fails because it uses the term ‘actual’ in two different ways. He says that past events are said to be actual in the sense of being completed or over; but from this, he moves to the claim that the infinite series of events is actual in the sense of constituting some sort of whole. This second claim does not follow from the first, and must be false. For to say that something is both infinite because beginningless and a complete whole is to say that it is without beginning and has a beginning.

In a universe which lacks a beginning the past is infinite, but only potentially so. To say that a beginningless past is potentially infinite is only to say that prior to any event, there is some other event, or that before each event there is another event. I say “prior to any event” and “before each event” because I want to be making a claim about past events considered individually. I want to avoid talking about “the set” of past events, “the series” of past events, or “the past” considered as the collection of all past events, because phrases such as ‘the set’, ‘the series’, and ‘the past’ falsely suggest that we can talk
about past events as some sort of totality--which is just what cannot be done in a beginningless universe.

Unlike an actual infinity of past events, a potential infinity of events could exist. There is nothing immediately counter-intuitive about a universe in which each event is preceded by some other event. First, between any two events in such a universe, there will be a determinate, finite relationship. No two events would be infinitively separated from one another. So a determinate causal relationship could exist between any two events in this universe. Second, one could not speak of the universe as getting any older in such a scenario, if by getting older one understands a day being added to the total sum of one's days. This definition of 'older' simply could not applied to an universe without beginning, for it presupposes that past days form some sort of total whole to which something can be added--a supposition which is incompatible with supposing that the universe to be without beginning. One could adjust one's definition, however. To say that the universe at T2 is older than the universe at T1 is simply to say that the "set," loosely conceived, of events at T1 is a proper subset of the set of events at T2. This is an odd use of the term 'older', but it is a coherent one.

Third, one could not reach the present moment in such a universe, if one had to traverse past events an event at a time. But one does not have to worry about reaching the present, for, fortunately, the present is just where one happens to find oneself anyway. Fourth, one cannot speak of "the past" in such a universe in the way one ordinarily speaks of the past. When I speak of my past life, for example, I generally have in mind some whole made determinate by its beginning, my conception, and its end, the present. The past is history; and history, as story, has narrative unity, which unity is dependent upon making determinate a beginning, a middle, and an end. A beginningless universe cannot have history or a past in this sense. At best, one can arbitrarily select some event and consider it as if it were some first event. So just as the term 'older' will means something different when predicated of a beginningless universe, so does the phrase 'the past'. ‘The past’ means only that which is already over.
Finally, is important to note that the potential infinity of a beginningless universe is not completely analogous to the potential infinity of the ever increasing pile of turkey-slices produced by the immortal master carver. At any given instant, the pile is finite. One can arrest the process of carving and contemplate the pile at any given instant as a whole, that is, as possessing some first and last slice. But even if one were to witness the last event of a beginningless universe, one could never step back and see it as a whole or gather all of its events into a totality because it lacks a beginning. A beginningless universe is, therefore, infinite at every moment of its existence; that is, every event has been preceded by another event ad infinitum.

This notable difference has lead some, including Fr. Tacelli, to speak about the past of a beginningless universe as an actual infinity, since there actually have been infinitely many past events in a universe without beginning (quite unlike the pile of turkey slices). But to say that there actually have been infinitely many past events is to say something like there have really been or truly been infinitely many events. With this much I have agreed. But this does not entail that these past events, which have really been, constitute a totality. By claiming that the past events of a beginningless universe constitute only a potential infinity, I have not intended to cast doubt upon the ontological status of past events as past, i.e., as really having occurred. I intend only to deny that they form a totality.

This denial is significant, however, for it means that the proof that the universe must have a beginning (and, consequently, must have been created by God) is flawed. Past events in a beginningless universe fail to constitute just that sort of infinity, an infinite totality, required in order to make the proof work. Although a beginningless universe is odd and quite impossible to imagine, it is not for that reason impossible. Actual infinities are impossible--conceptually impossible--because the notion of an infinite totality is incoherent. Potential infinities are conceptually consistent. Though they can not be comprehended as wholes, they are intelligible: One need only state that prior to each event, there is another event. Here one's attention is not upon the whole of
past events; one simply makes a claim about each past event. So if the universe is without beginning, no contradiction follows, and no easy argument for the finiteness of time itself is open to us.

This is not to say, however, that a beginningless universe must be a godless one. In fact, a universe without beginning affords an interesting argument for the existence of God. Let me conclude by sketching out briefly the sort of argument for which it allows:

If the universe is without beginning, then prior to each event, there is another event. If “the past” is such that prior to each event, there is another event, then “the past” could not have transpired an event at a time. No infinite, not even a potential one, can be established by successive addition—as is evident in the case of the ever increasing pile of turkey slices, which never adds up to an infinity. But “the past” is, by definition, actual in the sense that it has been; and there must be a cause of its having been. Nothing within the infinite “series” of past events can be the cause of its having been, since past events are finite and transpire successively. Therefore, the cause of a potential infinity of past events must lie outside those events and, from outside of time, cause there to be a potential infinity of events in time. But an atemporal cause of events in time is what we mean by the term ‘God.’ So if “the past” is without beginning, it must have been caused by God; and if it so happens that it does have a beginning in time, it must also have been created by God. But “the past” has either had a beginning or it has not. Therefore God exists.

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A PROBLEM IN KANT'S THEORY OF MORAL FEELING

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I have always found Kant's discussion of moral feeling to be a beautiful thing. But it has always impressed me as something that does not quite fit tidily into his system. In what follows I shall argue that a fundamental incongruity exists between Kant's phenomenology of moral feeling and his metaphysics—a metaphysics of rational purism.

In the Introduction to his *Metaphysic of Morals*, Kant classifies feeling under the heading of sensibility, as opposed to understanding. Sensibility has two aspects: sense and feeling. ‘Sense’ corresponds to an intelligible object. ‘Feeling’ refers merely to an effect in the subject of pleasure or pain. Pleasure may be either “contemplative” as in aesthetic taste, or “practical” as in tactile sensation. Practical pleasure evokes the appetitive power called “desire” in the narrow sense, while habitual desire is called “inclination.” The connection between this appetitive power and pleasure can be called “interest,” and in the case of natural desire, an “interest of inclination.” (*MS*, 212) Objects that promise us pleasure, therefore, may be called “objects of interest or of inclination.” No matter how different such objects may be, the feeling of pleasure by virtue of which they elicit our desire is the same. (*KpV*, 23) It is always an empirically discerned effect upon our sensibility.

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1 A previous version of this paper was presented at a meeting of the North Carolina Philosophy Society at Queens College, in Charlotte, North Carolina, on February 23, 1991.
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I

The Relation of Feeling to Moral Law

This has a direct bearing on morality. Since only experience can show us whether a feeling of pleasure or pain will arise in the presence of a certain object, no universally valid moral law can possibly be based on a maxim for the realization of practical pleasure. *(KpV*, 58) If our act is motivated by feelings of personal satisfaction, it cannot have moral value, for Kant, even if what we do is right. It may have “legality,” but not “morality.” *(KpV*, 71) But acting from feeling offers no guarantee that an action will be right. At best, it guarantees that we will act from natural self-interest. But even if our desire was for the sublime pleasure that comes from acting morally, this still would not make such pleasure a moral *motive* for action. *(KpV*, 115) The only thing that can guarantee the moral worth of our actions is to act from duty. For this, Kant says, the moral law must *directly* determine the will. *(KpV*, 71)

This does not mean that our faculties of appetite and feeling enjoy no amicable relation to the moral law. Indeed, one of Kant's abiding concerns was precisely to establish the nature of such a relation. In 1773, well before his major ethical works, he made this significant statement in a letter to Marcus Herz: “The concept of morality must please in the highest degree, must have moving power; and though it is indeed intellectual, it must have direct relation to the basic incentives of the will.”4 Again, in the celebrated Duisberg Fragment 6, probably written just after the first *Critique*, he offered an analysis of the desire to be worthy of happiness, calling the enjoyment of this condition an “intellectual pleasure.”5 Josef Bohatec accordingly refers to the doctrine of this fragment as “intellectual eudaemonism.”6 How does one reconcile such notions with Kant's insistence that moral law must *directly* determine the will?

