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Chapter 5

Leibniz on Freedom and Contingency

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Introduction

Builders build. Farmers farm. But what do philosophers do? One answer to this embarrassingly difficult question is that philosophers engage in conceptual engineering.[1] They hone, shape and construct concepts that are above all useful. In doing so, they are constrained on two sides. On the one side, they are beholden to common thought and language. One could, for example, shape a concept of an omnipotent being that barks and delivers pizza but it is not clear what would be the point; introducing such a concept would only invite confusion. On the other side, philosophers are beholden to the goals of improvement and consistency. A philosopher carving out a concept of justice aims to provide insight and coherence. She fails in her task if she only tells us what every lexicographer knows or if her account proves self-contradictory.

The concepts of freedom and contingency, as they are used in ordinary language, are ripe for conceptual engineering. Our workaday understanding of freedom has many connotations but no precise and fixed meaning. It is associated, for example, with the ability to make decisions, determine courses of action, and with being responsible. It is also intertwined with the intuitive, if elusive, conviction that things could have gone otherwise. The question of how the various connotations associated with freedom should be fit together into a coherent whole is a good job for the conceptual engineer - a job that to this day remains unfinished. Much the same is true for the concept of contingency. It also has many connotations but no precise and fixed meaning. It overlaps with our workaday understanding of freedom, especially in the thought that things could have gone otherwise. But it also has its own distinct family of connotations. It is linked, for example, to our understanding of notions such as determinism and chance. It is constrained by our willingness to make

[1] For various developments of this thought, see Blackburn (1999), Brandom (2001), Burgess and Plunkett (2013a, 2013b), Chalmers (2011) and Eklund (2015). I owe special thanks to Sam Levey for helpful discussion of the relationship between Leibniz and conceptual engineering.

transitions among a family of modal notions, for example, by our willingness to infer from something's being contingent that it is not necessary.

Leibniz's work on freedom and contingency is, I think, best understood as an exercise in conceptual engineering.[2] Leibniz has a sense of what he thinks these concepts are good for – of how they can and should be used. Paramount in this regard is the roles that freedom and contingency play in making sense of divine and human responsibility. God is to be praised for his creation, but in order to be praiseworthy, God must be free and his creation – so it might seem – must be contingent. We are to be rewarded and punished for our voluntary actions, but in order to be worthy of reward and punishment, we must be free and our actions – so it might seem – must be contingent. Although Leibniz shapes concepts of freedom and contingency that he thinks are useful to his ends, nonetheless he does not carve with an utterly free hand. He is eager to show that his concepts of freedom and contingency are at least continuous with everyday usage and the understanding of his predecessors. Leibniz wants to improve our concepts of freedom and contingency; he does not wish to simply discard them and start wholly anew. The next section will explore Leibniz's conception of freedom. Subsequent sections will turn to Leibniz's understanding of contingency.

1. Freedom

Leibniz's understanding of freedom is anchored in three necessary conditions (GP 6:288-290/H 302-304). The first condition is *intelligence*, which Leibniz calls the "soul of freedom." Rational agents alone enjoy intelligence and so, for Leibniz, rational agents alone enjoy freedom in the fullest sense. But why is intelligence so important? Leibniz tells us that intelligence "involves a clear knowledge of the object of deliberation" and that it "occurs in the actual use of reason" (GP 7:288/H 303). His thought seems to be that intelligence allows us – at least in principle – to understand the actual good in objects of choice. It thus puts us in a position to weigh the true value of the options we confront and to choose accordingly. In doing so it places us in a deliberative position not unlike God's deliberative position. For God, of course, chooses under

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[2] In a letter to Gerhard Wolter Molanus of February 1698, Leibniz says as much himself:

> But the more I consider the matter, the more manifestly I seem to myself to see that the error was not so much in realities as in formulas, on account of assumed definitions of freedom, necessity, will, and right that are not only less philosophical, and less familiar, but also less suited to edification. … What if therefore, as I am almost persuaded, by merely developing definitions all that harshness could be softened, and it is permitted to remove the controversy about which people have sounded so tragic; do you think this should be neglected? (Schrecker (1934, 84), cited and translated in Adams (1994, 30)).

conditions of perfect comprehension. The rational ability to determine our actions in light of the true value of the potential outcomes of our actions is thus, Leibniz suggests, the very heart of freedom in its fullest sense.

