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# The Freedom of Solar Systems

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## Abstract

This essay discusses how, for Hegel, freedom can be realized in nature in a rudimentary fashion in solar systems. This solves a problem in Kant's account of freedom, namely, the problem that Kant only gives a *negative* argument for why freedom is *not* impossible but does not give a *positive* account of how freedom *is* real. I give a novel account of Kant's negative argument. Then, I show how, according to Hegel, solar systems can be considered as exhibiting freedom in a rudimentary fashion. Finally, I lay out how Hegel systematically develops this point about the freedom of solar systems in the 'Mechanism' chapter of the *Science of Logic*. In doing so, he uses Kant's negative argument in a 'purified' form to arrive at an account of an 'intimate token-type relation' between the planets in a solar system and the law that governs their motion. The essay as a whole provides a concrete example of how Hegel is an inheritor and radicalizer of Kant, both with respect to freedom's reality and with respect to philosophical method.

'No Idea is so generally recognized as indeterminate, ambiguous, and open to the greatest misconceptions, to which therefore it actually falls prey, as the Idea of freedom'. – Hegel (*EIII*: §482R, 215/301)<sup>1</sup>

## Introduction

This essay deals with a material and a formal issue. The material issue is the problem of free will. The formal issue is how to do philosophy, i.e., philosophical method. I lay out *how* Kant and Hegel deal with a central issue regarding the problem of free will, the issue of how freedom can be real when every event is determined by causes that act according to laws of nature. This is not only of historical but also of systematic interest, I believe. The question whether a philosophical account of a material issue is correct leads to the question of *how* this account was established, i.e., it leads to the question of philosophical method.



My laying out Kant's and Hegel's arguments regarding determinism gives rise to a comparison of their methods, which is especially helpful in order to get into view a topic at the heart of Hegel's philosophy: his 'dialectical' method.

In section I of this essay, I give a novel account of Kant's argument that free will is not ruled out. Central to this account is the distinction between determinism and pre-determinism, only the latter of which is in conflict with human freedom. I propose to read Kant as arguing, in the 'Third Antinomy of Reason', that predeterminism entails a contradiction and that this is why freedom is not ruled out even though determinism holds for every actual event. This prepares the ground for the question of how Hegel goes beyond Kant, a question that takes up the bigger part of this essay. Hegel goes beyond Kant in so far as Kant only shows that predeterminism is wrong but does not show *how* freedom is realized in nature. In current Hegel scholarship, it is popular to address this issue by appealing to Hegel's account of life. For all its merits, this approach has the shortcoming of not addressing the issue of predeterminism. This leaves us without a comprehension of how life can be realized in an at-bottom deterministic nature. I suggest that such comprehension can come about by our turning towards Hegel's account of mechanism in his *Science of Logic*. This account deals with the basic concepts of a mechanical view of nature. In section II, I lay out how, according to Hegel, *solar systems* are mechanistic phenomena that do not fit the mould of predeterminism. This is so because predeterminism rests on the assumption that everything is determined by external causes, whereas no appeal to causes external to the solar system is necessary in order to determine the location and motion of the planets once a solar system is in place. Hegel expresses this point with the at-first bewildering claim that solar systems embody freedom. This sense of bewilderment can be alleviated by pointing out that Hegel understands freedom to come in degrees and that solar systems embody freedom only in a rudimentary way, which lacks many aspects of full-blown freedom, such as self-determination, mindedness and recognition. Hegel's point that solar systems are not primarily to be explained by external causation, however, depends on the reader's finding this argument intuitively plausible. This may not be enough to convince a person who believes in predeterminism. I hence discuss, in section III, how Hegel seeks to give not only an intuitively plausible but a systematically rigorous argument for the freedom of solar systems. This argument involves his scrutinizing the basic concepts in play in a mechanical account of nature, an account that also underlies predeterminism. I lay out how this scrutinizing consists in exposing some presuppositions of and problems with the account at hand, and how this gives rise to an improved account, which constitutes a next stage in the argument. Furthermore, I show how Hegel takes up the core of Kant's negative argument in a 'purified' form and uses it for his dialectical progression from one stage to the next. It is through this progression that Hegel arrives at his account of the freedom of solar systems, which is thereby developed out of the more rudimentary account of mechanical nature that underlies predeterminism. After a brief comparison of

Kant's and Hegel's methods, I conclude with a discussion of how my account of the rudimentary manifestation of freedom in solar systems supplements an influential account of practical freedom in Hegel and provides an understanding of how such freedom is possible.

## I. Kant's negative argument

In this section, I lay out how I think Kant's argument in the 'Third Antinomy'—his argument for why determinism does not exclude freedom—is most fruitfully construed.

Given the current debate in Hegel scholarship surrounding 'metaphysical' and 'non-metaphysical' readings of Hegel's idealism,<sup>2</sup> it is necessary for me to address worries that some readers may have regarding my invoking Kant in order to illuminate some aspects of Hegel's thinking. In short, I believe that the debate over metaphysical and non-metaphysical readings presupposes an opposition between mind and world, between thinking and reality. If a non-metaphysical reading is understood as addressing thinking *rather than* reality, then I agree that it is objectionable. Yet, Hegel of all thinkers would say that opting for one side of such a dualism in order to avoid what is objectionable on the other side does not constitute progress. However, typical targets of this objection such as Robert Pippin or John McDowell need not be read as endorsing a non-metaphysical reading that is predicated on such a dualism. I furthermore think that it would constitute a serious misunderstanding to read them in such a way.<sup>3</sup> When understood properly, investigations into the fundamental forms of thinking are investigations into reality.<sup>4</sup> For only when we err in *empirical* cognition is there a disconnect between mind and world.<sup>5</sup>

Kant can be understood in a similar way—*pace* Hegel's mixed reaction of sometimes praising Kant highly<sup>6</sup> and sometimes reading him uncharitably.<sup>7</sup> While Kant is traditionally understood as a proponent of a dualism between our mind and how things really are,<sup>8</sup> such a reading is not obligatory. On such a reading, the notion of a 'thing in itself' is a philosophical given, i.e., an unclarified presupposition. This notion can be understood from within the human standpoint, however, by considering it to be a 'limiting concept' that we attain by starting from the concept of an object of experience and then abstracting away our forms of intuition. Importantly, the concept thus formed, this abstraction, is 'parasitic' for its content on the concept of an object of experience.<sup>9</sup> This constitutes the kernel of a non-traditional, non-dualistic reading of Kant. It is such a reading that I think is helpful in order to set the stage and to bring similarities and dissimilarities to Hegel into view and, thereby, to illuminate Hegel's account of how freedom is realized in nature.

The reading of Kant that I lay out here shares crucial aspects with readings proposed by Lucy Allais (2018) and Henry Allison (2020: 212–14).<sup>10</sup> Like these

thinkers, I distinguish between determinism and predeterminism and read Kant as endorsing determinism while rejecting predeterminism. Predeterminism is here understood as the view that any event is predetermined to occur in the way it does, given the laws of nature and the state of the universe at one moment.<sup>11</sup> That is, all movements of the hands or lips of a person not yet born are already fixed. On my reading, Kant's argument for the compatibility of determinism and freedom is not to be understood as his endorsing that freedom is compatible with predeterminism. On the contrary, Kant explicitly decries such a compatibilism as leaving us merely with the freedom of a roast on the turnspit to affirm the motion it will perform anyway (*CPPrR*: 217/97). Rather, freedom is compatible with determinism because—contrary to a natural tendency in us to think so—determinism does *not* entail predeterminism. This difficult thought can be understood through Kant's argument that predeterminism is false. The resulting picture is one where Kant is a determinist in so far as he considers every actual event to flow with necessity from a temporally previous cause, but where this determinism is compatible with an open future.

Kant's argument against predeterminism is stated in the 'Third Antinomy of Reason' in the *Critique of Pure Reason*. Briefly construed, it runs as follows. A central point of this argument consists in our recognizing that what predeterminism comes down to is the claim that every event is sufficiently determined by the laws of nature and the past of the universe. Thus, the freedom to act otherwise is excluded—be it the momentary ability to act otherwise at any given moment or the long-term ability to act otherwise in the future by acquiring relevant knowledge or by changing one's habits. A further important thing to note here is that, according to Kant, the natural causation involved in predeterminism operates in such a way that an event is 'externally determined': an event occurs due to factors external to it that make the event occur in the way it does. For example, an ice block melts because of sunshine.<sup>12</sup> For an event to be predetermined thus means for it to be sufficiently determined by an external cause. Yet, such an external determination is only a case of natural causation if the causing of the event is equally a natural event. The sun's shining onto the ice block is equally a natural event, for example. A natural event, however, cannot account for the sufficient determination of the event in question. For the causing event must itself be externally determined. And that point equally holds for the cause of the cause, the cause of the cause of the cause, and so on. Thus, the idea that an event is sufficiently determined through natural causation falls to the ground. The point here can also be expressed in the following way. The burden to provide a sufficient cause gets placed on a natural event, from where it gets moved to its cause, then to its cause, then to its cause, and so on. As a result, the burden of providing a sufficient cause always gets kicked down the road rather than answered.