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5 Beck, p. 215.
6 Beck, p. 216, n. 16.
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Indeed, does Kant not call the very notion of intellectual feeling “self-contradictory”? (KpV, 117)

The answer to this question must begin with Kant's statements in his chapter on moral incentives in his second Critique. There he notes that the determination of the will by the moral law has a twofold effect on feeling--one negative, one positive. The negative effect, which comes through the striking down of self-conceit and the thwarting of inclinations, is the “pathological” feeling of pain. The positive effect, which comes through the suprasensible nature of the moral law that is made visible by the feeling of pain, is the “moral” feeling of respect. (KpV, 73) The moral law evokes a positive feeling of respect by revealing itself as the source of free, intellectual causality, completely independent of natural inclination. Kant seems reluctant to call this moral feeling “pleasure,” because of its suprasensible origin. There can be no feeling for the moral law itself. (KpV, 75) The feeling of respect arises only mediately by means of the removal of the resistance offered by the appetitive powers to suprasensible determination. For this reason Kant calls respect a “negative pleasure.” And even though it has “sensuous feeling” as its underlying condition, he contrasts it with “pathological” feeling by calling it “moral” feeling. (KpV, 75) LEFT OFF

II

Consciousness of the Law and Moral Incentive

Granting that the moral law produces such effects on the faculty of feeling it is still not clear how human will is furnished with a moral incentive. Can a feeling, such as respect, furnish a moral incentive? It would seem

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7 As Heidegger observes in his analysis of Kant's chapter on moral incentives: “From the negative phenomenon of repulsion the force that performs and grounds the repelling must become visible a priori and positively.” Martin Heidegger, The Basic Problems of Phenomenology, trans. Albert Hofstadter [Bloomington: Indiana University Press, 1982], p. 134.

8 Critique of Judgment, sec. 23.
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not. For Kant declares clearly that “respect for the law is not the incentive
to morality” and that the moral incentive of the human will “can never be
anything other than the moral law” (KpV, 76, 72). But then the question
becomes: How does the moral law, which is suprasensible, become an incentive
for the human will? To answer this question, it is necessary to understand that,
for Kant, a feeling may be either a cause or an effect of an appetitive act.
Typically, practical pleasure precedes an appetitive act as its cause, and
the object producing the sensible pleasure is an object of an “interest
of inclination.” But when the practical pleasure follows from a
preceding appetitive act as its effect, then it is an “intellectual pleasure” and
the interest in the object is an “interest of reason” (MS, 212).

Hence, it would appear that Kant allows for something like
“intellectual feeling,” despite what he says about the “self-contradictory”
character of such an expression (KpV, 117). Correlatively, he does allow for a
kind of rational inclination (a propensio intellectualis), which is not the cause
of this pure rational interest, but rather its effect (MS, 213). Thus, not all desire
is sensuously determined; one must distinguish a “higher” and “lower” faculty
of desire (KpV, 22), following the scholastic distinction between passion and
will. Practical intellectual pleasure, then, is pleasure determined by an act of the
will, or what is the same in this case, practical reason.9

9 This account is corroborated by Kant in a number of other passages. In one he cites a
place (the Berlinische Monatschrift) in which he “reduced the distinction between pathological and
moral pleasure to its simplest terms: the pleasure that must precede our obedience to the law in
order for us to act in conformity with the law is pathological . . . but the pleasure that we can feel
only after having determined to obey the law is in the moral order.” (MS, 378) In a second place,
he writes: “Pathological feeling precedes the thought of the law: moral feeling can only follow
from the thought of the law.” (MS, 399) In third place, Kant writes: “The dissimilarity of rational
and empirical grounds of determination is made recognizable through the resistance of a practically
legislating reason to all interfering inclinations, which is shown in a peculiar kind of feeling which
does not precede the legislation of practical reason but which is, on the contrary, first effected by it,
as a compulsion. That is, it is revealed through the feeling of respect of a kind that no man has for
any inclinations whatever, but which he may feel for the law alone.” KpV, p. 92.
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In the case of such intellectual feeling or pleasure, the connection between the appetitive power and the pleasure, as we have seen, may be called “an interest of reason” (MS 212). Now “interest,” for Kant, is that by which reason becomes practical, a cause determining the will, or an “incentive” of the will (GMS, 460, n.; Kpv, 79). But how can an interest of reason become an “incentive of the will”? On the one hand, Kant denies that the will can be morally determined by any antecedent feeling, even the feeling of respect. On the other hand, he insists that only the moral law itself can directly determine the will as its incentive. But as Lewis White Beck observes:

In spite of what Kant says, the law itself is not the incentive. A law is just not the sort of thing that can be an incentive. At most, consciousness of a law can be an incentive. If the law itself were a determinant of conduct, without the intervention of consciousness (which means, for us men, also feeling), it would not be a practical law, and men would not be free agents.

For Kant, after all, consciousness of the moral law is “a fact of reason” (KpV, 31). Hence, the question becomes: What is the nature of this consciousness of the law, such that it can be an incentive? If the second Critique leaves any room for doubt on this, it is removed by The Metaphysic of Morals, where Kant writes: “Reverence (Achtung) for the law, which on the side of the subject can be designated as moral feeling, is one with man’s consciousness of duty” (MS, 464). This means: consciousness of moral law is identical to moral feeling. But then, the feeling of respect, in some sense, must be a moral incentive.

This would seem to directly contradict Kant's statements denying that any feeling, even moral feeling, can be an incentive to morality. However, this would be a true contradiction only if the feeling of respect were a

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11 Beck, A Commentary on Kant's “Critique of Practical Reason,” p. 221ff.
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feeling preceding the consciousness of the law—if it had to be presupposed—in order for the law to become a determining ground of the will (KpV, 71). But moral feeling cannot precede consciousness of the law, if, as Kant suggests in The Metaphysic of Morals, it is consciousness of the law. Only by means of this identification can we make sense of Kant's statements that respect is “the sole and undoubted moral incentive,” and that “the incentive to be employed must be only the respect for duty, the sole genuine moral feeling” (KpV, 78, 85).

If the feeling of respect is a moral incentive, then, like all incentives it must in some sense be “a subjective determining ground of a will.” (Kpv 71f) But this does not mean that it determines the will in the sense of an “antecedent feeling tending to morality.12” Such an incentive would be the cause not the effect, of the appetitive power or will, and therefore neither intellectual nor moral; and a will so determined would be sensibly determined and therefore neither free nor rational. Rather, moral feeling is itself objectively determined by the will insofar as it is effected by the legislation of practical reason. But then how can it be an incentive? Beck says that the subjectivity of the incentive “refers to the workings of the moral principle, which is itself objective, upon the constitution of the human subject, and this working is the incentive which is obviously subject-conditioned as well as objectively determined.”13 But how the moral feeling of respect for the law can be both (1) an affective response objectively determined by the will (as practical reason) and (2) a practical incentive serving as a subjective determining ground of the will, is not immediately apparent.

12 KpV, p. 75. Kant does not mean this even when he speaks of moral feeling as a “susceptibility” (Empfänglichkeit) “on the part of free choice to be moved by pure practical reason.” (MS, 400) For by “susceptibility” he cannot mean feeling as a state of consciousness, but only a potentiality that must logically or temporally precede the actual feeling of respect.

13 A Commentary on Kant's “Critique of Practical Reason,” p. 217.
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III
Moral Feeling as Rational Self-Revelation

Perhaps the clearest sense that can be made out of Kant's notion of moral incentive is by thinking of it as some sort of rational self-disclosure. Heidegger points out, in remarks on Kant's notion of moral feeling, that respect for the law is conjointly a specific revelation of one's self to oneself as a rational-moral agent. Respect for the law involves respect for oneself as the self that is not bound by self-conceit and self-love, but transcends its natural conditions by virtue of its suprasensible freedom and rationality. Nowhere is this dimension of moral feeling more powerfully invoked by Kant than in his famous eulogy of duty, where he points to the suprasensible personality as the seat of human dignity (KpV, 96f.). Through Submission to the law, I experience not only self-humiliation but the self-elevation of myself to myself as autonomous homo noumenon. I experience the humiliation of my heteronomous natural self by my autonomous suprasensible self as consciousness of my higher vocation.