Leibniz nonetheless allows that in our current state we seldom, if ever, choose under conditions of perfect intellectual clarity. Our senses bombard us with confused thoughts and we constantly make decisions on the basis of imperfect assessments of the value of the potential outcomes of our actions. To this extent we are, according to Leibniz, "the slaves of passion" and we seem to differ little from unintelligent beasts. Leibniz maintains that even under such circumstances, however, we may enjoy a sort of second-rate freedom, the "freedom of a slave" (GP 6:288/H 303). Leibniz's thought here is that even when we are not in a position to weigh the true value of the options we confront, we may nonetheless determine our actions by the apparent value of the options we face. Even where we are not free in the fullest sense of the term, we may nonetheless be free insofar as we may pursue ends that seem best to us at a particular time. Being determined by what seems best to us – whether it actually is or not – thus seems to central to Leibniz's understanding of freedom in a somewhat broader, perhaps more realistic sense.

The second necessary condition for freedom Leibniz calls *spontaneity*: in order to be free, one must be an immediate causal source of one's own actions (GP 6:289-290/H 303-304). A baseball thrown through the air is not free in part because it does not causally determine its own trajectory. Likewise, I am not free when I am pushed out of an airplane because, when pushed, I do not causally determine my exit. When I jump out of a plane myself, however, I am free since I do causally determine my exit. Leibniz's commitment to the condition of spontaneity is closely related to his critique of occasionalism – that is, the doctrine that God is the only genuine cause in the world (GP 6:292-293/H 306-307). Leibniz maintains that the doctrine of occasionalism would undermine all creaturely independence, since, if occasionalism were true, no creature could be a genuine causal source of his or her own actions. By Leibniz's lights, the truth of occasionalism would mean that no creature could be spontaneous, and, thus, no creature could be free.

According to Leibniz's own mature metaphysics, all substances satisfy the condition of spontaneity (6:289/H 304). For according to Leibniz's mature metaphysics, each genuine creature is not only causally isolated from every other genuine creature, but is furthermore the immediate causal source of all its activities. Apparent causal interactions between creatures are, on Leibniz's view, the result of synchronized endogenous changes. When it looks like someone pushes me out of a plane, what really happens, according to Leibniz, is that the pusher does what she does as a result of her own causal power, while I do what I do as a result of my own causal power. The condition of spontaneity thus seems to be very easily satisfied. Indeed, perhaps too easily satisfied. If every creaturely action is causally driven from within, a common resource for distinguishing between voluntary and involuntary actions is lost. We can no longer appeal to a distinction between external and internal causes

in order to distinguish between my being involuntarily pushed out of a plane and my voluntarily jumping out of a plane (see GP 4:517-524/WFN 79-86; for discussion, see Rutherford (2005) and McDonough (2016)).

A third necessary condition for freedom is *contingency*: for an action to be free it must be contingent (GP 6:288/H 303, GP 6: 296-297/H 310). If it is absolutely necessary that I eat an ice cream sundae, then I cannot eat an ice cream sundae freely. More centrally to Leibniz's concerns, if it is absolutely necessary that (say) Judas sins, then Judas cannot sin freely.

One might wonder how personally committed Leibniz is to the condition of contingency. In early works, he sometimes suggests that God's creation is both free and necessary (see, for example, A.6.3.122/Sleigh 45, A.2.1.117-118/Sleigh 3-5). Furthermore, throughout his career Leibniz subscribes to compatibilism; that is to say, throughout his career Leibniz maintains that freedom is consistent with causal determinism. He thus allows that I may jump out of a plane freely even if I am causally determined to jump out of a plane. He allows that Judas may sin freely even if Judas is causally determined to sin. Compatibilism, however, might make the condition of contingency seem less urgent. If I can jump out of a plane freely in spite of being causally determined, why should it matter whether or not there are other possible worlds in which I don't jump out of a plane? If Judas can sin freely in spite of being causally determined to sin, why should it matter whether or not his sinning is contingent?