This is the core of the argument of the ‘thesis’ position of the Third Antinomy. Kant puts it as follows:

If [...] everything happens according to mere laws of nature, then at every time there is only a subordinate but never a first beginning, and thus no completeness of the series on the side of the causes descending one from another. But now the law of nature consists just in this, that nothing happens without a cause sufficiently determined a priori. Thus the proposition that all causality is possible only in accordance with laws of nature, when taken in its unlimited universality, contradicts itself, and therefore this causality cannot be assumed to be the only one. (CPR: B472–74/A444–46)

According to predeterminism, events are sufficiently determined through external causation. In order to save this doctrine in the face of the just-stated argument, a different kind of causation must be invoked. This different, non-external causation will then provide the sufficient determination that external causation cannot provide.

However, now the argument becomes pertinent that Kant states as the *antithesis* position. This argument is that such a different kind of causation would not be natural. It thus would not make any connection to events and thus could not be the sufficient cause of an event (CPR: B473–75/A445–47).

With non-external causation ruled out, we are back at the point that natural causation is the only causation there is. But if it is the only causation there is, then it must be sufficient for explaining why an event occurred in the way it did. Yet, natural causation cannot bear that burden, as it were. However, it stands to reason that something conditional like an event can only occur if all its conditions are in place. Thus, there *must* be a sufficient cause—if not natural, then of a different kind. A non-natural cause, however, would not make any connection to events and thus could not be the sufficient cause of an event. But if natural causation is the only causation there is, then...

This is the central point of Kant’s antinomy about causation and freedom. We are perennially going back and forth between the thesis’ claim that there must be a non-natural kind of causation and the antithesis’ claim that there cannot be a non-natural kind of causation.

Kant’s solution consists in his pointing out that in this argumentation, we treat events as if it were accidental to them that they can be perceived by human beings. Yet, according to Kant, the concept of an event only has content because the content of concrete event-concepts<sup>13</sup> is given through the senses—the senses of a human being. The claim that events are sufficiently determined by a cause must hence be understood as a claim about perceivable events and perceivable

causes.<sup>14</sup> In this way, the concepts of event, cause and sufficient determination are essentially tied to human perception and experience. That is, according to Kant, it holds for every perceivable event that it has a sufficient cause. This is the first step in the solution. Kant's point that the concepts of event, cause and sufficient determination only have content because the content of concrete event-concepts is given through the senses<sup>15</sup> also entails that the primary locus of the deterministic doctrine is *actual* events. That is, the deterministic doctrine says in the first instance that every *actual* event must have a sufficient cause. Now, every possible event can become actual and in this sense it holds that every possible event has a sufficient cause. Yet, the decisive step in the natural yet specious move from determinism to predeterminism consists in our neglecting the significance of the difference between actuality and possibility, specifically, the difference between actual events and causes on the one hand and possible events and causes on the other. Once we imagine a chain of causes trailing off into infinity, we have left the solid ground of actual events and causes. Using the mere form of natural causation, we move into a sphere in which we do not care about whether concrete data about concrete causes can be supplied so that we could speak of actual causes. It is this disregard for concrete experience and actuality that underlies predeterminism, according to Kant.

It is true, Kant thinks, that every actual event must have a sufficient cause. But this does not allow for the conclusion that this sufficient cause is realized in a way that is not tied to experience; through an actual infinity of causes, for example.<sup>16</sup> We can form the concept of an infinite chain of causes—just as we can form the concept of the causal history of the universe or of the state of the universe at time  $t$ . Yet, such concepts are essentially abstract, because we can never have a corresponding perception of them.<sup>17</sup> An infinite chain of causes is never actual. But, Kant holds, we nevertheless need that concept in order to provide us with orientation in our empirical inquiries. He expresses this by saying that the concept of an infinite chain of causes is not 'given', but 'set as a task' (*CPR*: B526/A498).

The resulting picture could be expressed by saying that events are determined by their causes only *locally*, not globally. It is once we neglect the essential connection of said concepts to human experience—once we forget our finitude, as it were—that we fall into the antinomy. Thus, Kant is a determinist regarding every actual event, but not a pre-determinist.

In this way, Kant shows the pre-deterministic attack on freedom to be ill-founded. However, Kant equally rejects the argument for the thesis position that we *must* introduce a non-natural kind of causality—a causality of freedom—in order to make sense of nature. That would introduce uncaused causes into nature which, as such, could not be part of nature (cf. *CPR*: B479/A451). For everything in nature has a cause. Kant is explicit that his argument only establishes that freedom is not ruled out. A consequence of this is that there can be no account

of *how* freedom can be real, i.e., of the way in which freedom can be manifest in nature (cf. *CPR*: B585–86/A557–58).

One may think that this is a problematic result. For if freedom is essential to human beings, then Kant's position seems to involve that we can in principle not make sense of this essential aspect of ourselves. Hegel took this outcome to be philosophically unacceptable. In the following section, I lay out Hegel's account, in the 'Mechanism' chapter of the *Science of Logic*, of how freedom can be realized in nature in so far as solar systems can be taken to exhibit a rudimentary form of freedom.

## II. Degrees of freedom

How does Hegel seek to go beyond Kant's merely negative argumentation regarding freedom in its relation to nature? If one looks into recent scholarship with an eye towards this question—Pinkard (2012), Kreines (2015) and Ng (2020), for instance—then, despite the different approaches, one can find the following strategy: if Hegel's account of *life* is made sufficiently transparent then it will become clear how core aspects of human freedom are present in life—especially animal life—which shows that freedom and nature are not as starkly opposed as Kant's account seems to have it. For example, Ng writes: 'Hegel [...] aim[s] to demonstrate that the infinite activity of reason and freedom is immanent in nature and, more specifically, immanent in the activity characteristic of life' (2020: 133).

Now, discussing organisms and drawing attention to what is actually going on in organisms *can* convince the sceptic about freedom that she has restricted her conception of what there is without justification. Such a discussion involves drawing attention to the internal organization of living beings: that we cannot understand what, for example, a heart is if we do not recognize its function of pumping blood. Furthermore, such a discussion involves pointing out how the internal organization of, say, a plant is kept up by the plant's incorporation of inanimate material from outside (nourishment). Relatedly, the concept of *injury* finds application in organisms—with injuries typically leading to a goal-directed process in the injured organism, the process of healing. Internal organization, nourishment and healing processes are not to be found in nature *exclusively* conceived along the lines of external causation.<sup>18</sup> Thus, someone who thinks that determinism is incompatible with freedom can be brought to reconsider her attitude when confronted with such pertinent details of certain natural beings. For if organisms exhibit features that do not fit the mould of external causation but are clearly in nature, then it is wrong to hold that natural phenomena can *only* be explained by means of external causation.

While I am sympathetic to this strategy, it faces the problem that someone who believes that nature is at bottom nothing but the realm of external causation

will likely respond with the claim that life processes are *inessential*—that future research will explain them in terms of external causation—or that they are an *irresolvable puzzle*.<sup>19</sup> One way in which this problem is manifest regarding the books mentioned above is the following. Kreines's book says the most about the issue of the difference between Mechanism<sup>20</sup>—which roughly is Hegel's term for conceiving of nature along the lines of external causation<sup>21</sup>—and Life. Kreines addresses the relation between Mechanism and Life by invoking Hegel's statement that Mechanism is 'indifferent' to being taken up in the unity of life (2015: 101–2). Yet, the sceptic about freedom's reality will likely find it puzzling *how it is possible* for Mechanism to be indifferent. Or the said indifference of mechanism is understood in a way that is compatible with predeterminism; for example, on the model of a humpback whale's indifference to whether it carries barnacles or not. That is, said sceptic can endorse 'indifference', thinking that external causation is the only relevant form of explanation regarding nature, and that higher forms of unity and explanation are an indifferent addition that could also be absent.

