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Free Will versus Determinism - As Determined by Radical Conceptual Changes

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Abstract

My objective in this article is to question whether the problem of free will can, within our current conceptual system, be framed coherently. It is already widely recognized that a mental faculty, the will, needed to initiate action, no longer fits with current thought. However, we can still ask whether human decisions and actions are determined by something other than the agent. So the important question is whether we still have a cogent concept of *determinism*. The two prevalent alternatives are a closed set of deterministic laws of nature, and a simple distillation of the principle of sufficient reason: all events must have a cause. I first provide examples showing that philosophical concepts come and go as categorial frameworks change. The modern concept of deterministic laws of nature was developed during the latter half of the modern period and is now being called seriously into question. G. W. Leibniz's principle of sufficient reason could only be justified in theological terms, which most contemporary Western scholars reject. I end with an inadequate account of a dawning worldview based on complex adaptive systems theory, in which most human actions are best described in terms of non-necessitating *propensities*.

Research Article

Keywords

Categorial frameworks, Complex systems, Determinism, Free will, Historicist philosophy, Laws of nature.

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1. Introduction

Much of this article deals with the threat to free will believed to come from deterministic laws of nature, but I also turn briefly to what I call metaphysical determinism, simply stated as the principle that every event must have a cause. I intend to show that "the problem of free will versus determinism" is misdescribed.

First, however, I provide an excursus on the state of contemporary Anglo-American philosophy. Philosophers, at least in the U.S., are divided by the question of whether philosophy contends with perennial problems, or whether its subject matter shifts along with historical changes; a question regarding the very nature of philosophy. One view, the "perennialist," is that philosophers, from Plato to Alvin Plantinga (b. 1932), address the same problems (in this case *the* free will problem). Other, "historicists," (including myself) believe that new problems arise in different eras, but often bear enough "family resemblance," in Ludwig Wittgenstein's terms, that it is possible to perceive them as minor variations on perennial problems.[1]

In Section two I provide two accounts showing radical conceptual changes from one era to the next. Section three offers first a sketch of how the free will problem is most often understood today, but then lists a number of quite different types of determinism that have been seen to threaten human freedom. I also show that the concept of *the will* can actually be dated historically. Section 4 describes the worldview in early modernity in which the modern concept of determinism was at home. Then I hope to make an important distinction between the early modern worldview supporting science, versus the late modern "Laplacean-Neopositivist" view of science, which occurred after the monotheist worldview came to play no part. I end by mentioning a few philosophers of science who are calling the standard, twentieth-century account into question.

Section 5 considers the origin of the slogan "every event must have a cause" in Leibniz's Principle of Sufficient Reason, and I note that apart from its theistic grounding, the concept of determinism faces philosophical problems. Finally, in Section 6, I suggest that we are at the beginning of a new worldview in which the question of determinism no longer plays a significant

1. From what knowledge I have of Persian philosophy, I suspect that the historicist move will be less attractive. It seems that there is more of a tendency to attempt to synthesize philosophical insights from ancient to contemporary in Iranian thought, whereas Anglo-American philosophers have a tendency to consider earlier philosophers to have been refuted, and of mere historical interest.

role. The new complex systems theory leads to a conclusion more suited to describing actual human life. We are surely in some cases determined, but to a greater extent, we operate according to "propensities," rather than either deterministically or randomly.

2. To Be or Not To Be a Historicist?

It may be that radical conceptual changes are easier to detect when we are far removed from them historically, so in this section, I provide two examples of what Stephen Körner calls different "categorial frameworks." The first is Paul Feyerabend's description of the differences between the archaic and classical Greek frameworks. I then take up an account of the lack of archaic *moral* concepts and their later development, as Alasdair MacIntyre describes.

2-1. Feyerabend

I hope that my account here of how Feyerabend illustrates his concept of *incommensurability* is not too short to be convincing. In sixty–two pages he makes an impressive case for the claim that the archaic Homeric worldview was incommensurable with that of classical Greece, using art, the style of the Homeric literature, and even the vocabulary of that earlier era (1975, pp.223-285).[1] He claims that the archaic categorial framework was based on a covert category, which he calls a "paratactic aggregate"; that is, parts of bodies - as well as of material souls, 'parts' of actions, characteristics of characters, are simply added together (1975, p.233). He describes humans depicted in art as never appearing to be self-motivated, but rather as moved from outside - appearing more like puppets to us than self-directed persons (1975, pp.236-237). This raises the intriguing question of whether "the problem of free will" could even have been conceived in that worldview.