Whatever his personal convictions may have been, Leibniz nonetheless repeatedly and publicly endorses contingency as a necessary condition for freedom, especially in his *Theodicy* (see, for example, GP 6:37/H 61, GP 6:288/H 303, GP 6:296-297/H 310). It is possible that in spite of his early wavering he came to share the intuition that one cannot sin freely if the agent's sinning is not in some sense contingent. It is also possible that Leibniz privately rejected the condition of contingency even while publicly endorsing it, perhaps with the aim of currying favor or educating a wary public (see G 3:66-67/WFN 127, for discussion, see Whipple 2015). Or, finally, it is possible – and this seems most likely to me – that Leibniz, the conceptual engineer, saw a tension between what he took to be the demands of utility and the demands of common usage. Perhaps he was never deeply convinced that a useful concept of freedom must make reference to contingency. But perhaps he also came to recognize that any concept of freedom that does not presuppose contingency threatens a dangerous rupture with ordinary usage. If that's right, Leibniz must have been alarmed that various features of his philosophical system might seem to rule out contingency altogether. The next section will therefore explore some of the ways in which Leibniz's philosophical system might seem to commit him to the view that all truths are necessary. Subsequent sections will look at Leibniz's attempts to resist this threat of necessitarianism.

2. Necessitarianism?

Necessitarianism is the view that there are no contingent truths – that everything that is actually the case is necessarily the case. According to necessitarianism, its being sunny in Leipzig on the first of July 1646 is, if true, every bit as necessary as its being the case that triangles have three sides. According to necessitarianism, Judas's betraying Christ for thirty silver coins is, if true, every bit as necessary as two plus two equaling four. Many philosophers have been eager to deny necessitarianism. They suggest that it is simply implausible to suppose, for example, that my taking a sip of coffee is every bit as necessary as, say, the Pythagorean Theorem. They suggest that necessitarianism would run roughshod over important philosophical distinctions, that it would, for example, ruin the crucial distinction between essential and accidental properties. Leibniz's understanding of freedom, however, gives him a very specific reason for rejecting necessitarianism. As we've seen, Leibniz maintains that freedom and responsibility presuppose contingency, and thus, presuppose the denial of necessitarianism.

At least three commitments of Leibniz's philosophical system nonetheless seem to drive him towards necessitarianism. The first such commitment is the principle of sufficient reason. Put baldly, the principle of sufficient reason states that nothing happens without a sufficient reason. If there is a flash of lighting, there must be a sufficient reason for the flash of lightning. If I rob a bank, there must be a sufficient reason for my robbing a bank. Contingency, however, might seem to require that things could have gone otherwise: that there might not have been a flash of lightning; that I might not have committed a crime. But how could things have gone otherwise given the principle of sufficient reason? Perhaps a current event could have gone otherwise if a previous event had gone otherwise. But how could a previous event have gone otherwise? Perhaps a previous event could have gone otherwise if a still earlier event had gone otherwise. But how could a still earlier event have gone otherwise? A regress obviously rears its head. Some have thought, with David Hume, that such a regress is acceptable – that a regress of sufficient reasons might go back forever, one reason being sufficient for the next without any reason being necessary (Hume 1998, 56). Leibniz, however, does not share Hume's sanguinity. He insists that any chain of sufficient reasons must ultimately terminate in a necessary reason (G 7:302-8/L 486). But if any chain of sufficient reasons must terminate in a necessary reason, it is hard to see how any of those reasons might be counted as contingent. If a prior reason is necessary and is sufficient for a subsequent reason, it is hard to see how that subsequent reason could be anything other than necessary as well.

Leibniz is also driven towards necessitarianism by a family of widely-held theological views. Like most of his contemporaries, Leibniz believes that God is omnipotent and wholly good. But if God is omnipotent it seems he must be able to bring about whatever he wills, and if he is omnibenevolent, it seems he must will the best. If, say, a flash of lightning would be for the best, it seems that God must will it, and if God wills it, it seems that it must come to

pass. But how then could things have gone otherwise? How could the flash of lightning – or any other event – be contingent? Likewise, Leibniz believes that God is omniscient. But God's omniscience implies that God knows everything that will ever happen. He is ignorant of nothing, not even future events. But if God knows everything that will ever happen, how can anything happen otherwise (see, for example, A.6.1.539/Sleigh 9)? If God knows that I will rob a bank, how can it be possible that I won't rob a bank? How can my robbing a bank be contingent?