Hence, I submit, it is helpful to turn towards Hegel's statements about the rudimentary form of freedom that is present in 'Absolute Mechanism' and its paradigmatic realization in solar systems. First, this is helpful for understanding Hegel's conception of *freedom*, as solar systems realize the following aspects of that conception: 1) absence of determination from without, 2) determination through an internal principle, an internal principle that 3) is a Law that is not external to the objects it governs, but fully suffuses them and thus 'is the pervading immanent essence of the objects' (*SL*: 641/6:423). A consequence of aspect 2) is that the motion of solar systems could in principle go on forever while aspect 3) means that solar systems exhibit an 'intimate type-token connection' (Kreines 2015: 206) between the Law and the planets.<sup>22</sup> Second, solar systems are hardly in danger of being declared to not really be in nature, or to only be in nature to the extent that future research might show that solar systems are *actually* governed by *qualitatively different* laws than those found by Kepler and embedded in a general theory of mechanics by Newton.<sup>23</sup> Thus, if turning one's attention to the specificities of solar systems reveals that solar systems are not properly captured in terms of external causation *and* realize a rudimentary conception of freedom, then this will be helpful for convincing the sceptic about freedom's reality and it will be an important step in going beyond Kant by showing *how* freedom can be realized in nature. Having this intermediate step between external causation and life in view will furthermore be helpful if life is considered to be ineliminably puzzling, because the seeming tension between external causation and Life is thereby eased if not lifted.

My approach here is novel, as, in books about the *Science of Logic*, it is common to give short shrift to the 'Mechanism' chapter (see Pippin 1989, 2018; Ng 2020), to claim that it does not belong into the *Logic* at all (Hösle 1987: 247), or that Hegel speaking of 'Absolute Mechanism' makes no sense (Rosen 1974: 48), or to find it



necessary to depart from Hegel's text (Martin 2012). Martin makes the important point, against scholars such as Burbidge, that only in the immediate form of Mechanism are objects external to each other.<sup>24</sup> And while Martin's book is in general illuminating for understanding Hegel's method in the *Science of Logic*, I do not find in the 'Mechanism' chapter Martin's claim that the realm of Objectivity forms a *continuum* (2012: 378). Kreines (2015) compellingly discusses parts of the 'Mechanism' chapter that have critical import for contemporary philosophy of science, but does not go into the positive parts of that chapter with respect to freedom. An intimate unity of type and token—or Universal and Singular—and thus freedom, according to Kreines, only comes onto the scene later in the *Logic* (2015: 220).<sup>25</sup> Then, Moyar (2018) gives a helpful account of the 'Mechanism' chapter within the context of the 'Subjectivity' and 'Objectivity' sections of the Logic of the Concept, in which he emphasizes the role of Hegel's account of syllogisms in Hegel's account of Mechanism, Chemism and Teleology. Yet, due to my focus on method and on the productivity of Hegel's dialectical method, I seek to go beyond Moyar's text by giving an account of how exactly the transitions between the forms of the 'Mechanism' chapter come about. Finally, Mure (1950), Carlson (2007) and Moss (2013) do discuss the 'Mechanism' chapter. Yet, while all three texts are helpful—primarily to a reader who is well-acquainted with Hegel's writing style—they all push the method of the *Phenomenology of Spirit* from 1807 into the *Science of Logic*.<sup>26</sup> Furthermore, they all discuss the 'Mechanism' chapter primarily in terms of Hegel's difficult theory of concepts, judgments and syllogisms. While, in these texts, it is simply accepted that Hegel applies this theory to solar systems, I seek to contribute to the task of making understandable why Hegel is *justified* in applying his theory of concepts, judgments and syllogisms to solar systems in the way he does.<sup>27</sup>

I want to begin my positive case with a *very* brief sketch of Hegel's concept of freedom:<sup>28</sup> Hegel speaks of 'freedom, i.e., not being dependent on an Other, the relating of itself to itself' (*EIII*: §382A, 15/26).<sup>29</sup> While a full-blown 'relating of itself to itself' involves mindedness (cf. *EIII*: §385, 20/32) and eventually relations of recognition in a by-and-large rationally organized society (cf. Pippin 1999: 194; Pippin 2008), I argue that a rudimentary, inanimate, and thus non-conscious form of it is present in solar systems, in so far as their principle of motion does not involve bodies external to the solar system. But the latter is of course an unorthodox usage of the term freedom.

The claim that solar systems embody freedom will strike most readers as bewildering. Yet, as a merely textual matter, Hegel writes of the 'free mechanism' of solar systems several times in the section 'Absolute Mechanism' in the *Science of Logic* (*SL*: 643–44/6:426–28). Then, there are many passages where Hegel writes of 'free motion' and 'absolutely free motion' in relation to solar systems in the *Logic* and the *Encyclopaedia* (*SL*: 286/5:392; 297/5:406; *EII*: §253, 1:221/41; §264R,

1:245/65; §267A, 1:256/79; §268, 1:257/80; §268A, 1:257/80; §269A, 1:262/84–85; §270, 1:263/85; §270R, 1:263/86, 1:266/89, 1:266/90, 1:268/91; §270A, 1:272/97, 1:276/101, 1:280/105; §344A, 3:49/376; *EIII*: §392A, 36/53). Furthermore, he does occasionally write of ‘free matter’ in relation to solar systems (*EII*: §264A, 1:246/66; §268A: 1:257/80), of the ‘free central body’ (*EII*: §286R, 2:42/143), of ‘free heavenly bodies’ (*EII*: §376A, 3:213/539; §311A, 2:98/202), or of the ‘free existence’ of matter and motion in solar systems (*EIII*: §380, 8/16).

What makes the situation more complicated is that there are also a few passages where Hegel explicitly denies that freedom is present in the realm of nature. For example, in the introduction to the philosophy of nature in the *Encyclopaedia*, Hegel writes the following in relation to his claim that nature is the realm of externality:

In this externality, the determinations of the [Concept] have the appearance of an *indifferent subsistence* and *isolation* with regard to one another; the [Concept] is therefore internal, and nature in its determinate being displays *necessity* and *contingency*, not freedom. (*EII*: §248, 1:208/27)

Hegel states here that in so far as nature is the realm of externality, the Concept is not manifest in it and is thus merely internal. Therefore, freedom is not manifest in such externality—an externality that finds its reality in the concept of *matter*.<sup>30</sup>

Yet, almost as a direct answer to that statement, Hegel says the following early in a lecture on the third part of the *Encyclopaedia*:

That the externality and multiplicity of matter cannot be overcome by nature is a presupposition which, at our standpoint, at the standpoint of speculative philosophy, we have here long since left behind us as invalid. The philosophy of nature teaches us how nature sublates its externality by stages, how matter already refutes the independence of the individual, of the many, by gravity, and how this refutation begun by gravity [...] is completed by animal life, by the sentient creature, since this reveals to us the omnipresence of the one soul at every point of its bodiliness, and so the sublatedness of the asunderness of matter. (*EIII*: §389A, 32/47)

Hegel says that nature is *not only* the realm of externality. For ‘nature sublates its externality by stages’. I.e., already within the realm of nature, externality is increasingly overcome. That, already in nature, externality is increasingly overcome coheres with Hegel’s claim in §249 of the *Philosophy of Nature* that ‘[n]ature is to be regarded as a *system of stages*’ and it provides some content as to the meaning of this hierarchy of stages. With respect to the topic of freedom, which in the

quotation above from §248 is opposed to externality, such a gradual overcoming of externality suggests that freedom is *gradually increased* in the ascending stages of nature. Thus, Hegel's seeming incoherence of ascribing freedom to nature in the case of solar systems but denying freedom to nature as a whole can be resolved by taking freedom to come in degrees. Of course, full-blown freedom can only be found in the realm of spirit. Thus, and let me emphasize this, *there is no freedom in the full sense in mere nature*. Yet, this is compatible with *some* aspects of full-blown freedom being realized in nature; and having in view in what way and to what degree freedom is already realized in nature may be helpful or even necessary for us to realize our own freedom. Moreover, the reading I am proposing coheres with further usages by Hegel of the term 'free' with respect to natural phenomena, such as his writing, in §273 of the *Philosophy of Nature*, of 'free physical qualities' and 'total free individuality', the latter pertaining to shape, magnetism, electricity and the chemical process.