If such an experience can serve as a moral incentive, it would not be, first of all, an antecedent feeling tending to morality, but one that proceeds from and, eventually, reinforces the determination of the will by reason. This seems evident from Kant's chapter on the Summum bonum in his second Critique where he speaks of the determination of the will by reason as the "ground of the feeling of pleasure" (KpV 116). While denying any necessary empirical connection between moral virtue and happiness, Kant nevertheless insists on an analogue of happiness that necessarily accompanies the consciousness of virtue but does not involve a gratification, as happiness does; and he calls this a "self-contentment" or "Intellectual contentment" that arises from consciousness of our independence from inclinations as motives determining our desiring. (KpV, 117f.) He goes even further in Religion Within the Limits of Reason Alone,

14 The Basic Problems of Phenomenology, p. 132.
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describing the aesthetic character or temperament of virtue as “joyous.” Moral resolve, he says, begets a “joyous frame of mind,” assuring us of having attained a “love for the good,” of having incorporated it into our maxim. Still, Kant himself is far from clear how such feelings might serve, within his ethics, as incentives for morality.

IV
Appraisal

Kant's theory of feeling is bound to the classic dualist tradition for which feeling belongs to the faculty of “sensibility” as opposed to “rationality.” This produces a tension in almost everything Kant says about moral feeling, which is feeling that must be rationally informed. On the one hand, feeling is something that belongs to the function of receptivity and to the naturally determined faculty of sensibility. But the only source of lawfulness within this system belongs to the function of spontaneity and to the autonomy of self-legislating practical reason. Hence, feeling cannot serve as the objective determining ground of moral value. In other words, if the human agent is divided into “reason” and “sensibility,” then morality consists in subduing one's sensible, pathological nature and purifying one's will of all affectivity. Affectivity cannot enter into the principle of moral willing. Moral willing must be free from passion.

On the other hand, in Kant's discussion of moral feeling this disembodied metaphysics of purism seems to give way before a richly phenomenological description of moral affectivity, which Heidegger calls “the most brilliant phenomenological analysis of the phenomenon of morality that we have from


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In fact, his entire discussion of the feeling of respect as a moral incentive presupposes that willing is indissolubly merged with feeling in the acting person—a presupposition that the explicit dualism of his system makes rather difficult if not impossible.

Is moral feeling phenomenal or noumenal? Is it pure or is it part of our pathological system? It cannot be both. Yet Kant's account is ambivalent. On the one hand, it is described as an affective response to the determination of the will by moral law, as an effect of rational willing on our emotions, as a practical incentive, as a subjective determining ground of the will. This suggests that it is something phenomenal, belonging to our affective nature. On the other hand, it is described as an “intellectual” feeling and identified with awareness of the moral law (a “fact of reason”), although the law itself is said to be suprasensible and not susceptible of affective feeling. (KpV, 75) This suggests that moral feeling is something noumenal, devoid of pathological affectivity. But which is it? Within Kant's system it must either be one or the other, phenomenal or noumenal, affective or purely rational. It cannot be both.

Kant's metaphysics subverts his phenomenology. His metaphysics compels him to deny that respect can be a moral incentive, since it is a feeling and therefore sensibly conditioned. (KpV, 76) His phenomenology compels him to recognize that human emotions furnish powerful subjective motives for actions conforming to duty, and that respect for moral law is an obvious moral incentive. (KpV, 78, 85) But even his description of respect as an incentive betrays the subversive influence of his metaphysics. Respect is distinguished from other feelings as an effect rather than cause of willing. But then, how does it work as an incentive? How does it move the will to moral action?

One possibility is that the will may be moved by consciousness of the law. As we have seen, moral feeling is identified with this consciousness. This is evident, for instance, in Kant's discussion of a person's consciousness of being a suprasensible moral agent. But this presents a problem: since this

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consciousness is what moves the will, it cannot also be the effect of the will. In this instance, it may qualify as an incentive, but not as moral feeling, on Kant's definition.

Another possibility is that the will may be moved by the affective incentives of “self-contentment” and a “joyous temperament” produced as effects of previous instances of moral willing. But this, too, presents a problem: since these feelings are the affective results of contingent instances of moral willing, they cannot be relied upon to move the will in the absence of practical rational insight into the moral law itself. In this instance, such feelings may qualify as moral respect, but they are no substitute for practical reason.

A basic ambivalence in Kant's discussion turns on two possible senses of “will”—the “executive will” (Willkür) and the “legislative will” (Wille), to borrow Abbott's terminology. Only the former can be moved by moral feeling. The latter, which is equivalent to practical reason, cannot be moved at all, and, as Beck says, there is little or no justification in calling it a “will” at all. This allows for considerable ambiguity. For one thing, it means that the will can be both mover (as “legislative”) and moved (as “executive”). Furthermore, if moral feeling is identified with consciousness of the law, this means that it can be conceived both as the determining ground of the “executive will” and as an affective response determined by the “legislative will.” At every turn Kant appears to be victimized by his own predilection for metaphysical dualism and purism.

Kant's metaphysics did not permit him to allow, like Aristotle, that natural affections themselves could become morally virtuous. As Cassirer notes, his “natural man” is fallen, like that of St. Paul. The morally virtuous or vicious

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18 *A Commentary on Kant's “Critique of Practical Reason,”* p. 179.

A PROBLEM IN KANT'S THEORY OF MORAL FEELING

type has no clear place in his moral philosophy. Instead, as Sokolowski notes, he works within the moral types of Aristotle's morally strong or self-controlled person and the morally weak person (enkrates and akrates).20 Thus the place of the virtuous will is taken by the “holy will,” which is not desire shaped by reason, but reason cut off from desire and unaffected by it. “Virtue,” for Kant, does not mean the rational domestication of desire and feeling, as in Aristotle; rather, it means the experience of reason prevailing in its struggle against alien desire and feeling. In short, Kant's “virtuous man” is no better than Aristotle's "morally strong man," who takes care to keep his desires under rational control. Likewise, Kant's “vicious man” is no worse than Aristotle's “morally weak man,” who rationally wishes he could be good even as he surrenders to his desire.

Hence, Kant puts no moral stock in the affective disposition as the source of moral action. Even the notion of disposition as a formal “maxim of maxims” is construed primarily as an effect of inscrutable choice rather the a discernable motive of willing. Ultimately there is only the interplay of reason and sensibility--and choice. The sedimentation of passions themselves into a settled, identifiably moral way of desiring has no place in Kant's ethics as a normative motive for moral action.

This, of course, was the chief complaint that Kant's contemporary critic, Schiller, had against the Kantian ethic. 21 When Schiller complained that Kant's opposition of duty to inclination could easily inspire “a gloomy and monkish asceticism,” he was not objecting to Kant's practice of clarifying the nature of duty by contrasting it to inclination. Rather, he was objecting to a view of human nature in which no moral virtue attaches to an inclination to do

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21 The issues underlying the famous controversy between Kant and his contemporary critic, Schiller, and their well-intentioned (but often misconceived) efforts at reconciling their views, are carefully analyzed in the fine opening chapter of the first major part of Hans Reiner's Duty and Inclination: The Fundamentals of Morality Discussed and Redefined with Special Regard to Kant and Schiller, trans. Mark Santos (The Hague: Nijhoff, 1983).
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one's duty. It was a matter of complete moral indifference to Kant, he felt, whether an action done from a sense of duty is accompanied by an inclination to do it. At most, it was a happy coincidence. For Schiller, by contrast, the harmonization of desire and reason, sensibility and rationality, is the very aim and goal of moral perfection and virtue, a **telos** in which the ultimate essence of human existence—the “beautiful soul” (**schöne Seele**)—might be realized. “Man not only may, but ought to, combine pleasure with duty,” he insisted.22 The virtuous man does his duty with joy. He no longer needs to consult reason before every action and decision, as Kant insisted, because moral law ceases to have the “imperative form” of an alien necessitation. The inclinations themselves become moral and rational.