Feyerabend contrasts this archaic worldview with that of classical Greece, in which the concept of an *object* changed drastically from an aggregate of parts to one in which objects have imperceptible underlying essences, with a multitude of (possibly deceptive) appearances. Elements of these frameworks cannot be added together: one cannot introduce an essence–appearance–object into the world of aggregate–objects without destroying the "fact constituting" principles of the former (1975, p.270).

1. Unfortunately, by the third edition (1993) nearly the whole of this chapter had been eliminated.

2-2. MacIntyre

MacIntyre's "Epistemological Crises, Dramatic Narrative, and the Philosophy of Science" (1977) was written largely in response to the furor that arose in the philosophy of science in the 1970s, when Thomas Kuhn suggested that, contrary to textbook accounts of science as a continuous accumulation of knowledge, there were periods of crises in which radical conceptual changes occurred ([1962] 1970). Feyerabend's point (above) was to show that such crises occur within entire cultures as well. MacIntyre writes: "Philosophers have often been prepared to acknowledge this historical character in respect of scientific theories; but they have usually wanted to exempt their own thinking from the same historicity" (1966, cited in Gutting, 1980, pp.55-57, *passim*]).

MacIntyre was prepared by his life experiences to understand Feyerabend's concept of incommensurable worldviews. He grew up and was educated "two antagonistic systems of belief and attitude" (interview in Borradori, 1994, p.139). One was the remnants of the oral Gaelic culture of fishermen, poets, and stories. But his undergraduate studies were in Latin and Greek languages, history, and philosophy. He was forced to confront the problems of "rendering Greek philosophy into modern languages as different as English and Irish... ." He had his first inkling that "languages, as used by different societies, may embody different and rival conceptual schemes, and that translation from one such language to some other language may not always be possible" (in Borradori, 1994, p.141).

In his *Short History of Ethics* (1966) MacIntyre describes epistemological crises (again between archaic and classical Greek thought) that brought about drastic conceptual changes in ethics; he wrote:

> Moral Philosophy is often written as though the history of the subject were only of secondary and incidental importance. This attitude seems to be the outcome of a belief that moral concepts can be examined and understood apart from their history. Some philosophers have even written as if moral concepts were a timeless, limited, unchanging, determinate species of concept, necessarily having the same features throughout their history, so that there is a part of language waiting to be philosophically investigated which deserves the title "*the* language of morals" (with a definite article and a singular noun)... . In fact, of course, moral concepts change... .

So it would be a fatal mistake to write as if, in the history of moral philosophy, there had been one single task of analyzing the concept of, for example, justice, to the performance of which Plato, Hobbes, and Bentham all set themselves,... (MacIntyre, 1966, pp.1-2).

MacIntyre writes that social changes after the Homeric era, through the Theognid period (beginning *c*. 650 BCE) to the Sophists, made the moral framework of the Homeric literature problematic. In Homeric society, the most important judgments that can be passed on people concern the ways they discharge their predetermined social functions. The word *agathos* can only pertain to *skills* one needs in order to perform one's role. Thus, it is not yet a *moral* term at all; it is simply a report on whether a person possesses certain observable qualities. Nor do the family of concepts translated into English today such as "goodness," "virtue," "shame" denote what we would call moral concepts. Only gradually does *arete* come to refer to a personal quality detached from function, and more closely comparable to our modern moral concept (1966, pp.5-12, *passim*). If the very existence of *moral* vocabulary can be (imprecisely) dated, then one of its crucial components, freedom to do or not to do, may turn out, also, to be far from a perennial problem.

3. "The Problem of Free Will versus Determinism" Historicized

I start this section with a brief overview of how *the* free will problem is most often understood today. I then begin my argument intended to show that the problem is improperly formulated, first, by noting the variety of "determinisms" that have been taken to threaten human freedom; and then showing that the very concept of the will can be historically dated.

3-1. The Standard Account

I rely heavily here on the work of Robert Kane, a most noted and interesting expert on free will. Kane distinguishes between a practical or experiential, and a theoretical approach to free will. It may be that he has captured, in his account of how we experience ourselves as agents, the family resemblance, across centuries, that leads philosophers to speak of *the* free will problem. He writes: "we believe we have free will when (a) it is 'up to us' what we choose from an array of alternative possibilities and (b) the origin or source of our choices and actions is in us and not in anyone or anything else over which we have no control" (2002b, p.5). This sense of agency is bound up with many significant notions such as moral responsibility, personal worth, desert for our actions, and so on. It informs interpersonal relations in terms of gratitude, resentment, admiration. And, as Wittgenstein would say, this sort of language is "already in order."