Having thus argued for why it need not have been a misstep by Hegel to constantly write and speak of freedom in relation to Absolute Mechanism and its paradigmatic realization in solar systems, I now want to turn to his account of this rudimentary form of freedom. That solar systems exhibit a rudimentary form of freedom can be brought out in the following way. As mentioned above, a paradigm case of external causation is causation along the lines of the inertial conception of motion.<sup>31</sup> An example of how that conception works is that a billiard ball's motion is determined by something external to it, for example, by another billiard ball that has collided with the first billiard ball. Billiard balls can move in all kinds of ways, but if we want to know why *this* billiard ball moves in exactly this way, then, according to the logic of external causation, we have to ask *what other object made the billiard ball move in this way*. In contrast to such a case, the question 'Why does this planet move in the way it does?' is not obviously answered in the same way. According to Hegel, this question is answered in an importantly different way, namely by recourse to its being a planet. Because the object of inquiry is a planet, the unit of significance is the *solar system* of which the planet is a part: in order to determine the location or velocity of a planet, the star(s) at the centre of the solar system and other planets of the solar system have to be taken into account, but—at least in principle—nothing beyond that. Furthermore, what determines *the way* in which the planet moves is that it is a planet: it orbits the star(s) in the centre of the solar system, and it does so indefinitely.<sup>32</sup> Dissimilar to the case of the billiard ball, the question 'What initiated the movement of the planet?' is *not* crucial to understanding why this planet moves in the way it does.

Solar systems can thus be taken to fulfil the first aspect of freedom listed above: absence of external determination. Not being determined from without, a solar system is determined from within. It is so by having an *internal principle* according to which its objects—the planets—are determined. This principle is

reflected in Kepler's laws of planetary motion, Hegel holds: 'the immortal honour of having discovered the laws of absolutely free motion belongs to Kepler' (*EII*: §270R, 263/86). In the *Science of Logic*, Hegel says more about the character of the law within Absolute Mechanism. The law is not external to the objects, but rather 'is the pervading immanent essence of the objects' (*SL*: 641/6:423). In relation to the objects, '[t]he law is indeed immanent in them and it does constitute their nature and power' (*SL*: 644/6:428). Given that Absolute Mechanism also pertains to the realm of spirit,<sup>33</sup> one can say that 'the Law' is not a conception of the law as in the Clash's singing 'I fought the law and the law won'. The attitude expressed in that song is one of opposition to the law, of the law's being an oppressive force. In the realm of spirit things can of course always go wrong, not live up to their concept; that is, there can be bad laws, or people can be opposed to laws that are actually good. But the good and defining case of 'the Law' is one in which the law is not opposed to the object, but rather fully suffuses it.<sup>34</sup> This is the case when planets revolve around a star or when a person acts in a morally good way, i.e., according to the categorical imperative. The motion of planets is thus to be described by a law that is internal to them, that describes what planets are; just as agents and their actions are to be described by the moral law. This is not to deny the dissimilarity that, in the latter case, it is possible for the individual agents and actions to deviate from the Law that governs them. Accordingly, Hegel says in the addition to §264 of the *Philosophy of Nature*: 'while finite matter receives motion from outside, free matter moves itself [...] Similarly, the ethical person is free in the laws, and they are only external to the unethical person' (translation amended).

Furthermore, with the Law's fully suffusing the objects it governs so that the Law is their essence, there is an "intimate unity" between type and token, or between Universal and Singular.<sup>35</sup> Hence, solar systems also realize this aspect of freedom. In sum, the freedom of solar systems consists in their exhibiting the three internally connected aspects of 1) absence of external determination, 2) determination through an internal principle, which is 3) a Law that 'suffuses' its Objects, whereby an intimate unity between Universal and Singular is established.

It should be noted that while Hegel uses terms such as 'individuality' and 'objective universality' in order to describe solar systems (*SL*: 643/6:426), he does in general not use the terms 'self-determination' and 'concrete universality' to do so.<sup>36</sup> Hegel starts using these latter terms affirmatively once the *Science of Logic* has advanced to the 'Teleology' chapter (*SL*: 656/6:444). What Absolute Mechanism lacks in order to exhibit proper self-determination and concrete universality is a certain negativity or *opposition* of Concept to Objectivity. This opposition is present in the 'movement of the end':

[T]he movement of purpose can now be expressed as being directed at sublating its *presupposition*, that is, the immediacy of

the object, and at *positing* it as determined by the concept. This negative relating to the object is equally a negative attitude towards itself, a sublation of the subjectivity of purpose. (*SL*: 658/6:447)

That is, the intimate unity between Universal and Objects that is present in Absolute Mechanism is lacking in negativity or difference in order to be ‘determined by the concept’, i.e., in order to exhibit the negative unity of self-determination and concrete universality.

Having thus determined the rudimentary form of freedom that solar systems exhibit, I want to turn to an objection that might arise. Someone who takes nature to be the realm of external causation may consider the absence of external determination of an established solar system to be *inessential* and claim that what we have to ask is how the solar system *came about*. But note that when we ask that, we do *not* consider the object in question to be determined as part of a higher unit—the planet as part of a solar system—and the circular motion to be in principle eternal. One could say: we are then not treating the solar system as a solar system, but press it in the mould of external causation by shifting the question from ‘Why does this planet move in the way it moves?’ to ‘Where did the solar system as a whole come from?’. One can of course also ask this latter question, but one should note how thereby the distinctive form of planetary motion, which can in principle go on forever, is not taken into account anymore. That the form of solar systems is—its continuity to lower forms of Mechanism notwithstanding—*sui generis* can be seen in the fact that we cannot determine how the solar system formed when merely considering the revolution of the planets around the sun.

I mentioned above how considering solar systems can be helpful for someone who, confronted with the distinctive features of life, considers these distinctive features to be *explained away* by future research or who comes to the conclusion that life is ineliminably *puzzling*. We are now in a position to spell out how solar systems can be helpful regarding these two mindsets. Both mindsets flow, I think, from taking external causation to be the only legitimate way of describing *nature*. According to the first mindset, life can be at best an inessential epiphenomenon, whereas an exponent of the mindset of puzzlement acknowledges the different form that is exhibited by living beings and is now at a loss as to how that form could be present in nature. Considering solar systems can be helpful regarding both mindsets because the step from external causation to solar systems is relatively small and because solar systems are hardly in danger of exhibiting some objectionable teleology. It is quite intuitive how a body may at first move in a straight line, according to the inertial conception of motion, and then gets ‘captured’ by a star and now exhibits the different form of determination exhibited by planets. Clearly, nothing spooky or weird is going on here that would warrant reduction to external

causation. Thus, the transition from external causation to something like ‘internal causation’ or ‘explanation by recourse to a larger whole’ can be more easily acknowledged to be unproblematic when the specific form of solar systems is taken into account.

### III. The forms of mechanism and their unity (as established through Hegel’s method)

This account of the freedom of solar systems is, I think, plausible and it can highlight that solar systems are misconstrued when we seek to explain them by means of external causation. Nevertheless, a staunch believer in the exclusivity of external causation may insist on there being no relevant difference between a case of collision and a case of planetary motion: both are cases of external causation and simply differ with respect to the values of the variables involved. This mindset can find expression in that person switching the question from ‘Why do the planets move in the way they do?’ to ‘Where does the solar system come from?’, as described above. While I take it to be a good question to ask this person how their staunch belief in external causation is justified, one can take Hegel to hold that this staunch believer is right in so far as I have so far merely presented her with arguments that are intuitively plausible rather than systematically rigorous. Notwithstanding the fact that different difficulties would arise were such a staunch believer to be confronted with Hegel’s conception of a systematically rigorous argument, it is worth noting that Hegel is committed to the principle not to argue with proponents of philosophical positions by presenting them with arguments external to their view. Rather, Hegel seeks to scrutinize the philosophical position at hand, to identify the basic concepts of that position and how they are supposed to interact, and to thereby bring certain deficiencies of that position to light—deficiencies that then give rise to a successor position.<sup>37</sup> In what follows I provide an account of how this scrutinizing works and how Hegel thereby arrives at his account of solar systems.

This account will give a sense of the way in which, according to Hegel, the predeterminist has to be dealt with, and of Hegel’s method more generally. Furthermore, the account includes a concrete case of the way in which Hegel inherits and goes beyond Kant’s negative argument. This concrete case, then, allows for a comparison between Kant’s and Hegel’s methods in dealing with predeterminism.

Furthermore, seeing in detail how thinking through external, i.e., mechanical causation leads to the form of Absolute Mechanism, in which mechanical causation is preserved (‘sublated’), allows us to understand how mechanical causation is not opposed to the rudimentary form of freedom that solar systems exhibit, but rather *figures in it*. This positive understanding is in turn helpful in order to

understand how mechanistic relations can figure in higher, more complex forms such as life or human agency.