A third commitment pushing Leibniz towards necessitarianism is his understanding of truth and logic. Leibniz accepts a somewhat idiosyncratic account of truth, a clear statement of which is given in a short piece dated to the mid-1680s:

> Therefore, the predicate or consequent is always in the subject or antecedent, and the nature of truth in general or the connection between the terms of a statement, consists in this very thing … The connection and inclusion of the predicate in the subject is explicit in identities, but in all other propositions it is implicit ….
> (A.6.4.1644/AG 31)

The core idea here is that in a true statement the statement's predicate must be contained in its subject. If, for example, the statement "Betty is tall" is true, the predicate expressed by "…is tall" must be contained in the concept of Betty. This is a radical view of truth. It presupposes that all statements can be put in subject-predicate form and it says nothing about how propositions relate to the world. Nonetheless, it is not entirely implausible as an account of analytic truths. Perhaps the statement "Tricycles have three wheels" is true because the concept expressed by "…has three wheels" is somehow contained in the subject expressed by "tricycles." As part of his views on logic, Leibniz further maintains that for every genuine subject there is a complete concept containing every predicate that will ever be true of that subject (A.6.4.1540/AG 41). So, for example, Leibniz maintains that there must be a complete concept corresponding to Julius Caesar, and that that complete concept must contain every predicate true of Caesar. If Caesar crossed the Rubicon, Caesar's complete concept must contain the predicate expressed by "…crossed the Rubicon." If Caesar was stabbed by Brutus, Caesar's complete concept must contain the predicate expressed by "…stabbed by Brutus."

Taken together, Leibniz's views on truth and logic might seem to imply that every true statement is analytic in the sense that it is true simply in virtue of the concepts it expresses. The statement "Caesar crossed the Rubicon," for example, appears to be true simply because the predicate expressed by "…crossed the Rubicon" is contained in the concept expressed by "Caesar." Likewise for the statement "Betty is tall" or "Bill is handsome." Statements that are analytic in this sense, however, are commonly thought to express necessary truths. If, for example, "All tricycles have three wheels" expresses a proposition that is true simply in virtue of the concepts it involves, how then could that proposition possibly be false? How could that proposition

be contingent? But if all truths for Leibniz are analytic truths, and all analytic truths are indeed necessary, how could there be any contingent truths? Leibniz's views on truth and logic thus seem to push him once again into the arms of necessitarianism. The next two sections will explore Leibniz's attempts to avoid its chilly embrace.

3. Per Se Contingency

Rather than abandoning either his conception of freedom or his philosophical commitments, Leibniz responds to the threat of necessitarianism by trying to refine our concept of contingency itself. His theory of per se contingency represents his first effort in this regard (see, in particular, A.6.3.116-149/Sleigh 26-109). At the heart of Leibniz's theory of per se contingency is the thought that something might be contingent considered per se, that is, considered by itself, even if it is necessary in light of God's goodness or will. Perhaps God's will entails that he creates the best of all possible worlds. And perhaps the existence of the best of all possible worlds entails that Judas exists, and that if Judas exists, that Judas sins. If that is right, we might say that Judas's existing is hypothetically necessary, that is to say, necessary on the hypothesis of God's will. Does that mean that Judas's existence is in no sense contingent? Maybe not. Leibniz suggests that considered per se – that is considered in isolation – Judas might or might not have existed, and if he had not existed, he would not have sinned. Leibniz concludes that even if Judas's existence and sinning are hypothetically necessary, they are nonetheless contingent per se. Necessitarianism may be avoided – and freedom preserved – since there is, after all, a sense in which at least some truths are contingent.

It is tempting to object that Leibniz's theory of per se contingency is nothing more than sophistry – that per se contingency is not genuine contingency, and that Leibniz has tried to avoid the threat of necessitarianism by simply redefining words. If we take seriously the role of conceptual engineering in Leibniz's philosophy, however, this objection – at least flatly stated – loses, I think, much of its force. Confronting a tension between his account of freedom and his broader philosophical commitments, why shouldn't Leibniz refine our admittedly hazy conception of contingency in a way that suits his needs? Why shouldn't he offer us a concept of contingency intentionally shaped to be consistent with other things he believes to be true? Having whittled a round peg, why not whittle a round hole?