It happens that while writing this article I received an email from a hitherto unknown correspondent, asking me to help clarify some issues regarding free will (personal communication, June 26, 2021; quoted anonymously with his

permission). Before responding, I asked about his academic background; he said he had not gone to university (but he is clearly an auto-didact concerning the free will issue). Note how well his pre-theoretical description of how things seemed to him expresses Kane's experiential sense of free will.

> When it comes to free will I find many people who think our actions can't have any causes or reasons at all if free will is real, almost as if we create our own thoughts. But I've always thought of free will as the ability to choose between different options set before me without it being totally determined what I will choose. I don't choose the options, there may be strong reasons or impulses to go a certain way. I don't choose the impulses, but all that needs to be the case, as far as I can see, is that the final decision is mine and I was free to make a different choice.

However, because of our capacity for meta-cognition; that is, to reflect on one's reflections, we (as a culture) have inevitably raised theoretical questions about this experiential or practical sense of free will. In our own day, the theoretical problem is referred to largely under the heading of *determinism.* Consequently, the problem is considered to admit of two basic types of solutions: compatibilism and libertarianism. A typical compatibilist response would be to say that I acted freely if there was nothing to prevent me from doing as I chose (such as imprisonment).

The difficult question then arises of whether I could have *chosen* otherwise than I did. Libertarian responses require a theoretical account of how there could be a rational, responsible intervention in the otherwise causally closed course of events. Given the great progress in neuroscience today, the current worry about determinism is most often the question of whether brain processes *caused* the choice. Reflecting on studies showing that certain brain processes involved in a movement occurred *before* the subject became conscious of a decision to act, my new email friend writes:

> For me to have libertarian free will then the decision cannot be made by ***anything***... prior to me making a ***fully conscious*** decision... . I need a "conscious self" to be able to choose freely. Of course, a "conscious self" is the totality of my brain... . I can't see how free will could work from the perspective of determinism, but I don't see how determinism could be wrong... ."

He finds the subject depressing.

I have noted that a number of the writers of historical articles often accurately describe their subject matter (will, free will), beginning in ancient times, but attempt to fit each historical thinker (anachronistically, I believe)

into one or another *current* category of free will: libertarian or compatibilist.

3-2. Toward Dismantling the Problem

I agree with those who claim that philosophical problems failing to be resolved by the best minds, over the course of centuries, may turn out to be improperly formulated. One of these has been the problem, seen already in Descartes's writings, of how the soul could move the body. Failure to answer this successfully, after three centuries, is one reason for the shift from dualist to physicalist accounts of human nature.

Well-respected work has already been done to show that the free will problem, as described above, is not a well-formulated question. I briefly mention two reasons. First, there is a rejection of an a-historicist perspective in favor of an account of a variety of problems that share a family resemblance. Kane writes:

> Determinist or necessitarian threats to free will have taken many historical forms - fatalist, theological, physical or scientific, psychological, and logical... . But a core notion runs through all these forms of determinism, which explains why these doctrines appear to threaten free will. Any event is determined, according to this core notion, just in case there are conditions (such as the decrees of fate, the foreordaining acts of God, antecedent physical causes plus laws of nature) whose joint occurrence is (logically) sufficient for the occurrence of the event: it *must* be the case that *if* these determining conditions jointly obtain, the determined event occurs (2002b, p.6).

Another infelicity in speaking of "the free will problem" is that, while many authors continue, as I do, to use the word "will" in deference to earlier scholars, many recognize that the concept of *the will* no longer fits our conceptual framework. So an interesting question is when the concept came into being.[1] Authors credited with its invention range over nearly a millennium, from Plato to Augustine of Hippo.

T. H. Irwin (1992) concludes that Aristotle had *a* concept of will, but helpfully notes that it lacks what has often been considered an essential element since Augustine's day. Earlier concepts involved the intellect and desire. He writes:

> It seems we must recognize the will as a third element in rational choice besides mere belief and mere desire. If we recognize this third element,

1. I realize that the phrase referring to a concept "coming into being" is highly problematic.

> we will readily infer that it must be important, even decisive, in character, virtue, and vice; for our actions, plans, and effective preferences will reflect not our mere desire, the results of our reflections on these desires and our choices about which desires to follow (p.454).

The primary source cited for Augustine's contribution is his *De libero arbitrio*, Books 2 and 3, thought to have been written between 391 and 395 CE. He needed this concept for theological purposes: to reconcile the goodness and omnipotence of God with human sin, and with massive disruptions of the natural world such as volcanoes, famines, droughts.

If we agree with Irwin and other scholars, such as Albrecht Dihle (1982, chap. 6) and Phillip Cary (2000, p.181), that the origin of a concept of will going beyond a combination of intellect and desire can be approximately dated, then could there not be an *end* to this concept as well?