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Virtue and Self-Alienation

John Zeis

Recent moral philosophy has witnessed a revival of a theory of virtues which harkens back to the traditional positions of Aristotle and Aquinas. As a result, there has been a return to substantive questions in ethics and a re-evaluation of the assumptions of modern moral theory. This is a welcome development in modern ethics, but the twentieth century theory of virtues cannot consist of a mere restatement of the classical positions. Too many new questions and problems in ethics have been posed for us to expect all the answers to be garnisheed from our ancient and medieval masters. If the revival of a theory of virtues is to be ultimately successful, we must enter into dialogue with the modern tradition. If we do not, we risk either philosophical ghettoism or a unsystematized eclecticism in moral theory.

The object of this paper will be to contribute to this dialogue by presenting a generic problem for modern ethical theory which a theory of virtues based on the classical position will be utilized in solving. The rationale behind this is that many of the seemingly insoluble problems that we encounter in modern

theorizing about ethics result from not taking into due consideration the insights of the classical position, most particularly in its relation to those problems. One such problem is the issue of the nature of moral
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motivation and moral worth. The modern tradition is replete with examples of this problem. And to a great extent, the lines of battle between different traditions are drawn by their positions on this issue. Kant's discussion places strong emphasis upon this question, but one of the obvious gaps in Kantian theory is his ignoring the role of the virtues in relation to moral worth. Hobbes' theory of man in the state of nature versus man in civil society presents us with a remarkable attempt to derive the necessity of being moral from even the most extreme view of man as self-interested and wholly lacking in natural moral inclinations. But whether Hobbes' view of human nature is true is suspect, as is whether even if it were true, could all of what we consider to be necessary to the moral life be derived from this view. The focus of this paper is why, to a large extent, defects in these theories on the nature of moral motivation and moral worth stem from their lack of due consideration of a satisfactory theory of the virtues.

I

Hobbesian Alienation

Hobbes' moral theory, like the classical theory of virtues, is rooted in a theory of motivation. But the Hobbesian position is much simpler. According to Hobbes, the springs of voluntary motion are found in the endeavors of desire and aversion. In the absence of regulation by a civil
authority, these desires and aversions would lead to a state of war. The sanctions which are attached to civil law are required to keep certain desires and aversions in check so that peace and felicity may be obtained. According to Hobbes, the state of nature would be equivalent to a state of war because, as egoistic hedonists, only our own desires and aversions could operate motivationally. But since we are all equals, namely we each have the power to kill the other, we must come to a recognition of the need for law: for without law, our equals are a vivid embodiment of our aversion to death and a frustration of all our desires. So although we have a right to all things in the state of nature, so do our equals; and consequently when everyone has a right to all things, no one has a right to anything. This is the recognition which necessitates creation of the law, which is the basis of all morality. And it is only the sanctions attached to the law which engender our respect, for without such sanctions, there would not be sufficient motivation for obedience to the law.

I take it that this is the standard view of the Hobbesian position. One of the features of this position which moderns have found so attractive and what has enabled it to function as a fundamental basis of all utilitarian type moral theories is that there is no internal check on the desires and aversions which are the causes of voluntary action. As Robert Paul Wolff has expressed it:
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Desires themselves are treated by Bentham and Hobbes as given facts of human personality. We may be able to discover the causes of our desires, of course, but we cannot--on their view--subject them to a rational critique. It would make no sense to speak of the desires themselves as rational or irrational... Nor can we judge some satisfactions to be, in and of themselves, good and others bad.² (p.129)

I wish to articulate the Hobbesian view of human nature in his way. There is a second intention volition of all men: that all of one's desires be satisfied and all of one's aversions be avoided, and that it is only within a human community that a need for control of desires and aversions attains significance.³ As a result, the Hobbesian view of civil society is such that, although it is incomparably better


³ The notion of "second intention volition" is a synthesis of Harry Frankfurt's idea of second order volitions developed in his article "Freedom of Will and the Concept of Person," The Journal of Philosophy 68 (1971) 5-20 and the medieval doctrine of second intentions, which are concepts derived from reflection upon first intention concepts. As the description implies, I am viewing second intention volitions as volitions which are constructed from reflection upon first intention desires or volitions. Frankfurt's conception of second order volitions is that they are desires to have a certain first order desire be one's will. His thesis is that having these second order volitions is constitutive of being a person. My conception of second intention volitions differs somewhat from Frankfurt's second order volitions because second intention volitions are not necessarily desires about desires. Nonetheless, they are similar because they are constitutive of personhood as expressions of our capacity for reflective self-evaluation and they are supposed to be regulative of first order desires.
than the state of nature, nonetheless it is still a condition which limits our natural desires, and as such, human nature itself. For Hobbes good is whatever one desires, and living under the moral law requires relinquishing some of these goods for the greater goods of survival, peace, and felicity. In fact, we may describe the desire for peace and felicity in Hobbes' theory as another second intention volition which curbs our second intention volition to satisfy all desires. I think it is constructive to consider the juxtaposition
of Hobbes and Nietzsche on this point. Nietzsche's view of human nature, sans equality, is remarkably similar to Hobbes'. And Nietzsche's denial of equality in human nature is precisely what enables him to champion moral nihilism from his otherwise very Hobbesian-like view of man. According to my model, what Nietzsche discovered was that if man has the second intention volition to satisfy all desires and avoid all aversions, then civil society is an institution which stifles the true realization of our fundamental end. Hobbes' morality is for the weak, cowardly, and inevitably frustrated. What we see in Nietzsche is an elimination of the second intention Volition for peace and felicity necessary in a Hobbesian structure. This results in unregulated freedom for the satisfaction of the desire to satisfy all desires, which yields a glorified version of Hobbes' state of war.

This is the first problem with Hobbes' view of law as constitutive of morality. The moral law is contrary to our natural inclinations and interferes with our potentiality to satisfy our second intention volition to satisfy all our desires. As such, it is an alienating force. We must relinquish this desire, but only because of the threat of sanction attached to violation of the law. The second problem is well-known and is related to the first. Since the moral law is contrary to our nature, What explains moral behavior in the absence of sufficient sanction? Hobbes stresses the need for adequate sanction attached to the law,
and rightly so, for in his view, there can be no other motivating factor for satisfying obligations. That this is a problem with Hobbesian theory is well-recognized, but what is not is that it is really generated by the first, and more fundamental, problem. It is only because of our alienation from the requirements of morality that the second problem even arises. But in the Hobbesian view of man, this alienation is unavoidable. Since man has the second intention volition to satisfy all desires, and since this desire is unsatisfiable in a moral context, the moral law is essentially alienating. Restrictions which are contrary to fundamental desires of the individual are imposed as a result of forces external to the nature and desires of the agent. And consequently, when these forces are not present, there is no reason for obedience to the moral law.