Even granting a role for conceptual engineering, however, Leibniz's theory of per se contingency faces a number of serious objections. One objection suggests that Leibniz's proposed emendation of our concept of contingency simply goes too far. The following modal principle is widely accepted and seems deeply entrenched in our ordinary ways of thinking: if an antecedent entails a consequent, and the antecedent is necessary, then the consequent is necessary as well; that is, if p entails q, and it is necessary that p,

then it is necessary that q. Leibniz's theory of per se contingency offers him a way to reject that modal principle. It allows him to say, as he does, "that it is false that whatever follows from something <per se> necessary is itself necessary <per se>" (A.6.3.127/Sleigh 55). By the rules of the conceptual engineer, this is, in a sense, fair enough. Conceptual engineering is surely an art rather than a science and it may be impossible to sharply separate a concept's "fixed points" from its negotiable features (see Eklund 2015). Nonetheless, not all proposed revisions are equal, and not all must be accepted. If Leibniz is free to shape concepts to suit his purposes, we are also free to reject his proposals as suits our purposes. If it is fair enough for Leibniz to propose rejecting the modal entailment principle above, it is also fair enough for us to insist upon it.

Another objection to Leibniz's per se theory of contingency draws on a very different set of intuitions. As we've seen, Leibniz's interest in contingency is intimately related to his thinking about freedom and responsibility. Is Leibniz's theory of per se contingency sufficient for meeting the demands of divine and creaturely responsibility? Leibniz had grounds for thinking so. In thinking about divine responsibility, Leibniz seems to have been concerned above all to show that God's will plays an essential role in determining the existence of creatures, since, as Leibniz puts it, "it is not at all to be thought that all things follow from God's nature without any intervention of the will" (A 6.3.364). Leibniz's per se theory of contingency notably preserves just such a role for the divine will. If we bracket the divine will, Judas's existence is merely per se possible. It is only hypothetically necessary in light of God's "will or understanding of the good" (G 1:150/L205). Relatedly, Leibniz's theory of per se contingency does nothing to threaten the thought that Judas's actions flow from his own will – that his actions are the immediate results of his own volitions. Leibniz's theory of per se contingency might therefore meet Leibniz's own standards for responsibility. But, again, we might demur. One might think that divine and creaturely freedom require a more robust sense of contingency. One might think that if God creates on the hypothesis of his necessary goodness, then God does not create freely. Divine freedom requires not just alternative but alternatives that God could act on. One might think that if Judas sins on the hypothesis that he exists, then similarly Judas does not sin freely. Human freedom requires more than bare contingency, it requires alternative that an agent could realize.

4. Formal Contingency

It is a testament to Leibniz's ingenuity that he offers not one, but two novel theories of contingency. With his second theory of contingency, Leibniz suggests that the distinction between necessary and contingent propositions can be drawn in logical terms. So, for example, in his *De Contingentia*, tentatively dated to 1689, Leibniz writes:

> And with this secret the distinction between necessary and contingent truths is revealed, something not easily understood unless one has

> some acquaintance with mathematics. For in necessary propositions, when the analysis is continued indefinitely, one arrives at an identical equation by means of an analysis continued to a certain point; this is what it is to demonstrate a truth with geometrical rigor. But in contingent propositions one continues the analysis to infinity through reasons for reasons, so that one never has a complete demonstration, though there is always, underneath, a reason for the truth, but the reason is understood completely only by God, who alone traverses the infinite series in one stroke of mind. (A.6.4.1650/AG 28, trans. modified)

In this and similar passages, Leibniz seems to point towards a logical or formal theory of contingency. In the case of necessary truths, logical analysis is supposed to yield finite demonstrations. Starting with only definitions and armed with the laws of logic, we can demonstrate necessary truths. In the case of contingent propositions, logical analysis does not yield finite demonstrations. Starting with only definitions and armed with the laws of logic, we cannot demonstrate contingent truths.