Gilbert Ryle (1949) is most often credited with dismantling the philosophical theory of the will.[1] He notes that it has long been an axiom that the mind is tripartite; there are three ultimate classes of mental processes - thought, feeling, and will. If a person does something intentionally, such as pulling the trigger of a gun, it happened because the trigger pulling was the causal effect of a mental act, a willing or volition. However, what of mental events? If some mental operations are the result of volitions, then what of volitions themselves? "Are they voluntary or involuntary acts of mind? Clearly, either answer leads to absurdities. If I cannot help willing to pull the trigger, it would be absurd to describe my pulling it as 'voluntary.' But if my volition... is voluntary... then it must issue from a prior volition and that from another *ad infinitum*" (Ryle [1949] 1984, p.67).

Thus, (whimsically) we might say that the concept of *will* lasted from *c*. 394 to 1949; approximately 1555 years.

4. The Waxing and Waning of Modern Determinism

The concept of determinism is so ingrained in contemporary thought that it has long been invoked without analysis or justification. On one hand, Galen Strawson notes that the problem of free will versus determinism is

1. Wittgenstein was long regarded primarily as a philosopher of language, but it is now recognized that a more central issue for him falls within the category of philosophy of mind, in particular, an attempt to cure philosophers of what is called the Cartesian theater: ridding the mind of volitions was part of that agenda. He was working on a draft of what would be published posthumously - therefore just before 1951 - as his *Philosophical Investigations* (1953, esp. 611-619).

well-known, but adds: "for the record, though, determinism is the view that the history of the universe is fixed in such a way that everything that happens is necessitated by what has already gone before in such a way that nothing can happen otherwise than it does. It can also be explained more simply as the view that every event has a cause" (in Kane [2002a], pp.441-442).

On the other hand, Robert Bishop (in Kane [2002a]) writes that "[u]nderstanding the nature of determinism is notoriously difficult. At an abstract level of analysis, there are at least ninety varieties of determinism" (Bishop, 2002, p.111; citing Sobel, 1998).

In the first subsection, I give an account of where determinism stood in early modern thought; second, I describe significant changes near the middle of the modern era, which drastically changed the status of the concept of determinism (and are possibly overlooked by scholars not well-read in history of modern science–religion relations). In the third subsection, I identify several contemporary philosophers of science who see the era of deterministic scientific laws coming to an end, providing grounds for calling into question the cogency of determinism, especially regarding laws of nature.

4-1. Developing Modern Determinism

I intend to show here that, like the concept of *will*, it might be possible to date the rise and fall of *modern* determinism. It originated in early modern science, when the metaphysics of the Scholastic era, in particular its hylomorphic concept of matter, was replaced with a "new" and incommensurable concept of matter based on ancient Epicurean atomism.

It might be better to say, though, that these natural philosophers *largely* adopted Epicurean atomism, in which there *are* laws governing the atoms' movements, but (more significantly) replaced the Epicurean laws with a new and very different account of "laws of nature," which made sense in their largely Christian context: Just as God had provided laws for humans through revelation, analogously, in the mind of God there were "laws" governing the natural world, which could be discovered empirically. As Medhi Golshani reminds us, the founders of modern science, such as Galileo, Kepler, Descartes, Boyle, Newton, were sincere believers in God, and considered scientific activity "as an act of worship" (2020, p.444). For these natural philosophers, in contrast to ancient atomists, one could *not* claim that the laws were *deterministic* because that would imply that God's choices for the regularities were not in fact up to God. So the regularities in nature result from the faithfulness, omniscience, and benevolence of God. At least through Newton's day, God's providence (and often God's special acts in the world) were widely accepted.

There was a radical change between Newton's day (d. 1727) and that of Pierre Simon de Laplace, who died exactly a century after Newton. Laplace is famous for answering a question regarding the role of God in his system with the tart phrase that he had no need of that hypothesis. During that intervening period, deism emerged in England; that is, God's role was reduced to creating the laws of nature and then leaving the "machine" to run on its own (at least until the last judgment). Knowledge of God was based on reason alone; God was the explanation for the impressive self-sufficiency of the world's operations. Deism entered France in the second half of the eighteenth century; leaders of the French Enlightenment were largely atheists or believers in natural religion.[1]

Much more could be said about the tumultuous transitions in the middle of modernity, but for the purposes of this article, I skip to the period from the 1920s to 1970s.