The crux of Kant's argument against predeterminism, as laid out above in section I, is a reflection on the temporality of causation: If causes of events are essentially in time, then there cannot be an actual, infinite chain of causes. Hegel argues on a more abstract level. Hegel does this because he thinks that Kant's reliance on space and time is a liability when it comes to 'true metaphysics' or first philosophy.<sup>38</sup> Hegel can be understood as isolating the pure logical structure—in Hegel's sense of 'logic' and 'purity'<sup>39</sup>—of Kant's argumentation. The elements of this pure logical structure, which constitute the *starting point* of Hegel's argumentation in the 'Mechanism' chapter, are as follows. What there is (in the world, or nature, or objectivity) is: objects. The first thing to say about objects is that they are singular things. Each object is here conceived of as self-standing and external to the other objects. Furthermore, we here want to conceive of what there is, i.e., Objectivity, as being populated by objects. 'Everything is (directly or indirectly) an object', we could say. Objects are thus singular while everything is conceived of as an object, which renders the concept of an object universal.<sup>40</sup> To conceive of Objectivity as being populated by objects is a concept that Hegel calls 'the Mechanical Object':

the differentiated moments [of Objectivity] are *complete* and *self-subsistent objects* that, consequently, even in connection relate to one another as *each standing on its own*, each maintaining itself in every combination as *external*. – This is what constitutes the character of *mechanism*. (SL: 631/6:409)

On the basis of the very sparse determinations of the Mechanical Object just stated, the thought of the Mechanical Object is scrutinized or 'thought through' in the following way. Due to their singularity, objects are to be conceived of as different from each other. Due to their universality, however, they are all the same: they are all objects and so far no further determinations are on the table that would allow for a differentiation of one object from another. The claim to difference must hence be realized in some *particular determinations* of objects, i.e., in the *properties* or *qualities* that objects have. With the thought expressed in the last sentence, it is 'posited' that objects have particular determinations. That is, philosophical reflection yields the claim that the difference between objects must be realized in the particular determinations of objects and this point is now present and established in the philosophical investigation into Objectivity that Hegel pursues. In this way, Hegel establishes that objects have determinations.

But so far it is just a brute fact that objects have determinations. How can we understand objects to have particular determinations? As of yet, nothing accounts for the unity of an object and its determinations. That is, the philosophical question

‘How can an object have particular determinations?’ has, at this point of the dialectic, no answer. Yet, the task at hand is to give a philosophical account of Objectivity in general and of Mechanical Objects in particular. And it is germane to Hegel’s method to draw only on concepts that were so far introduced in order to state an account that answers the philosophical question at hand. Given that the only things we are thinking so far are objects, the only option for what could account for an object’s having a certain determination is another object. That is, an object’s having the determinations it has is explained by that object’s having *received* those determinations from another object. We have thus arrived at the basic structure or form of the concept ‘the Mechanical Object’: an ontology of objects with particular determinations, and these objects have their determinations on account of other objects. That is, whatever determinations an object has, it has *received* them from another object.<sup>41</sup>

One object’s receiving a determination from a different object is Hegel’s ‘logical distillation’ of the operative relation of predeterminism, which I called ‘external causation’ above. Furthermore, it is in this way that Hegel takes up Kant’s argumentation. Just as, in the ‘Third Antinomy’, the question of what the cause of an event is, so the question of what can account for an object’s having a determination does not go away when the can is kicked down the road to another object. One object is determined by another object, which is in turn determined by another object, and so on.

For Hegel, the regress shows that this concept does not accomplish what it was supposed to accomplish, namely, to give an account of how an object can have a particular determination. With the means established so far, we can only say: there are objects, and they have (particular) determinations, yet no account can be given of how they can have determinations. We can thus say that in a sense objects have determinations, and in another sense they do not have determinations. Thus, because the determinations are what accounts for the difference between objects, objects are different from each other and they are not different from each other. Hegel calls this the ‘contradiction’ internal to the Mechanical Object:

Now since the determinateness of an object lies in an other, there is no determinate diversity separating the two [...] But the objects are at the same time self-subsistent in regard to one another; in that identity, therefore, they remain utterly external. —Thus there arises the contradiction of a perfect indifference of objects to one another and of an identity of determinateness of such objects, or of the objects’ perfect externality in the identity of their determinateness. (*SL*: 633–34/6:413)<sup>42</sup>

We have arrived at a point at which an ontological structure has been identified, but where that structure involves a contradiction of sorts. Yet, this contradictory



structure captures what there is. For when we ask why an ordinary object has a certain determination, we are indeed referred to another object, and then to another object, and so on. When we ask why a stone is warm, we are referred to the sun, for example. Thus, Hegel holds that we have to acknowledge that contradiction. This acknowledgment of the contradiction of the Mechanical Object is expressed in the language of the *Science of Logic* in the following way. The contradiction gets ‘posited’ and we thereby move from the Mechanical Object to ‘the Mechanical Process’: ‘The mechanical process is the positing of that which is contained in the concept of mechanism, hence the positing in the first place of a *contradiction*’ (SL: 635/6:415).

This means that we accept that objects receive their determinations from other objects, even though the problem of how to account for the unity of an object and its determinations is thereby not satisfactorily solved. That no proper account can be given for the unity of objects and their particular determinations finds its real expression in its being a *mere fact* rather than a necessity that a certain object has a certain determination (that the stone is warm, for example). While by itself philosophically unsatisfying, the mere facticity of objects’ having the determinations they have, which Hegel takes to be an expression of the contradiction of the Mechanical Object, allows for higher forms to “take up” mechanistic nature and use it. For example, it is only because it is not a necessity that a river flows in the way it does that human beings can alter its course and use it to run a grist mill or to water fields.

In positing the contradiction of the Mechanical Object, we have posited that there is a way of receiving particular determinations. This way, which we can call a process, is now the topic of philosophical reflection.<sup>43</sup> That is, we have moved to the next thought, the ‘Mechanical Process’. At the beginning of the ‘Mechanical Object’, objects are *unified* in their universality. That is, there is unity among all objects in so far as they are all objects. Because, at that early point in the dialectic, no further specificity is provided to this abstract statement, we can say that this is a *merely abstract unity*. With the Mechanical Process, this merely abstract unity gets more concrete: it is through the processes of giving and receiving determinations that objects are unified. That is, the Mechanical Process states *how* the abstract unity of objects is realized.<sup>44</sup> This illustrates how the *Science of Logic* is a progression to presuppositions of the thought at hand: the Mechanical Process spells out an unclarified presupposition of the Mechanical Object.

Before turning to further details of the Mechanical Process, is it worth discussing a peculiar aspect of Hegel’s method in the *Logic*. This aspect is Hegel’s use of the concepts of ‘immediacy’ and ‘mediation’. The mark of immediacy is the absence of mediation, and mediation is what accounts for the unity of entities: entities are unified by being mediated in one way or the other. For example, at the beginning of the ‘Mechanism’ chapter, the unity of objects was immediate: it was

merely stated and no account was offered as to how objects are unified. The Mechanical Process is the mediation of objects and thus states how objects can be unified, i.e., how the abstract claim to unity is realized. While there is a significant amount of variety as to how the method of the *Science of Logic* works in each part and each chapter, the following very general statement can be made: in each section of the *Logic*, the first concept is marked by immediacy, the second one by mediation, and the third is the unity of the first two. (We will turn to the third concept or step of the ‘Mechanism’ chapter shortly.) Furthermore, that the first concept or stage is one of immediacy can also come into play with respect to a thought that is *part* of one chapter. In the case of the Mechanical Process, for example, there is an immediate and a mediate form. The first Hegel calls ‘Formal Mechanical Process’ and the second he calls ‘Real Mechanical Process’.

The Mechanical Process in its immediate form is thus one in which an object and its particular determinations are unified in an immediate way. This means that they are only externally related: the object has a determination, but this is not a necessity but rather a brute fact. Hegel expresses this by saying that the object is *indifferent* to having that determination—it could also not have it (cf. *SL*: 637/6:418). Nevertheless, the Formal Mechanical Process is the concept of objects’ passing on and receiving determinations. This process, however, can equally be considered from the vantage point of the Universal rather than singular objects. Rather than understanding objects to pass on and receive determinations, we can equally say that the universality of objects is realized in particular determinations—‘motion, heat, magnetism, electricity, and the like’—that get ‘distributed’ among objects (*SL*: 636/6:416).