It is again tempting to object that Leibniz's theory of formal contingency is more sophistry than substance. That is to say, it is tempting to object that he is introducing a conception of contingency that has little to do with our everyday notions of contingency (see, for example, Bennett 2001, 329). In replying, Leibniz could once again take some refuge in his role as a conceptual engineer. The conceptual engineer is free – within limits – to prefer utility to common usage. But Leibniz could also emphasize that his theory of formal contingency in fact has deep roots in our ordinary ways of thinking. In philosophical discussions of contingency, it is easy to focus – as we have thus far – on intuitions concerning freedom, responsibility and counterfactual alternatives. But the distinction between necessary and contingent truths is also intimately related to well-entrenched epistemological intuitions. It is natural to suppose that necessary truths can at least in principle be demonstrated a priori. If we are to know that 2+2=4 or that the Pythagorean Theorem is true, logical demonstration seems to be the right, indeed only, approach. Contingent truths, in contrast, cannot be logically demonstrated a priori. Contingent truths such as that it was sunny last Tuesday or that Leibniz was born in 1646 are the wrong sort of truths altogether to be given a logical demonstration from definitions alone. In order to know facts about the weather and birthdays, we have to touch base with experience somewhere.

In explicating Leibniz's formal theory of contingency, commentators have generally supposed that Leibniz is drawing a distinction between propositions that have, and propositions that do not have, finite proofs. On this approach, necessary truths are knowable (by us) by logical demonstration because there are finite proofs of necessary truths. Demonstrating a necessary truth is akin to serially summing a finite series of numbers. Contingent truths, in contrast, are not knowable (by us) by logical demonstration because there are no finite proofs of contingent truths. Demonstrating a contingent truth

would be like serially summing an infinite series of numbers. No wonder then that we can know necessary truths by logical demonstration but contingent truths only with the aid of experience.

The thought that Leibniz's formal theory of contingency is driven by a distinction between truths that have finite proofs and truths that do not is a reasonable one that can find some basis in Leibniz's texts. Nonetheless, it runs into a now well-known difficulty first articulated by Robert Adams:

> Even if infinitely many properties and events are contained in the complete concept of Peter, at least one of them will be proved in the first step of any analysis. Why couldn't it be Peter's denial? Why couldn't we begin to analyze Peter's concept by saying, "Peter is a denier of Christ and…"? (1994, 34)

The difficulty articulated by Adams, known as the Problem of the Lucky Proof, has deep roots in Leibniz's understanding of language and logic. Given Leibniz's understanding of the nature of propositions, of truth, and of demonstration it is hard to see how there couldn't be finite proofs for contingent truths. Indeed, it is hard to see how there couldn't be very short proofs for all contingent truths.

Two main strategies have emerged for responding to the problem of the Lucky Proof. The first strategy suggests that, for Leibniz, something extra-logical must constrain the order of the steps in a logical demonstration (see, for example, Adams (1994, 34), Hawthorne and Cover (2000), Merlo (2012)). So, for example, on one way of developing this general strategy, it has been suggested that a demonstration of a truth about Peter would have to proceed in the same order as the causal unfolding of Peter's intrinsic states (Hawthorne and Cover (2000)). Before one could prove that Peter is a denier, one would have to prove that Peter was a disciple. Before one could prove that Peter is a disciple, one would have to prove that Peter was a fisherman. Etc. On the plausible assumption that the series of states preceding Peter's denial is infinite, one could secure the result that no finite proof could reach the conclusion that Peter is a denier. The Problem of the Lucky Proof would thus be blocked.

Although intuitive and tempting, this first strategy for addressing the Problem of the Lucky Proof faces well-known difficulties. The casual version just sketched implies that Peter's initial state is necessary while all his subsequent states are contingent. That is, it implies, for example, that if Peter is created with brown hair, his having brown hair is necessary at the moment of his creation but contingent a minute later. An odd consequence at the least. More worrisome, however, this first strategy threatens to undermine Leibniz's sophisticated understanding of deductive proof. Unlike most of his contemporaries, Leibniz had a profound appreciation of proof as a formal procedure – that is, of proof as a procedure that depends on the form of inference, not on the meaning of the terms involved. He recognized that the validity of inferences from premises such as "if p then q" and "p" to the conclusion "q" does not depend on what "p" and "q" represent. The inference is valid regardless of whether p and q stand for dogs, cats, or parakeets. By

tying logical inference to extra-logical considerations, this first strategy for responding to the Problem of the Lucky proof threatens to undermine the very foundations of Leibniz's sophisticated understanding of logic.