4-2. Radical Change in Mid–Modernity

The most significant episode in the philosophy of science regarding scientific determinism began with logical positivism in the Vienna and Berlin Circles, and was followed, after 1938, by the neopositivists, whose work predominated until the 1970s. The positivists made a number of significant moves. One was to further clarify the model of the hierarchy of the sciences, beginning with physics. A second was a quest for the unification of science by showing that the laws of each higher level (chemistry, biology, and now, neuroscience) could be reduced to the level below and ultimately to physics.

Most significant here is the positivists' introduction of determinism into science. There had already been Galileo's and others' mathematization of scientific laws, creating mathematically necessary connections within equations describing laws of nature. The positivists' "covering law model" of the relation between theories and laws on one hand, and on the other, statements describing the empirical events taken to confirm them, was *deductive* and hence (at least apart from *ceteris paribus* premises) logically necessary.[2]

So the late modern conception of reality might be described (ideally, at least) as a view of the world *determined* by mathematically expressible laws, reducible from one level of complexity to the level below, logically consistent

1. I have taken the details of the changes in France from Mehdi Golshani (2002, pp.438-439).
2. Not having read Sobel's (1998) ninety forms of necessity or determinism, I am not sure whether there is a real difference here.

among themselves, and even, as hoped by some, to be unified in the future by one Grand Theory of Everything, uniting the laws of gravitation with those of the other three physical forces.

4-3. Dissenting Philosophers of Science

Here I mention the work of a small sample of philosophers of science who call into question the possibility of this logically consistent, hierarchically related, set of deterministic laws governing the whole of physical reality. Note that one question is whether determinism is supposed to be in nature, or in the ways nature is described linguistically? This issue will recur in the following section.

Jeremy Butterfield notes that, historically, the bold (and perhaps incoherent) idea that the entire *universe* itself is deterministic has been taken to be important by numerous philosophers.[1] A more realistic question, he says, is whether the *laws* governing the operation of certain systems are deterministic. However, he makes a convincing argument showing that there is, as yet, no workable definition of the determinism of a set of equations (1998, vol.3, pp.33-39).

Nancy Cartwright was well recognized already in the late 1970s as a rare and effective critic of the standard philosophical account of the nature of science at that time. She shows, and supports with quite detailed examples, that when we examine instances of the workings of science itself, we find some cases of precise order, but others with only rough regularity, and even some in which no order can be discerned at all (1999).

Bas van Fraassen points out that scientists themselves typically do not speak in terms of phenomena being caused by laws that determine them. They speak instead of symmetry and invariance. He inquires whether there are in fact laws of nature - and argues that there cannot be. If we say, for instance, it is a law that *f=ma*, this is taken to *imply* that f=ma. In his words, for any law *A*, if *A* is true then necessarily A. But what, he asks, is the ground of this necessity? A typical response is that "necessity itself is a primitive fact..." (1989, p.39). This notion of the primitivity of the concept of necessity will be important in the following section.

William Bechtel and R. C. Richardson ([1993] 2010) argue that scientists often explain phenomena by decomposing complex entities, such as biological organisms, into their components and then describing the mechanisms that perform specific operations. Note that this is neither mechanistic nor

1. One of these was Spinoza; see: the following section.

reductionistic, in that what they calls mechanisms are vastly more complex than the machines humans can build and, also, researchers must recompose the components *and* situate the whole *in its environment* in order to understand it. This, again, is in sharp contrast to claims that explanation involves deductions from laws.

5. The Demise of Determinism?

Much of the previous section, as the title was meant to suggest, has involved chipping away at what I have claimed should be called the Laplacian–Neopositivist worldview. The philosophers of science described above are calling into question the existence, or even the coherence, of the concept of deterministic laws *in science*. However, there is still what might be called a *metaphysical* determinist threat, to which I turn here.

In the first subsection, I present G. W. Leibniz's arguments regarding his Principle of Sufficient Reason (hereafter, PSR), and show how it came to be taken as a *metaphysical*, as opposed to a scientific, threat to freedom. Next, I introduce a thesis described and illustrated by Richard Mason in *Before Logic* (2000) regarding the origin of what are thought of as *unchanging* or *unanalyzable* philosophical or logical concepts such as *necessity* (as van Fraassen illustrates in complaining about answers to questions about its grounds). Some of Mason's claims can be expressed more precisely with the help of Stephan Körner's *Categorial Frameworks* (1970). It will then be possible to offer a thesis about why the free will problem has been so intractable since the development of the Laplacean–Neopositivist framework.