While not all transitions in the *Logic* work in the same way, the transition to the Real Mechanical Process now happens in the same fashion as the transition from the Mechanical Object to the Mechanical Process in general: by reflection on the concepts thought so far. Here this means the following. So far we were thinking of the Formal Mechanical Process as a presupposition of the Mechanical Object. The content of this reflection—that the Formal Mechanical Process is a presupposition and thus internal to the Mechanical Object—now gets posited. What is thus posited is the following: a particular determination is internal to the Mechanical Object. That is, we now conceive of objects as having a *specific character*. Interaction among objects with a specific, internal character—a certain capacity, for example (cf. *SL*: 639/6:420)—is what constitutes the Real Mechanical Process. For the interaction—i.e., the ‘communication’ of determinations (*SL*: 638/6:419)—to be possible, objects have to share a certain ‘sphere’, where the shared sphere is internal to the respective objects. For example, in the case of the sun’s heating the stone, the stone is receptive to the sunlight, is able to take it up and become warm because of it. Sun and stone thus share the sphere of ‘warmth’ or ‘temperature’. In contrast, the stone will be unfazed by exposure to

Beethoven's Ninth, as they do not share a sphere. In this context, Hegel discusses the case of an individual object's not having the *capacity* to receive and use the communicated determination and of the individual object's demonstrating its singularity in resisting the communicated Universal. He thus talks of the 'force' of the Universal to overpower the singular object and of the 'violence' when an object's individuality is 'shattered' by the Universal.<sup>45</sup> The point of this discussion is that it only makes sense to speak of a (universal) determination's being adequate or inadequate to an object once we have expanded our conception of an object in the way described in the Real Mechanical Process. For only then does the Object have a character of its own.

The next (and final) step or concept of the 'Mechanism' chapter emerges when we reflect once more on the thought at hand, the Real Mechanical Process. In the Real Mechanical Process, the particularized Universal and the object as Singular are *not external* to each other anymore. This means that the opposition of Singular and Universal, which led to the contradiction of the Mechanical Object, is overcome. In Hegel's idiom, the contradiction is thereby 'sublated'. We can think this sublation in 'the Centre' and in 'the Law', which are the immediate and mediated form of the thought called 'Absolute Mechanism'. Hegel puts the transition thus:

This immanent reflection is now the objective oneness of the objects, a oneness which is an individual self-subsistence—the *center*. Secondly, the reflection of negativity is the universality which is not a fate standing over against determinateness, but a rational fate, immanently determined—a universality that *particularizes itself from within*, the difference that remains at rest and fixed in the unstable particularity of the objects and their process; it is the *lam*. (SL: 640/6:422; translation amended)

In addition to what I have said in the previous section, I suggest the following as an interpretation of Absolute Mechanism and, thus, of this passage. As laid out in the previous section, the word 'absolute' in Absolute Mechanism indicates that the relevant determination does not come from without but from within. This is reflected in solar systems in so far as the motion of the planets is determined exclusively by reference to factors internal to the solar system. While planets and star(s) are in some sense external to each other, one can say that they are all internal to the object 'solar system', which is unified by means of gravity, which is sufficiently strong in order to be relevant when determining the location and velocity of the planets or moons. Absolute Mechanism is the unity of the Mechanical Object and the Mechanical Process. In its immediate form, this unity of Mechanical Object and Mechanical Process consists in there being a manifest Object that *realizes* the particularized Universal of the Mechanical Process. It can even be said: we

are now considering the case of there being an object that simply *is* the particularized Universal. This object is ‘the Centre’. In a solar system, the star at the centre constitutes the sphere in which the planets move. The star does so due to its mass and the corresponding gravitation: It is gravity that unifies the planets with the star and with one another. The shared sphere of these celestial bodies is materialized, as it were, in the star.

The immediacy of the Centre gives rise to the question how, in what way, the Centre unifies the planets.<sup>46</sup> This question is answered by there being a *Law* according to which the peripheral objects are determined. In the case of solar systems, as mentioned above, this Law consists of Kepler’s laws of planetary motion. The Law contains a particular way in which the particular peripheral objects are determined. Hegel thus speaks of the Law as ‘a universality that *particularizes itself from within*’ (*SL*: 640/6:422).

As mentioned above, the *reality* of the Law that governs planets lies in the star, which is the active force, as it were, that realizes the Law. With Absolute Mechanism we have thereby arrived at a thought in which Universal and Singular, mediated by the Particular (determinations), form an ‘intimate unity’. Furthermore, Absolute Mechanism contains a positive, albeit rudimentary, conception of freedom.

This run through the ‘Mechanism’ chapter of the *Science of Logic* can figure as a concrete example of Hegel’s method in that book. Hegel begins with an account of objectivity as populated by externally determined objects. This account also underlies predeterminism.<sup>47</sup> Consequently, this worldview is ‘thought through’. By scrutinizing this account, Hegel develops the thought of Absolute Mechanism, in which external determination is sublated in the internal determination expressed by the Law. This internal determination finds a helpful illustration in the fact that, according to Hegel, planetary motion is internal to what a planet is: what it means to be a planet is to move in the way stated by Kepler’s laws.

Central to my interpretation is that the progressions in the *Science of Logic* occur as a result of *reflection* upon the thought at hand. For example, it is established through reflection upon the singularity of objects that objects have particular determinations. And it is through reflection upon what was thought so far that the contradiction of the Mechanical Object and the externality of the Universal to the object get sublated. It is in such ways, I submit, that the transitions of the *Logic* work—and not by presupposing a conception of consciousness, self-knowledge, or of complete explanation (cf. Kreines 2015: 221), as the interpreters discussed in the previous section hold.<sup>48</sup>

If this construal of Hegel’s method in the *Science of Logic* is roughly on the right track, then the following can be said by way of comparison to Kant. Both Kant and Hegel seek to unfold the presuppositions of the position they argue against. For example, Kant argues against his empiricist predecessors by asking ‘How is experience possible in the first place?’<sup>49</sup> And he argues against predeterminism by

reflecting on its presuppositions, whereby he uncovers a contradiction in these presuppositions. I argued that—and explained how—Hegel follows Kant in this assessment. Yet, while Kant reflects on the presuppositions of predeterminism by focusing on the presuppositions of experience, including its temporality, Hegel radicalizes Kant’s method by shedding the intuitive and thus ‘given’ moments of spatiality and temporality that are central to Kant’s account of cognition.<sup>50</sup> As a result, Hegel argues against the pre-determinist in a more purified form, as it were, by reflecting on the relation between objects, their Universality, and the Particularity that is needed to account for the Singularity of objects. In this way, Hegel takes the freedom-denying position of predeterminism and, by scrutinizing it, develops a positive account of freedom that is paradigmatically realized in solar systems.

### Conclusion: unconditional causes


I want to close by tying together the worked-out account of the freedom of solar systems with Kant’s terminology of an ‘uncaused cause’ and with an established account of Hegel’s conception of freedom from the secondary literature. In the ‘Third Antinomy’, the only way that Kant offers to construe freedom is as an uncaused cause. In his ‘Naturalness and Mindedness—Hegel’s Compatibilism’, Robert Pippin explains Hegel’s notion of freedom in light of the suggestive claim that ‘Geist is a product of itself, only what it takes itself to be’ (1999: 203). Pippin considers it a virtue of his approach that he simply bypasses classical formulations of the problem of free will. He writes:

Since I do not need to be able to think of myself as an uncaused cause in order to qualify as a free subject, I do not need to establish, either metaphysically or as a practical condition, any realm exempt from strict determination according to the laws of nature (whether or not subsumption under causal law is the *Ur-Prinzip* of nature). (Pippin 1999: 194–95)

I think that the case of solar systems is also helpful here. While I agree with Pippin’s focus on freedom’s being an active state of mutual recognition with other people and recognizing oneself in that, I do think that we need to understand *in what way* we can conceive of ourselves as an uncaused cause in order to make our freedom as agents in the world fully transparent. Our freedom does not, of course, consist in our possession and use of a randomly exercised, miraculous capacity for interrupting the unity of nature. Rather, we can act according to our comprehension of things and by adopting principles of action, such as the moral law. It is helpful to consider solar systems in order to understand how freedom thus construed is

possible in so far as a solar system does not violate the unity of nature, but is a system such that the principle of its motion does not lie outside of it, but is internal to it. If we *restrict* our concept of causation to external causation, then solar systems are a case of an *uncaused cause*. Yet, solar systems are not problematic. Thus, they show us how the term ‘uncaused cause’ can be understood in an unproblematic way.