II

Kantian Alienation

In response to the kind of alienation from the requirements of morality found in Hobbes, Kant proposed a quite different moral theory, but it too has its own version of moral alienation. The Kantian position is constructed with a view of moral motivation which is virtually contrary to the Hobbesian theory of motivation. Self-interest as a motivating factor is not only not necessary for moral action, its presence is in fact a sufficient condition for an agent's forfeiting moral worth in action. If the agent is motivated by self-interest, or in fact any prudential end, moral worth is negated. As a counterweight to the crass view of moral motivation presented by Hobbes, we can, I think, sympathize with Kant's extremism on this issue. It is a noble attempt to restore some dignity to moral character. But in place of the motivation of self-interest, Kant substitutes the obscure notion of motivation from duty. This is obscure because, unlike the Hobbesian view, it is unclear how duty as such can operate as a motivating factor. Unlike desires and aversions, it is not clear how duty is operative upon the appetite.
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From Kant's point of view, acting from duty is acting from a rational objective, and that is what constitutes the moral worth of the action. This objective is essentially impersonal and since it must be severed from any connections of consideration of self-interest, its function as a spring of action is mysterious and just as alienating as the Hobbesian view of the moral law, only as a different sort of alienation. Of course, Kant attempts to defend his view of moral motivation against this type of charge on the basis that as rational agents we ought to form our volitions from duty. But then we may attribute to him the position that, as rational agents, we all have a second intention volition to act from duty. And if this is so, then acting morally is acting from self-interest, not of course in regard to first order desires, but in regard to our second intention volition.
Despite the insistence of Kant that his moral theory is the only one which can be reconciled with a proper theory of the nature of persons, there is still a disturbing kind of alienation which results from his position. The form of alienation in Hobbes as I characterized it was that in following the demands of morality, a person had to accept the unsatisfiability of his second intention volition to satisfy all desires. And if second intention volitions function constitutively, this would be a seriously debilitating form of alienation. The form of alienation generated by the Kantian theory is not at all the same. In Kant's theory, the person is not alienated from their second intention volitions in following the demands of morality. this is because according to the Kantian view of human nature, the second intention volition which is relevant to morality is that one act from duty; and so one might say that, trivially, this does not generate alienation. However, there is a form of alienation in Kantian theory, and it is that our second intention moral desire is alienated from our first order desires. In Kantian theory if there were any correspondence between first and second intention volitions, it would be wholly gratuitous. 

Just as it is instructive to compare Nietzsche with Hobbes on this question, it is I think instructive to similarly compare the Existentialists with Kant. It is no accident that the Existentialists developed their theory on Kantian philosophical soil, for the kind of alienation I
attribute to Kant is just the kind of problem which the Existentialist thinkers are so attuned to. In Kant's theory the second intention volition to act from duty is paramount in human action and wholly constitutes moral worth. But since this second intention volition is severed from any causal or explanatory connections with our first order desires or volitions, it is quite difficult to see what the point of moral action really amounts to. If moral action is merely the commitment to an abstract requirement of duty which has no intrinsic ties to our other desires and inclinations or prudential ends, it does seem as if human life is purposeless and our only hope for the moral life is some achievement of existential angst. Granted, Kant attempts to temper the alienating features of his theory by formulating a social expression of the categorical imperative, but this seems to be a mere concession of a problem which nonetheless is misdirected. For although it is possible to utilize his insight that it is unjustifiable to treat a person merely as a means to an end in a teleological theory of ethics, Kant would balk at this strategy and the principle itself cannot be justified simpliciter in a teleological theory; treating a person merely as a means to an end is wrong only under certain conditions. Consequently, even the social expression of the categorical imperative is alienated from our first order desires and inclinations, and in fact that is just another way of understanding what it is about the principle that makes it a categorical imperative.
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Hence I don't see how, in a true Kantian system, we can avoid this type of alienation, and the specter of existential angst seems unavoidable.

III
The Virtues and Alienation

It appears to me that a theory of the virtues is necessary for solving the problems of alienation which are endemic to the views of Hobbes and Kant (and consequently all derivative moral theories) on moral motivation. My thesis is that only via some theory of the virtues can our first and second intention volitions be amicably reconciled. In a theory of the virtues, there is a recognition that there are first order desires in the form of passions, inclinations, and aversions which are neither good nor evil in principle. In one respect, this is similar to the Hobbesian view of the appetite, but by identifying objects of first order desires and aversions as "good" and "evil", Hobbes incorporates egoistic hedonism into the basis of his motivational theory. But in a theory of virtues, these desires and aversions are treated as neutral, and it is only in relation to our second intention volitions that these first order desires become identified as good or evil. In virtue ethics, the second intention volition which is operative in morality is: 'do good and avoid evil', and it is in the intellect's judgment of first order desires in relation to this second intention principle that our passions, inclinations, and aversions

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4 In Summa Theologiae (Chicago: Encyclopedia Britannica, 1952) I.II 59 a 1, Aquinas states that "passions are not in themselves good or evil."
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become identified as good or evil.
The assumption behind this view of our first and second intention volitions is that moral action is perfective of the will, and so perfective of the agent's appetite. This is unlike the Hobbesian view wherein which some goods (i.e. objects of first order desires) must be compromised in the face of a second intention volition, or the Kantian view wherein which first order goods are demeaned in relation to duty. Virtue ethics entails that first order desires, in the absence of teleological specification by our second intention volition to do good and avoid evil, are neither to be taken for granted as good, nor demeaned as morally irrelevant, but must be directed to their perfection in such a way that fulfills human potentiality. It is precisely via this perfection of first order desires by our second intention volition that the virtues operate causally in fulfilling our potential.
The essential function of the intellect in Hobbes' moral psychology is that it restricts our first order desires in a way that enables us to satisfy our second intention volition for peace and security. The essential function of the intellect (or better 'reason') in Kant is that of purging our moral considerations of the influence by first order desires. But in virtue ethics, the essential function of the intellect is neither restrictive nor purgative, but developmental and perfective. It is in relation to the second intention volition to do good and avoid evil that first order desires

5 In I.II 66 a 3, Aquinas describes moral virtue as perfecting the appetite.
6 Aquinas states that man is suitably directed to his proper end by virtue in I.II 517 a 5.

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are restructured into habits of character which are the virtues. Engendering virtues does entail setting restrictions and purging certain kinds of motives and inclinations, but these are by no means the essential function of the intellect in its operation upon the appetite. The unformed appetite in a theory of virtues is undisciplined and undirected, and the disciplining and directing of the appetite is what enables the agent to flourish. The habits which are virtues are just those that the agent needs in order to satisfy the fulfillment of a well-ordered, rational, unified life, because the virtues are what enables the agent to reconcile his first order desires with second intention volitions without resulting in self-alienation. The fulfillment of human potentiality via the virtues is the achievement of a rational, consistent, unified character which is essential to true self-enjoyment. The virtues are not merely habits of will and action which a person needs for cooperation with others, they are necessary primarily for self-perfection. This is evidenced by the fact that the cardinal virtues, excepting justice, are not motivated by other-regarding considerations. The prime function of the virtues is the perfection of the character of the agent such that the agent obtain a happiness which is the realization of our end as rational appetitive agents. The shift in ethics initiated by Hobbes and carried through the modern tradition is that morality is necessary primarily for cooperative activity among human beings. In

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7 The nature of the rule of reason over appetite is described by Aristotle in Politics, i 2 1254b4 and confirmed by Aquinas in the Summa Theologica I.II 56 a 4 ad 3 as a "political command' such as that by which free men are ruled". This model of the relation between the intellect and the appetite is devoid of any entailment of the sorts of alienation I ascribed to Hobbes and Kant. For a contemporary development of the role of the virtues in self-enjoyment so Jonathan Jacobs Virtue and Self-Knowledge.
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neglecting the place of the virtues in morality, there is a preoccupation with dilemmas caused by the concern for the self versus concern for other. This preoccupation is inevitable since first order desires and inclinations in modern ethical theories are seen to be in essential tension with the demands of morality. Although Kant attempts to avoid this tension, preoccupation with this issue is implicit in his discussion of the locus of moral worth. Acting in accordance with duty is not enough, one must act from duty, and according to Kant one's motivation from duty is exhibited most clearly when we act dutifully even though our desires and inclinations are in opposition to the demands of morality. Although Kant admits that in order to act from duty, it is not necessary that this opposition occur, nonetheless his admitting that in this situation moral worth is most clearly exhibited betrays an adherence to a view of moral character which is quite contrary to the view entailed by Virtue ethics. In virtue ethics, it is also true that acting in accordance with duty is not enough, for moral worth is most clearly exhibited in actions which flow (habitually) from virtue. In order that this pattern of will and action obtain, the agent's desires, inclinations, and aversions must be shaped to coincide with the requirements of our second intention volition to do good and avoid evil. This is possible only if the appetite is perfected by virtue. The Kantian paradigm of the exhibition of moral worth is, in virtue ethics, an example of merely an agent who is

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8In the *Nicomachean Ethics* 4 1105a28-31, Aristotle states that it is not enough that acts be done in accordance with the virtues, they must be done from a "firm and unchangeable character."
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struggling in the development of virtue. The kinds of situations are paradigmatic not of developed moral character, but of an agent who does not yet have the virtue in question, even though by rational consideration and choice, he is admirably attempting to become virtuous. Without an adequate consideration of the place of virtue in moral character, Kant is left without the means to properly illustrate developed moral character.