5-1. The Principle of Sufficient Reason

While early modern science was developing, G. W. Leibniz (himself a notable contributor) formulated his PSR. This has come to be taken to entail a truism, that every event must have a cause. The principle has evolved into a decisive element in accounts of the free will problem that begin with the requirement that an agent's actions be up to her, and the *further* requirement not only that she was free to act as she chose, but that her choice was not determined by anything beyond her control. Given the common assumption in Western philosophical circles that a choice is, in some sense, a neural event, the choice itself must have had a neurobiological cause, and whatever that state was, it must have had its own prior cause, and so forth, all the way back to a time before the agent's birth.

Leibniz may be best known in popular culture for his claim that this is the best of all possible worlds. It is not surprising that it was parodied by those

who knew neither his definition of it nor his argument for it. He defined it in his *Discourse de Métaphysique*, which was written in 1686, but not published until 1846. Its primary definition is that is the one in which the richest variety of phenomena can be derived from the simplest hypotheses.[1] God, being omniscient, would have known the totality of possible worlds, and would have recognized that the chosen universe would contain evil and suffering, but however bad one thinks this world is, any other would have been worse. He devoted many pages to this issue in the one book published during his life, *Essais de Théodicée* (1710).[2]

The PSR follows from the thesis of the best of all possible worlds. It means that, whenever a contingent statement is true, there must be a sufficient reason for *why* it is true. "No fact can be a brute fact, isolated and unintelligible" (Matson, 1987, vol.2, p.327). This must be true because it describes an element of the world which God had sufficient reason to choose. Note that PSR antedates Immanuel Kant's sharp distinction between reasons and causes. So a sufficient *reason* may be a mechanical cause, but it may also be the choice of a rational agent.

Leibniz would be appalled to see his PSR being used in arguments *against* human freedom. He struggled at various times to explain free will. His best formulation is the claim that a world with humans acting freely is better than one in which everything is manipulated by God. And, although all individual substances contain within them all of their predicates, God has built into humans the capacity for *freely* chosen actions (Garber, 1998, pp.550-551).

5-2. Categorial Frameworks - Before Logic

Mason notes that when we speak of concepts such as necessity, inference, possibility, we tend to mean *our* concepts, and our concepts *now*. The central thesis of his book, *Before logic* (2000), is that "some - apparently purely logical - notions acquire their senses within specific frameworks, and that some apparently purely logical problems surrounding them tend to arise when those frameworks are removed or denied" (2000, p.5).

Mason's third chapter compares Leibniz's focus on *necessary truth* with

1. So I imagine that Leibniz would be among scientists today who hope to find a Grand Theory of Everything; he would be
more impressed by the thesis of the "fine-tuning" of the basic laws and constants of physics. This conclusion is drawn from vast numbers of calculations showing that even a nearly unimaginably small change in any such number would have resulted in a universe in which no life whatsoever would be possible (e.g. Leslie, 1989).
2. The information above is from Garber (1998, pp.542-545).

Baruch Spinoza's focus on necessity *in nature*. He says that as later philosophers "have attempted to wash out the taint of theology" (70-71) from Leibniz's formulation, this has created a host of philosophical problems regarding truth, necessary truth, the relation of true sentences to the realities they are taken to describe - problems that perplex philosophers to this day.

Mason laments that there is no reversing the decision to follow Leibniz rather than Spinoza's route of causal necessities in things. However, this shows how far he is from the philosophy of science. The positivists used the logical necessity of a valid deduction to impute *causal necessity* into series of states of affairs in the world. And it is exactly this (supposed) causal necessity in series of events that is crucial to the problem of human freedom.

So I leave Mason here and turn to Stephan Körner's *Categorial Frameworks* (1970). He aims to provide a more precise formulation of what I have loosely been calling worldviews, such as that of the archaic versus classical Greeks, and the latter's difference from MacIntyre's Gaelic world. In particular, I have attempted to draw a line, too often overlooked, between the early modern (Christian) worldview and have coined the awkward "Laplacean–Neopositivistic" worldview to designate its successor.

Due to the density of Körner's writing, I resort to a great deal of quotation. In his Preface he writes:

> The manner in which a person classifies the objects of his experience into highest classes or categories, the standards of intelligibility which he applies, and the metaphysical beliefs which he holds are intimately related. To give an obvious example, the employment of the category of causally determined events, the demand that all or some explanations be causal, and the belief that nature is at least partly a deterministic system so involve each other that they are either all present in a person's thinking or else all absent from it. Groups of persons, societies, and whole civilizations exhibit, in so far as they can be said to think, a similar correlation between their categories, standards of intelligibility, and metaphysical beliefs (1970, p.*ix*).

So a categorial framework includes (1) "maximal kinds," that is, the most significant or "maximal categories" of all existing entities, along with one or a few levels of their genera; (2) the criteria for being an individual member of each category; and (3) the logic underlying the reasoning used by those who hold it.