Solar systems are of course different from human beings and the full-blown conception of freedom possible in the realm of spirit in many respects. For example, *qua* inanimate objects, solar systems are not alive, they do not have the possibility of deviating from the laws that govern them, and they are not even possibly conscious of these laws. Thus, forms of mindedness such as recognition, the possibility of and at times need for novelty and creativity, or the ability to subsume objects under concepts are absent. These differences notwithstanding, understanding the way in which solar systems are not to be described in terms of external causation and can thus be called free is illuminating for understanding our freedom.<sup>51</sup>

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### Notes

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<sup>1</sup> Abbreviations used:

- CPR* Kant, *Critique of Pure Reason*, trans. P. Guyer and A. Wood (Cambridge: Cambridge University Press, 1998). As it is the custom, I cite by page-number of the B- and A-editions.
- CPrR* Kant, *Critique of Practical Reason*, in Kant, *Practical Philosophy*, trans. M. Gregor (Cambridge: Cambridge University Press, 1999)/*Kritik der praktischen Vernunft*, in *Kants Werke, Band V* (Berlin: de Gruyter, 1968).
- EI* Hegel, *Encyclopedia of the Philosophical Sciences in Basic Outline – Part I: Science of Logic*, trans. K. Brinkmann and D. Dahlstrom (Cambridge: Cambridge University Press, 2010)/*Enzyklopädie der philosophischen Wissenschaften I* (Frankfurt: Suhrkamp, 1986).
- EII* Hegel, *Hegel's Philosophy of Nature*, trans. M. J. Petry (London: Allen and Unwin, 1970)/*Enzyklopädie der philosophischen Wissenschaften II* (Frankfurt: Suhrkamp, 1986).
- EIII* Hegel, *Hegel's Philosophy of Mind*, trans. W. Wallace and A. V. Miller (Oxford: Clarendon Press, 2007)/ *Enzyklopädie der philosophischen Wissenschaften III* (Frankfurt: Suhrkamp, 1986).

- FK Hegel, *Faith and Knowledge*, trans. W. Cerf and H. S. Harris (Albany: State University of New York Press, 1977)/‘Glauben und Wissen oder Reflexionsphilosophie der Subjektivität in der Vollständigkeit ihrer Formen als Kantische, Jacobische und Fichtesche Philosophie’, in *Jenaer Schriften 1801–1807* (Frankfurt: Suhrkamp, 1986).
- LHPbIII Hegel, *Vorlesungen über die Geschichte der Philosophie III* (Frankfurt: Suhrkamp, 1986).
- PbR Hegel, *Elements of the Philosophy of Right*, trans. H. B. Nisbet (Cambridge: Cambridge University Press, 1991)/*Grundlinien der Philosophie des Rechts* (Frankfurt: Suhrkamp, 1986).
- SL Hegel, *The Science of Logic*, trans. G. di Giovanni (Cambridge: Cambridge University Press, 2010)/*Wissenschaft der Logik* (Frankfurt: Suhrkamp, 1986).

<sup>2</sup> Cf., e.g., Stone (2005: Ch.1), Kreines (2006), Stern (2008), Bowman (2013: 1–7, Ch.3) and Wolf (2018).

<sup>3</sup> It is a central theme of Pippin (2018) to clarify that he does not endorse a non-metaphysical reading in such an objectionable way (cf., e.g., 2018: 32, n.54). McDowell’s diagnosis, which I came to find correct, is that we are beset by the dualism between thinking and reality because we adopt a problematic account of experience (cf. McDowell 1996: xi, 9, 23).

<sup>4</sup> Christian Martin thus rightly points out that the *Science of Logic* presupposes nothing, also no conception of the relation between thinking and reality (2012: 29). Rather, we have to become aware and rid ourselves of any such preconceptions. To use the terms ‘isomorphism’ or ‘homomorphism’ (cf., e.g., Bowman 2013: 18, 37, 54; Rand 2017: 394; Wolf 2018: 334) in this context is, I think, an expression of such a preconception. For mind and world are then conceived of as two distinct structures that happen to stand in a relation of isomorphy or homomorphy to each other.

<sup>5</sup> To someone who does not already agree, such a dogmatic statement can of course at best serve to point in a direction where the solution may lie. Unfortunately, this vexed and deeply rooted issue cannot be overcome easily, I think. Kern (2017) and James Conant’s work on scepticism (Conant 2004), perspectivism (Conant 2005, 2006), and ‘logical aliens’ (Miguens 2020) are, in my estimation, helpful to tackle the issue. Also, error in non-empirical cognition such as mathematical or philosophical cognition is not happily described as the mind’s ‘not being in touch with the world’, I think.

<sup>6</sup> ‘It is one of the profoundest and truest insights to be found in the Critique of Reason that the *unity* which constitutes the *essence of the concept* is recognized as the *original synthetic unity of apperception*, the unity of the “*I think*”, or of self-consciousness’ (SL: 515/6:254; cf. also SL: 515–16/6:254–55 and 654/6:440–41).

<sup>7</sup> Hegel reads Kant uncharitably when claiming that Kant is a ‘subjective idealist’ (EI: §46R, 91/123) or that understanding and sensibility are two separate things that cannot properly cooperate (LHPbIII: 348). Bristow (2007: 19) says that Kant’s idealism is subjective because ‘[w]e can know objects only as relativized to our human standpoint’. But why conceive of the human standpoint as parochial? Is it not human beings that can understand Hegel’s non-parochial philosophy and whose ‘standpoint’ Hegel’s philosophy seeks to articulate? Houlgate criticizes Pippin for his

claim that Hegel's concept of the Concept is indebted to Kant's notion of self-consciousness (Houlgate 2006: 139). This criticism is based on accepting an uncharitable reading, wherein Kantian self-consciousness is degraded to mere external reflection. Finally, Sedgwick holds that Kant's philosophy is saddled with a dualism between understanding and sensibility because 'we cannot know that our concepts capture the nature of [the sensibly given] content' (Sedgwick 2012: 8). This raises the following interesting question: what is the kind of knowledge that is in question here? If Kant, in the *Critique of Pure Reason*, answers the question 'How is empirical knowledge possible?' by laying out how exactly sensibility and understanding are unified so that empirical knowledge comes about, then the knowledge in question was indeed provided, I think. For a difficult but illuminating account of how the relation between understanding and sensibility in the *Critique of Pure Reason* can be read in a non-dualistic way, cf. Engstrom (2006).

<sup>8</sup> Cf., e.g., Feder-Garve (1782: 53), Jacobi (2000: 171–75), FK: 320, LHPbIII: 348, Guyer (1993), Adams (1997), Langton (1998), Van Cleve (1999: 11, 49) and Bowman (2013: 5, 123).

<sup>9</sup> Cf. Allison (1992: 36), where he uses this term for the limiting concept of an intuitive intellect.

<sup>10</sup> While I share Allais' view on determinism's compatibility with an open future, I disagree with her reading of the thing in itself. In his earlier writings, Allison also retained a traditional, dogmatic reading of the thing in itself. Traces of such a reading occasionally flicker up also in his later writings.

<sup>11</sup> Kant is traditionally and nowadays read as a pre-determinist. Cf., e.g., Schopenhauer (1985), Stang (2016: 215–16) and Proops (2021: 288–89).

<sup>12</sup> It is in general important to note that Kant has a different conception of an *event* and of *causality* than Hume. For Kant, events are changes of the accidents of a substance, i.e., of the properties of an object (cf. Watkins 2005: Ch.4). While I think that Watkins rightly argues that Kant does not have a Humean conception of causality, I agree with the criticism of Watkins's contention that causes are temporally absolutely indeterminate in Hennig (2011).

<sup>13</sup> Concrete event concepts are the concepts of everyday events such as ice-block melting, sunshine, wind breezing, ball rotating, scraping, pushing, but also scientific event-concepts such as planetary motion, chemical interactions, atom decay, and so on.

<sup>14</sup> Perceivability here is not restricted to direct perception. For example, Kant thinks that we perceive magnetism by seeing iron filings move (cf. CPR: B273/A226).

<sup>15</sup> The categories can be taken to have content even though they stand in need of saturation by sensibly given matter. I leave this issue aside for simplicity's sake.

<sup>16</sup> Accordingly, in the 'Second Analogy of Experience', Kant reconceives of the principle of sufficient reason in such a way that the proximate cause of an event is sufficient. (Cf. CPR: B246/A200-1.)

<sup>17</sup> This point follows from Kant's 'two-stem doctrine' (cf. CPR: B75/A51).

<sup>18</sup> I leave out the aspect of reproduction here because I think it is less suited to quickly bring the distinctive form of life into view.

<sup>19</sup> Kant's discussion of life in the *Critique of the Power Judgement* is often read as expressing the attitude that life is ineliminably puzzling. McLaughlin (1989: 146–47, 152), Zanetti (1993: 352) and



Cohen (2004: 193–94), among others, claim that the ‘Antinomy of the Power of Teleological Judgement’ can only be ‘resolved’ by appeal to a super-sensible ground of nature which we cannot understand.

<sup>20</sup> I capitalize Hegel’s technical terms.