In Hobbes' theory, one wonders whether there is any consideration of moral character at all. In the absence of effective sanctions in the law, why would one act morally at all? What is so obviously defective about Hobbesian-based ethics is that, in a certain sense, what we mean by “morally” is precisely just what one ought to do in the absence of sufficient sanction, which is also just what Hobbes cannot explain. A theory of ethics which includes virtuous habits of character need not be so troubled by such a problem; in fact it is more a psychological, than a moral problem. The causal efficacy of such character traits in the person of high moral character will carry them through situations where external sanctions are ineffective.

We might see how virtue perfects the appetite by examining the relationship between the virtue of temperance and desire. Sensual desires are undeniably powerful motivations, since their satisfaction promises pleasure, which is generically good. But left unformed and undisciplined, these desires inevitably bring misery to the agent for a number of reasons. First, some desires ought not to be satisfied, but ought to be purged from our character entirely, because although their satisfaction brings short-term pleasure, their satisfaction in the end causes much greater misery. My desire for a cigarette is one such example. It is contrary to temperance because although smoking the cigarette will undeniably bring me short-term pleasure, in the long-term, it promises pain and misery. But this is not the only reason for forming our desires temperately.

Desires can conflict with the demands made on us by other virtues. My desire for an extended cruise in the Caribbean is of this sort. This conflicts with the demands of temperance not because it itself promises only short-term pleasure at the expense of long-term pain. Rather, it is contrary to the demands of justice
in relation to supplying what my family needs. In this case it is not that I ought to purge this desire from my character, but ought to concoct a more reasonable plan whereby this desire can be satisfied without conflicting with the requirements of justice. But virtue structures desire in yet another way. It can bring about the creation of beneficial desires. For example, I know of a case of a man who used to be a heavy smoker and suffered from kidney stones. His physician told him to stop smoking and drink more water. In a difficult but masterful rearrangement of character, he substituted a habit of drinking water for his habitual smoking. In this case temperance led him to purging the one desire which was contrary to virtue and creating another in its place which satisfied the demands of virtue. I take this as a model of how virtue perfects the appetite. Once perfected by virtue, the appetite and intellect work in perfect harmony, our first and second intention volitions are amicably reconciled, and we are integrated in character rather than self-alienated.
Student Article:

Plato and the Temptation of Mechanism: A Debate
During the seventeenth century, the transition from the traditional Aristotelian philosophy to Platonic and neo-Platonic philosophy began to take on a dominant influence over the science of the time. The effects of this change are evident in the mechanistic account of the universe presented by Galileo. Why then is Galileo's world so cold, mechanical and empty when it arises from a tradition in which the world is warm, animated and value-laden, like Plato's? This paper will seek to address what exactly it is about Platonism (and particularly this overly focused resurgence of it) that leads to mechanistic world-view. From there, it will examine how Plato, himself, avoids these mechanistic tendencies. Finally, it will critically evaluate Plato's responses to determine whether or not the most consistent Platonist would actually be a mechanist.

Plato's cosmological myth, the Timaeus, gives two accounts of the creation of the universe. These accounts, from Reason and Necessity, are not two opposing hypotheses, but rather two vantage points for viewing the same thing (analogously, one can imagine that up and down are actually the same line on a Cartesian coordinate viewed from two different perspectives). The account from Reason is a purposeful account of the world, where each individual existent (including Plato's god) is setting its sights on its teleological end in accordance with the Idea of the Good. The second account is from Necessity and it is a world which has lost sight of the Good. Things in this world do not strive toward the fulfillment of some ultimate purpose; they are merely the meaningless swirvings and collidings of some ultimate geometrical constituents. Plato introduces the teleological creation myth, complete with the Demiurge as its active cause, in order to answer the question as to why there is cosmos rather than such chaos. This second portion of the myth was created in order to
explain how the chaos is related to the Ideas. It becomes apparent, when one merely looks at the questions that each section was created to address, that the first question asks 'why,' as it is looking for a final end, whereas the second question asks 'how,' because it does not seek an end, but rather only a description of the actual state of affairs. It was precisely this view from Necessity which became the starting point for the world-view of the mechanist.

In Plato's account of what occurs by Necessity, the ultimate constituents of the universe are triangles. There are two types of triangles that come to exist within the matrix which, when further informed, group together to create more complex geometric shapes (e.g. pyramid, cube, octahedron and icosahedron). It is precisely these four Platonic solids which constitute the four basic elements respectively: fire, air, water and earth. Plato further states:

Such being their [the elements] nature at the time when the ordering of the universe was taken in hand, the god began by giving them a distinct configuration by means of shapes and numbers. (Timaeus 53b)

In this quotation, one notices that the Forms in the account from Necessity are vastly different from those Forms in the teleological account. The Demiurge is merely imposing Ideas of geometrical quantity upon the matrix, so as to form the elements, not in order to create distinct unified things, but rather distinct geometrical configurations or functional unities. Even the realm of sense experience is cast aside as a quantifiable geometrical and elemental interaction. In short, looking at the world through the eyes of Necessity, it becomes apparent that, rather than being qualitative in character, it is completely quantitative.

Hence, we see where someone like Galileo arrives at a mechanistic position from a peculiarly one-sided reading of the Timaeus. Galileo ran much further than Plato with this mechanistic interpretation because of his overwhelming faith in the ability of mathematics to discover and give an exhaustive account of reality, as well as the belief that geometrical space is the arena in which reality is played out. Galileo sought the answer to 'how' things are, rather than 'why'
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things are, and insisted that these descriptive answers must be expressed in terms of exact mathematics. Everything that is real is capable of being accounted for through a series of quantitative calculations, and anything which cannot be accounted for by this mathematical method is not something which lies outside the scope of this mathematical method, but rather something which merely is not. It is immediately apparent why Galileo, considering his world-view, would reject, out of hand, the teleological account of creation presented at the beginning of the Timaeus; final ends are not quantifiable and are, therefore, not real. Any attempts at explaining the world, rather than describing it by applying the most simple mathematical calculation, are methodically doomed to failure.

The question remains as to why Plato would include the second account to begin with, knowing that it left out the fundamental nature of reality. Is Plato buckling under the weight of the mechanistic temptation? Certainly not. Plato explains, speaking of the sorts of causes he describes in the second part of the Timaeus:

. . . . all these things are among the accessory causes which the god uses as subservient in achieving the best result that is possible. But the great mass of mankind regard them, not as accessories, but as the sole causes of things. . . . such things are incapable of any plan or intelligence for any purpose. (Timaeus 46d)

As is readily apparent, Plato holds out on his mechanistic temptation by cautiously grounding himself in rationalistic intelligibility and teleology.

Both Plato and Galileo insist on the existence of mutable and immutable realms. Each believes that the changing world, the world which is experienced, is the mutable realm. For Plato, the Ideas and the matrix compose the immutable realm, whereas for Galileo, it consists of the governing laws of geometrical quantity and the atoms governed. One immediately notice an apparent correspondence between the two; as Plato's Ideas are to the matrix, so
Galileo's laws of geometrical quantity are to the atoms. The real difference lies not in the distinction between the mutable and the immutable, but rather in what lies within (or is left out of) the realm of the immutable. For governing over all within this realm in Plato is the Idea of the Good, but this notion or another similar is conspicuously absent from Galileo's account. The Idea of the Good is that in virtue of which order is established within the universe. It is within this order that, at all levels in the universe, the foundations of all intelligibility are grounded.