Körner points out that, given this combination of elements, there are propositions within a categorial framework that are "internally incorrigible." Returning to the recent Western framework, his example is the proposition

that "all natural events are governed by immutable laws of nature." This is because the proposition is logically implied by the principle of causality, which is one of the constitutive principles associated with the maximal kind, material object.

I have argued elsewhere (1996, p.130) that Anselm's ontological argument can be seen as a demonstration that God's existence is internally incorrigible: Here God is a maximal category, and a criterion for membership includes being "that which none greater can be conceived." Because of a scale of degrees of reality (which likely makes no sense to most of us today) objects that exist independently of thought have greater reality than those that are mere objects of thought. So the statement "God exists" is internally incorrigible. Körner sharply distinguished between internally and externally incorrigible propositions (1970, pp.14-15). For someone outside the Christian framework of Anselm's day, the argument may appear questionable, obviously false, or even unintelligible.

Another point of importance to theistic scholars: Körner notes that everyone employs more than one categorial framework. So a maximal kind for both Christian and Islamic thinkers is Allah/God. But the strange thing about Western scholarship, since at least the beginning of the nineteenth century, is that mainline Christian scholars, even biblical scholars and church historians, have tacitly agreed that their arguments will not employ any reasoning that depends on the maximal category of God or God's acting in history. No church historian's lecture contains anything like the following: "And then God... . and what followed was... ." I doubt, though, that Christians and nonbelievers have completely disparate categorial frameworks; rather they operate more like two overlapping circles in a Ven diagram.

Now, back to early moderns: many would have held a largely traditional concept of God, and the category of the divine would have had one qualifying occupant. Körner claims that all Western frameworks recognize a division between categories of things that exist independently, as distinguished from categories of what we would call properties (or properties of properties), but only exist insofar as they are instantiated.

The bits of the early modern categorial framework needed to make my point are, of course, that God is a maximal category; one criterion for membership is to have the property of omniscience. A "sub-property" of omniscience is knowledge of all truths.

Another maximal category is material things, an important subcategory of which are the atoms, whose properties were most often taken to be size, shape, and motion. Because laws of *motion* were among the earlier scientific discoveries, and because God's *mathematical* omniscience, it followed that

among God's defining properties was knowledge of all such laws. God's omnipotence insured that atoms obeyed his laws.

If Mason is correct in saying that removal of a category from the framework in which it was at home is likely to cause continuing, perhaps insoluble, problems, then I believe *we have an explanation for the apparently interminable debates over free will.* (Note that Kane [2002b, p.3] describes a tremendous increase in the volume of free will debates since the middle of the twentieth century, which happens to coincide with the cementing of the positivist picture of science and the worldview of which it was a part.) Here is how I formulate my conclusion regarding the incoherence of the concept of deterministic laws of nature:

> Consider the fact that free will debates still turn on the cogency of the concept of deterministic laws of nature. Also consider the momentous changes that have occurred since the days of the early modern physico-theologians: For (most) philosophers of science, there is no God to create the laws; if they are not "in" God's mind, then where are they - if that question even makes sense? What could be their metaphysical status? How did they originate, or are they eternal? And, especially, how do they impose their control to determine causal sequences in events? Is the concept of the laws of nature now coherent? And if not, is there still a cogent concept of determinism to oppose human freedom?

(It is widely agreed that indeterminism is of no help here.) Ilya Prigogine writes: "I believe that we are at an important turning point in the history of science. We have come to the end of the road paved by Galileo and Newton, which presented us with an image of a time-reversible, deterministic universe. We now see the erosion of determinism and the emergence of a new formulation of the laws of physics" (1996, p.*viii*). It is time for a new worldview without a forced option between determinism and indeterminism. One is now in the making.

6. Complex Systems and Human Propensities

I, among a growing number of scholars, see the intellectual world to be undergoing a rapid and radical change, due to the adoption and wide employment of complex (self-organizing, dynamical, adaptive) systems theory. Alwyn Scott writes that, at the least, the adoption of complex systems theory represents a paradigm change across all the sciences (2004, p.2). Francis Heylighen, director of the Evolution, Complexity and Cognition group at the Vrei Universiteit, Brussels, claims that it represents the beginning of an

entirely new worldview (2010).[1]

The resources for complex systems theory began to develop in the 1940s with (1) general systems theory - an attempt to model mathematically the structures of complex entities from across disciplinary boundaries; (2) cybernetics - the study of automated control systems. Very important (3) was the work of Isabel Stengers and Ilya Prigogine in 1947, who showed that far-from-equilibrium systems, in contrast to what thermodynamics ordinarily predicts - the constant decrease of order - could exchange matter and energy with the environment, and jump to higher levels of order. (4) The importance of non-linear mathematics was recognized (largely in the 1960s) to describe phenomena such as turbulent flows. Here, the state of the system at time *t-1* is fed into the equation predicting the state at *t*.