<sup>21</sup> Note Martin’s important point that only in the initial form of mechanism, the ‘Mechanical Object’, are objects external to each other (2012: 378, n.332). Thus, when Mechanical Process and Absolute Mechanism are also taken into account, mechanism comprises more than just external causation, i.e., objects in external relations to each other.

<sup>22</sup> This is Kreines’s phrase for the relation between Universal and Singular within the ‘concrete universality’ exhibited by life and, even more so, the Idea (cf. 2015: 93–100, 203–6).

<sup>23</sup> It is plausible, I take it, to hold that the embedding—and to that extent altering—of Newtonian mechanics in Einstein’s theory of general relativity does not qualitatively alter the character of these laws, even though, e.g., the concept of space is altered in that embedding.

<sup>24</sup> Cf. note 21.

<sup>25</sup> Cf. note 35.

<sup>26</sup> Mure reads the *Science of Logic* as if it employed the method of the *Phenomenology* in so far as he explains the workings of the *Logic* in terms of ‘consciousness’ and the development of ‘understanding’ and ‘spirit’ (1950: 235). Carlson does so by invoking ‘external intelligences’ and a contrast between understanding and dialectical reason (2007: 530, 532). And Moss does so by taking it to be relevant whether ‘mechanical thought’ can ‘cognize itself’: ‘mechanical thought does not cognize itself, for qua mechanical it ignores itself. By treating itself mechanically, it does not attend to what it is, and does not know itself’ (2013: 76). While I agree with the content of Moss’s metaphor in the title of his article—that the Concept ‘resurrects’ itself in Objectivity—I take it that the following question brings out a limit of this metaphor: Why did the Concept die beforehand, presumably in the disjunctive syllogism? Also, Moss holds that the *Logic* consists merely in ‘logical analysis’ and that it requires a further step to ‘apply’ it to ‘non-logical objects’ (2013: 73). As laid out in the beginning of section I, I disagree with such a reading of the *Logic*.

<sup>27</sup> There are several texts that helpfully discuss Hegel’s account of solar systems and other mechanistic phenomena in his *Philosophy of Nature* (Houlgate 2005: 130–56; Stone 2005: 29–44; Halper 2008; Rand 2017; Kabeshkin 2021). While the *Philosophy of Nature* presupposes the concepts developed in the *Logic* and does not have its a priori rigor, these texts are helpful for understanding the ‘Mechanism’ chapter of the *Logic*. For they make Hegel’s account in that chapter more concrete.

<sup>28</sup> For a thorough discussion of that concept, cf. Pippin (2008).

<sup>29</sup> For basically the same statement with respect to freedom in relation to the will, cf. *PbR*: §23, 54/74–75.

<sup>30</sup> Cf. *EII*: §248R, 1:209/28; §252, 1:217/37; §253, 1:221/41; §261, 1:237/56; §261R, 1:237–38/56–58.

<sup>31</sup> I owe the term ‘inertial conception’ to Rand (2017). The term refers to a conception of motion and change, namely the one expressed in Newton’s first axiom or law of motion in the *Principia*, according to which a body persists in its state of rest or motion except insofar it is acted on by a

force. For example, a body moving in a straight line will not by itself slow down but rather continue to move in a straight line with the same speed unless acted on by a force.

<sup>32</sup> Kreines calls this point Hegel's 'concept thesis', according to which the behaviour of some things is to be explained by recourse to what they are, i.e. by recourse to their concept (cf. Kreines 2015). Thompson (1995) is a helpful attempt to make this ancient point available to readers who grew up in post-Fregean analytic philosophy.

<sup>33</sup> Cf. *SL*: 641/6:424, 631/6:410.

<sup>34</sup> I used the phrase 'fully suffuse' above on p.12. Cf. also: *SL*: 643-44/6:426-28, *passim*. For example, Hegel says at 644/6:428: "The law is [...] immanent in [the objects] and it does constitute their nature and power'.

<sup>35</sup> Kreines gives a helpful account of concrete universality as it is present in Life, of which an intimate unity between type and token is one mark (2015: 98–100, 206). However, he thinks that this intimate unity between type and token only arises with Life and explicitly denies it for 'something lawful' (2015: 212). I think this belief stems from the typical neglect of the 'Mechanism' chapter—even though Kreines devotes more attention to it than most scholars.

<sup>36</sup> In the 'Mechanism' chapter, Hegel writes at one point of a 'self-determining unity' in order to characterize the relation between Centre and external objectivity, i.e., between star and planets. But Hegel does not use the term 'self-determination' to characterize the relation between Universal and Singular in the 'Mechanism' or 'Chemism' chapter.

<sup>37</sup> This is the operation of 'determinate negation', which is the basic operation of Hegel's 'dialectical' method. Cf. Henrich (2003: 316–31), Martin (2012: 37–54), Bowman (2013: 26–61) and Pippin (2018: 139–80).

<sup>38</sup> Cf. McDowell (2007) and Rödl (2007).

<sup>39</sup> For a helpful discussion of how Hegel understands 'logic' (and its purity), cf. Pippin (2018).

<sup>40</sup> Cf. the following pertinent passage by Hegel about the universality of the concepts we use in order to say what there is: 'Principles of the older or the more recent philosophies, be it water or matter or atoms, are thoughts, something universal, ideal, not things, as they are immediately encountered, that is, in sensuous singularity' (*SL*: 124/5:172).

<sup>41</sup> Hegel's conception of Mechanism is more abstract not only than Kant's but also than that of the classical mechanists like Descartes and Locke. Hegel would claim that what he lays out in the 'Mechanism' chapter of the *Logic* is also the basic structure of classical mechanism as prevalent in Descartes's time: all there *is* is undifferentiated matter that nevertheless is singular, and the relevant determination of one bit of matter (motion) is received from other matter.

<sup>42</sup> Cf. *SL*: 635/6:415. For the same contradiction as it comes up in Life, cf. *SL*: 678/6:474.

<sup>43</sup> In Kantian terms, the *process* of giving and receiving determinations is expressed thus: there is one substance that is the cause and there is another substance that is the recipient of the effect of that causation.

<sup>44</sup> I thus disagree with Moss, who holds that, in the Mechanical Process, objects receive the determination of being 'individual objects' (2013: 78). Against this account speaks the philological reason that Hegel does not use 'individuality' in the sections on Mechanical Objects and the Mechanical Process, but only from Absolute Mechanism onwards. The *singularity* of objects,

however, is already the result of the transition from the Disjunctive Syllogism to Objectivity. Finally, objects must already be singular in order to be able to receive a determination, I would think.

<sup>45</sup> Karen Ng sees in this passage only the case of the force of an unjust state or of oppressive mores suppressing the individuality of people (2020: 231). Hegel is, however, talking in more general terms here. Next to the physical cases of too high voltage for a capacitor or of too much weight for a bridge, his description equally covers the overpowering of a murderer by the police or the cancellation of a racist speaker. Not immediately seeing the latter cases may stem from the unfortunate circumstance that the German ‘*Gewalt*’ cannot be neatly translated into English. For ‘violence’ only captures one aspect of *Gewalt*. In German, ‘*Staatsgewalt*’ (authority of the state), ‘*Gewaltenteilung*’ (separation of powers), and ‘*höhere Gewalt*’ (acts of God), for example, are equally cases of *Gewalt* but ought not to be translated as ‘violence’.

<sup>46</sup> For simplicity’s sake, I leave out the case of moons.

<sup>47</sup> What I call ‘predeterminism’, Hegel calls ‘determinism’ (*SL*: 633/6:412–13).

<sup>48</sup> It goes beyond the scope of this essay to show that the transitions in other parts of the *Logic* also work in this way. To sketch at least one further such transition: the transition from Being to Nothing occurs due to reflection on what Being actually contains: Nothing. And it is reflection on the transition from Being to Nothing that yields that Being *becomes* Nothing.

<sup>49</sup> Cf. *CPR*: A112 and *CPxR*: 183/53 for how empiricism cannot account for objective experience. Cf. *CPR*: B194–95/A155–56, B764–65/A736–37, Bxix for the centrality to Kant’s critical philosophy of the question of how experience is possible.

<sup>50</sup> For a detailed discussion of this radicalization, cf. McDowell (2007).

<sup>51</sup> I am thankful to the organizers and participants of the workshop on Teleology in Hegel’s *Logic* at the University of Valencia in 2020, of the German Philosophy Workshop at the University of Chicago, and to the feedback I received from Robert Pippin, James Conant, Matt Boyle, Christian Martin, James Kreines, Erin Miller, Sebastian Bürkle, Karen Koch, Thomas Pendlebury, and two anonymous reviewers.

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