Ultimately, the overarching principle in Plato's world-view, is the notion of the teleological ends of things. He desires to know the sufficient reason for each thing and each motion. Plato seeks the causes of things in their purpose, rather than merely the conditions of the phenomena and the means toward that purpose:

. . . . a lover of intelligence and knowledge must necessarily seek first for the causation that belongs to the intelligent nature, and only in the second place for that which belongs to things which are moved by others and of necessity set yet others in motion. (Timaeus 46e)

Given that the Idea of the Good is the source and ground of all intelligibility and what it is to know things, as knowledge is not merely geometrical in nature, it is to the Good which Plato turns as “a lover of intelligence and knowledge” to find this purpose. When Plato speaks of “the causation that belongs to the intelligent nature,” he is referring to the Demiurge, as the active cause of the world of Becoming, looking toward the Good in his creative act. The Demiurge is a knower, a lover and a maker: he knows the Ideas, he loves the Good, and he makes the world. Of these three, however, his love of the Good is primary as that is what impels him to make his moving replication of the world of Ideas. As the Good is that which governs and gives structure to the world of Ideas, so to it gives this teleological structure to his replication. By way of example, Plato explicates the teleological functions of the various parts of the human
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body in the third section of the Timaeus, where he discusses the relationship between Reason and Necessity. An interesting and insightful example of the teleological scheme is the relationship between the human head (which contains the immortal soul) and the stomach. The stomach is an appetitive organ rather than a reasonable one, and hence, like the senses themselves, it is frequently drawn to distraction by various phantasms. The stomach was intelligently placed in the lowest part of the abdomen so as to isolate it within its own territory, in order to place its tempting influence as far away from the seat of reason as possible. In this way, reason can maintain its contemplation almost completely undisturbed by its bestial appetitive grumblings. Yet, far from being an organ insignificant or superfluous to human beings, its appetitive existence possesses its own teleological intelligence; the stomach is able to distract the mind enough to occasionally pull it from its contemplative state and focus its attention toward seeking the sustenance necessary to survive. (Timaeus 70e-71a) It is obvious, from this account, that Plato is holding out for a purposeful universe and is not merely giving a positivist description of the universe. The relationship between the stomach and the head is more than an empty description of the state of affairs in which the atoms happen to find themselves at this moment. It is a purposeful relationship where all of the parts reject their autonomy and merge to form some one single unified whole. That whole is a human being who also, as a whole, has his own teleological end, which is to transcend the World of Becoming and return to the World of Being.

Here we see the problem of the one and the many rearing its ugly head. Its is this problem which both Plato and the mechanist seek to resolve. The mechanist, however, gives a reductionist view of the universe. All his ideas of geometrical quantity are order on the same level. He seeks to explain the existence of wholes (if there really can be said to be any in the mechanist's system) in terms of the positioning and spatial relationships of their parts. Hence, the whole itself (properly conceived) disappears or at least must be conceived as a distinct configuration no greater than its parts. Plato, on the other hand, orders his Ideas hierarchically. The Idea which makes a particular
thing what it is (e.g. a man) is the principle of organization of its properties. An Idea is the principle of relationship between the whole and its parts. And it is here that we see that the Idea of the Good is that principle in virtue of which all of the many are organized into one whole and are integrated into one reality. Thus, for Plato, the whole really is more than the sum of its parts.

Let us look further at the example of a human being. Through Galilean categories, it is a distinct geometrical configuration. The Galilean applies the principle of sufficient reason to the atoms and through this can explain the whereabouts of any given atom at any given time. Hence, for the Galilean, a human being is a particular geometrical configuration at an instant. Does something seem to be missing? Does this account ring true in our lives? Certainly not! Without unified wholes, with purposeless universe is nothing like that in which we live. The mechanist fails to give an exhaustive account of experience. Instead, he identifies the world with a geometrical abstraction, with an accessory cause, and radically misses his target. The Idea of the Good allows Plato to go where no mechanist would dare to tread. His is able to make the logical move to applying the principle of sufficient reason to the wholes as well as the parts. There is now not only a reason why each of parts can be said to form a distinct geometrical configuration at any given instant, but the Good can account for the existence (and frequently the actions and desires) of the whole over time. Hence, the Idea of the Good places humanity back in the human being. The what it is to be a human being, or a squirrel, or any other thing requires more than a momentary combination of a cluster of atoms. Things are more than their shape. Things require the unity, wholeness and purpose which is clearly part of our experience, and for Plato accounts and the mechanist does not.

The last of the three original questions seems to be quite easily answered; no true Platonist can espouse a mechanistic world-view. Galileo would certainly grant to Plato that the principle of sufficient reason is applicable to parts of things, but not with respect to the whole. One can use the predictive power of Galilean positivism in order to ascertain the movement of atomic constituents.
But as was said before, the mechanist cannot account for the existence of unified wholes. Plato takes the logical step of extending the principle of sufficient reason beyond the part to the whole as well. Men experience the phenomena in the world around them as wholes and not merely distinct geometrical configurations. Ultimately, the mechanist loses the world for which he is attempting to account.

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Plato's Failure to Overcome Mechanism

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Mechanism is a way of viewing and explaining the world in terms of a concept or a principle that is abstracted from the world. Consider the following scenario as an example. You are the spectator of a pool game and instead of simply viewing the game as one between two, goodnatured people, each trying to win the game by getting all her pool balls in first, you instead, view the game from a very different perspective. You no longer see two human beings engaging in playful competition, but have reduced them to two heaps which are composed of molecules, atoms, and genes arranged in a mathematical order. You no longer view the pool table and the balls as particular objects, but also as different arrangements of atoms and when the pool stick hits a ball it is simply a transfer of energy. The player's ambitions, logic and skill all disappear from the game. You have taken one aspect of the game, the fact that there is a mathematical and biological structure within it and separated it from all the other factors in the game. Taking that abstraction to be a true picture of reality is mechanism. Mechanism makes an abstraction, that is, it separates certain features from the world and makes them somehow extrinsic from any particular object. That extrinsic principle is then used to explain the world.

Seventeenth century science gave us a mechanistic perspective. It ushered in a significantly new way of looking at the world. It clarified certain problems and dissolved certain myths. The invention of the microscope and the telescope gave us a way to look deeper into ourselves and far beyond our world. The earth was no longer the center of the universe, instead the sun took center stage and man stepped back into the wings. The answers to our questions were no longer found by looking at the world around us--experience had been the mother of our myths. They were found instead, in mathematics. But
underneath the discoveries of modern science lay the assumptions that reality can be reduced to mathematics and that this process exhausted the heart of reality. Mathematical equations such as mass, velocity, and gravity were used to explain the movement of matter in the universe. Man became another part in a vast mathematical machine and mechanism flourished.

Mechanism is not a strictly modern notion, however. There were ancient mechanists who gave a similar account of reality. Platonism for instance, also saw the cosmos as a mathematical, ordered, harmony--a notion which was born out of the second section of Plato's *Timaeus*. It is in this section that Plato gives an account of the generation of the cosmos according to Necessity, an account which reduces everything to abstract principles. Plato attempts to explain the generation of the world through things like the matrix, the Forms and Necessity but these are concepts which are separate from any concrete realities, particular objects or instances. Universal, unchanging principles are used to explain the changing, finite, world we live in. For Plato what is really real is the world of the Forms which are distinct and extrinsic from the world of Becoming. The world we experience therefore is explained in terms of something outside it.

The similarities between seventeenth century mechanism and the mechanism in the second section of the *Timaeus* can be seen in Plato's and Galileo's atomism and their account of primary and secondary qualities. According to Galileo the ultimate constituents of the world are “tiny indivisible” particles which he called atoms. Matter is simply a conglomeration of atoms. The only qualities that matter has then, are the qualities which reside in the atoms themselves--that is mathematical qualities-number, figure, magnitude, position and motion. These primary qualities are the only qualities which exist. The secondary qualities of taste, smell, sound etc. are only effects of the senses. They are not real in themselves.\(^1\) Plato's geometrical atomism provides a similar account of secondary and primary qualities. Qualities such as “hot”, “heavy”,
and “light” are simply the effects of these triangles (the ultimate constituents of the cosmos) on our bodies. Fire is made of the sharpest triangles and this explains why we feel a burning sensation. Fire itself does not contain the sensation of burning. Similarly, pleasure and pain are the restoration or disruption of the order of triangles in our bodies. Pleasure and pain are not in the objects themselves. Both Plato and Galileo have reduced the world to mathematical qualities. They have taken a part of the world--its mathematical nature, reduced all things so they could be dealt with mathematically, and produced an account of the universe. Notice that the principle they use to explain the world is a separate and distinct notion. Atoms, although they make up distinct things and are “in” things, do so because of mathematical laws. The similarities seem to end here however, and Plato and the modern mechanists give contrasting accounts of the role mechanism plays.