While the standard model recognized level-to-level causation, it was taken to be entirely bottom-up. (5) Now there are realistic theories showing that a higher-level system can unproblematically exert downward influence by the way its organization results in *selection* among the various causal powers of its constituents. Better language here is to speak of "constraint" by means of a wider, more complex system. This evades the charge that "downward causation" must be by physical causes, and so is all bottom-up after all.

(6) *Context-sensitive* constraints are dependent on non-linearity, in that they come into play due to changes in the system's past. Constraints are quite interesting in that the limitations they impose result in a vast multiplication of higher-order states. For example, English is constrained to a 26-character alphabet.[2] However, given this restriction, it is possible to form a shared vocabulary, and, with the constraints of grammar, to form innumerable sentences.

(7) While *emergence* was postulated in the 1930s, there was never a satisfactory account provided (due to lack of the developments so far mentioned?) and due to the positivists' overwhelming influence. Recently, though, convincing accounts of how emergence can take place have been devised. The best accounts involve tangles of upward and downward causation involving at least three levels in the hierarchy of complex systems. Feedback loops allow for evaluation of results of actions and, thereby, improvements in functioning.

Therefore, the highest-level systems, such as living organisms, require (8)

1. Because, to my knowledge, this paper is not published, I refer the reader to the long list of Heylighen's writings on the internet.
2. English apparently does not have a letter equivalent to the Farsi or Arabic letter of the name of the Holy Book, since it is variously transliterated as K or Q.

some sort of memory to record what has worked in the past. In general, this memory is stored in the genes. In humans, there is a great leap when memories can be stored in individuals, and especially in the artifacts of entire cultures.

(9) Chaos theory was much in the news recently - these are systems that (due to the involvement of non-linear mathematics) are sensitive to initial conditions whose differences are too small to measure. So two systems, *apparently* with the same starting points nay diverge widely as they develop over time. It is possible to predict a set of boundaries in "phase space" where such systems may be found, but not their exact locations in that space, which, strangely, is called a "strange attractor."

When modeling more complex systems with more variables, it is possible to draw a three-dimensional attractor but beyond this, computers are needed to model *n*-dimensional attractors, incorporating *n* variables. Their shapes can become so complex that systems theorists speak of "topographical landscapes." These represent positions (valleys) in which the system is likely to be found, but also peaks and ridges where such probability is low.

This need to talk about probabilities has led to the use of a word Karl Popper adopted to describe the probability of a single event when it cannot be defined in terms of a series of instances (1990). "Propensity" is defined as "an irregular or non-necessitating causal disposition of an object or system [or person] to produce some result or effect" (Sapire, 1995, p.657). So "propensity" is a third term between determinism and indeterminism.

Notice how the concept of propensities seems to fit human behavior. There are still a number of simple biological necessities, such as the continuation of breathing. There are also some actions that are at least undetermined, such as whether I will go for a walk tomorrow. However, I seem to have uncountable propensities: to eat or not to eat breakfast; to work on this paper, unless I can find some other task to distract me from it; to give money to the man collecting funds for food; to take time to phone friends;... In fact, one might say that to know a person's character is to know what his propensities are.

In a world of complex systems, there is a need to work out a new vocabulary, a new set of maximal categories. Juarrero says that we need to give up our bias in favor of *things* with their intrinsic properties in favor of an appreciation of processes and relations. The components of a system are identifiable by their functions; that is, they cannot be what they are apart from the role they play in the system. One of Heylighen's maximal categories, in fact, is that of an agent, and the qualifications of admissions to such categories will be their types of actions (Juarrero, 1999).

7. Concluding Postscript

I hope that I have provided some intellectual resources for leaving the free will problem behind, just as modern thinkers eventually did with the theory of phlogiston and the practice of alchemy. I chose the title of this article to suggest that, while we have good uses for the word "determined," such as for the meaning of a concept to be determined by its role in a conceptual framework, this is nothing like being determined by any "laws of nature."

I end by agreeing with Golshani: "We need a more comprehensive framework that not only accommodates science, but can also take care of our ultimate questions... . In other words, it can give a coherent explanation of the totality of human experience. The worldview of monotheistic religion has such a capacity" (2020, p.446).

I envy my Iranian readers for whom this may still be possible.

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