The mechanists wanted to find a way to arrive at certain and universal knowledge about the world around them, mathematics had proven to be accurate and certain, so they extracted those elements from the world that could be dealt with mathematically. They derived principles, formulas, and equations that were separated and somehow above the world--apart from any particular object. Galileo for example, produced an equation for motion. But it only solved for motion at an instant and since there is no motion at an instant, Galileo failed to explain the motion we experience. These abstract principles were applied to every aspect of our world. The aspects they could not explain were somehow less real, as in the case of secondary qualities. The mechanists believed they were able to provide an exhaustive account of reality.

In contrast, Plato denied that the mechanistic account was sufficient to explain the cosmos. In the end of section one of the *Timeaus* Plato describes how many view the auxiliary causes of creation to be the only cause.

Now all these things are among the accessory causes which the god uses as subservient in achieving the best result that is possible. But the great mass of mankind regard them,
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not as accessories, but as the sole cause of all things, producing effects by cooling and heating, compacting or rarefying, and all such processes. But such things are incapable of any plan or intelligence of any purpose.²

What Plato asserts here is that the mechanistic account is not a complete account. Mechanism fails to answer the question “why is there cosmos rather than chaos?”. Galileo's account and modern science in general, lacks teleology. That is, the mathematical principles they use to explain the world cannot explain why there is a world. Gravity and mass can explain how a large object falls to the ground but it cannot explain why it does. Because these principles are extrinsic to particular objects they cannot explain their purpose. The world is not directed toward an end as it was in the medieval world. In the medieval world there was a God which we would someday return to. And this God as a loving creator was an intrinsic principle of teleology. He had a connection with the world he created. In the act of creating, God somehow became connected to the world and was no longer extrinsic to it. If there is a God at all in mechanism, he is not a loving creator connected to his world, but a clockmaker--a being very distinct and separate from the object he made. Real teleology then, must be something internal because external principles cannot explain the purpose of the world or the particular things in it. There has to be a connection between the purpose and the object acting with a purpose.

The “how” of matter and motion is explained by mechanism but the “why” remains unanswered and the mechanist is happy with answering the “whys” with a shrug of the shoulders and a “because that's the way it happened”. Man and the universe are simply the chance happenings of the laws which govern the movements of atoms and molecules. The cosmos is a well-rnade clock ticking with the necessity of mathematical laws. That we came to

be at all is due to the movements of the mathematical, ordered, world and we could have just as likely have been born a tree or a frog or not at all.

Plato's account according to Reason, the first section in the dialogue, takes primacy. It is the section which supposedly saves Plato from the “temptation” of mechanism by adding the teleology and intelligence which is lacking in the mechanistic account. It is here that the demiurge molds chaos into a likeness of Being. The demiurge provides the answer to the question “why is there cosmos rather than chaos?” If there is an eternal and unchanging Good, why create an imperfect likeness? It is because there is a god who is a knower, a lover, and a doer, that the world of Becoming was created. There is a subject, separate from the Ideas, which is capable of perceiving their goodness, loving their perfection, and desires to re-create them in a moving world. The demiurge creates the cosmos as a rational animal with a purpose. Its purpose is to imitate or participate in, as much as possible, the Forms and ultimately the highest form—the Good, which orders all other Forms. Plato in contrast to mechanism believed that an exhaustive account would have to include teleology.

But is Plato's account any more complete? Can his teleology resurrect our world from the seemingly purposeless world of mechanism. It appears not. The very concept that is suppose to save the Timaeus from the “temptation” of mechanism becomes the final push needed to make it a mechanistic work. In the beginning of section two Plato explains that it is necessary to give an alternative account of the generation of the cosmos because the world came about as a result of both Reason and Necessity. Reason is the stronger power which somehow persuades Necessity.

For the generation of this universe was a mixed result of the combination of Necessity and Reason. Reason overruled Necessity by persuading her to guide the greatest part of things that become toward what is best; in that way and
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on that principle this universe was fashioned in the beginning 
by the victory of reasonable persuasion over Necessity.3

It seems odd to speak of Necessity being persuaded. Things that occur 
due to Necessity are those things that are without purpose. Plato now says that 
Necessity was persuaded by the demiurge towards the Good. The teleology in 
Plato's account then, is extrinsic. The purpose resides in the demiurge. It is the 
demiurge that desires the world to be a likeness of the world of the Forms. It 
becomes difficult now to explain the connection between what the demiurge 
wills and what the world does. If the teleology remains extrinsic then the world 
remains a machine as it was in mechanism, and simply follows the purpose 
which is somehow imposed on it by the demiurge. Also, the end which the 
cosmos is supposedly striving to imitate or participate in is also extrinsic. The 
Good is a principle separate and distinct from the world of Becoming. The 
world is good in so far as it is a likeness of the world of the Forms and 
ultimately the Good. But how is it that the world is able to reach its end if its 
end remains extrinsic?

If both the purpose and the end in Plato's teleology lie outside the 
world, then it is an abstract teleology. That is, it is a principle which remains 
 apart from any specific object or particular instance and is somehow imposed on 
the world from above. Consider the artist/creator analogy Plato uses so often. 
Suppose there is a sculpture who wishes to fashion a mound of clay into a vase. 
He has a model or an end--the form of a vase. His purpose is to create as 
perfect a likeness as possible. The mound of clay has no purpose within itself, 
but will be molded by the sculpture who will impose his own purpose on the 
clay. Similarly, the demiurge wishes to fashion the world into a likeness of the 
Forms. Its model or end is extrinsic. The world has no purpose within itself--
no intrinsic principle moving it toward its end. The teleology remains extrinsic 
and abstract.

Lyceum

If the very principle that is suppose to supply us with the answer to our question “why is there cosmos rather than chaos?”, is an abstract principle--a principle which is separate from us and is imposed on us from above, then it can no more accurately explain the universe than the mechanist. The abstract principles which the mechanist used could not exhaustively explain the world around us and ourselves. No principle which lies outside us can provide a complete account of us. Velocity, gravity, and mass may explain how we were able to get into our cars and drive to the store but they can never explain why we decided to do so. Plato's teleology is also abstract and extrinsic. Both have separated their principles of explanation from the objects they are trying to explain.

Bringing the two together would involve positing an intrinsic principle of teleology--a real teleology and Plato seems to touch upon this notion when he describes the world as being ensouled. The soul somehow acts as a principle of motion but Plato doesn't fully develop this notion. Notice that if he had, his account would have been Aristotelian. Aristotle believed the solution to Plato's problems was to internalize the purpose and the end. The Forms were in the objects and provided a principle of motion. Their end was simply to realize their form. To ensoul the world would yeild a similar account. In any case Plato's teleology in the Timaeus fails to overcome the “temptation” of mechanism because it remains extrinsic.

Most of us are Mechanists. We see the cosmos as a machine rather than an organic being. If Plato can be resurrected from his mechanistic death it is through his notion of the world as ensouled. The world becomes a living creature. Mathematics and science are simply accessory causes and they cannot fully explain the nature of this living universe. Mechanism has taken a “part” to be the “whole”. It views matter in motion as the heart of reality--a reality which they have left heartless. The “whole” which science continues to try to understand is much greater than we think and cannot be exhaustively explained by abstract principles. The universe is more than just atoms, molecules, numbers, and laws. We are a small part of a much bigger reality. It would do
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us some good if we adopted the notion of the universe as a living being. A notion which I believe environmental science is trying to salvage. Perhaps then, man would be able to explain and also respect the features of life and the universe which fell out of the mechanistic account: i.e. love, passion, virtue, integrity, the sanctity of life. Perhaps we would be able to save our world from the destruction it now faces and perhaps then, we could be saved from the “temptation” of mechanism.

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