A second strategy for responding to the Problem of the Lucky Proof is inspired by Leibniz's thinking about the ontological argument for God's existence (see, for example, Maher (1980, 238-239), Hawthorne and Cover (2000, 153-156) and Rodriguez-Pereyra and Lodge (2011)). Leibniz famously maintains that an a priori demonstration of God's existence would require two steps. First, a demonstration that the concept of a necessary being is consistent. Second, a demonstration that such a being exists. Perhaps then a demonstration of any truth should similarly involve two steps. First a check to show that the subject-concept is consistent. Second a demonstration to show that the relevant predicate is contained in the subject-concept (A.6.3.582-583/Parkinson 105-107). If all that were the case, one might hope that the Problem of the Lucky Proof could be addressed by the first step. In general, for Leibniz, contingent propositions involve subject-concepts that are infinitely complex. Demonstrating that such concepts are consistent would therefore seem to require infinitely many steps. While there might be a "lucky proof" that a particular predicate is contained in a particular subject, the point would be moot. Even if one were lucky enough to demonstrate that a particular predicate is contained in a particular subject, one would still have to prove that the subject-concept itself is consistent – an infinite task.

This second strategy for blocking the Problem of the Lucky Proof is ingenious and can find some basis in Leibniz's thought. It also, however, faces well-known difficulties. Most importantly, it implies that any proposition involving an infinitely complex subject-concept will be contingent. But not all of the propositions that Leibniz thinks involve infinitely complex subject-concepts seem to be contingent. In particular, Leibniz himself suggests that all explicit identity statements must be necessary. He tells us, for example, that "An animal is an animal" is true in itself (A VI.iv.292/P 42) and that "identical propositions are necessary without any understanding or resolution of the terms, for I know that A is A regardless of what is understood by A" (G 1:194/L 187). By the lights of the second strategy for blocking the Problem of the Lucky Proof, however, the propositions expressed by "An animal is an animal" and "Peter is Peter" should be counted as contingent – a result inconsistent not only with contemporary convictions but also with Leibniz's own explicit remarks.

Leibniz's work on ideal languages and algorithmic machines might suggest a rather different strategy for making sense of his formal theory of contingency (see McDonough and Soysal (2016), (2017)). Drawing inspiration from figures such as Johann Heinrich Alsted, Johann Heinrich Bisterfeld, Jan Amos Comenius, Athanasius Kircher, and Raymond Lull, Leibniz hoped to discover an ideal language consisting of primitive simple concepts, complex concepts composed from those simple concepts, and valid rules of inference and substitution (for discussion and texts, see Antognazza (2009, 62-63),

Arthur (2014, 29-32), Hotson (2000, 39-50, 82-94, 150, 163-77)). Leibniz maintains that users of such a language could carry out inferences algorithmically and solve arguments with mathematical certainty. Indeed, in a crucial analogy, Leibniz suggests that primitive concepts could be designated with prime numbers, complex concepts with non-prime numbers, and inferential rules could be modeled on the rules of algebra. Armed with such a language, even philosophical interlocutors could resolve their disputes with no more difficulty than calculating a bill. Even diametrically opposed parties could resolve their disputes by declaring, in Leibniz's words, "let us calculate!" (A 6.4. 964; see also A.6.4. 913).

Leibniz's work on ideal languages is closely related to his groundbreaking work on algorithmic machines. With stunning insight, Leibniz recognized that it should be possible for even a machine to carry out genuinely formal operations. If a logic or language could be manipulated without understanding the terms involved, then even a machine operating "blindly" ought to be able to successfully follow its rules. In the late 1670s, Leibniz famously brought that insight to fruition, inventing the first machine capable of carrying out all four algebraic operations of addition, subtraction, multiplication, and division. Leibniz's "Step Reckoner" surpassed Blaise Pascal's earlier calculating machine, the "Pascaline," precisely in its ability to solve, in an algorithmic fashion, problems not only of addition and subtraction, but also of multiplication and division.

Leibniz's work on ideal languages and algorithmic machines reveals his deep interest not only in formal systems and demonstrations per se but also in the reach and limitations of formal systems. Perhaps then his theory of formal contingency is rooted most deeply not in whether or not, in the abstract, there exist finite proofs for contingent truths, but rather in whether or not there is a "blind," formal procedure that one might follow for demonstrating those truths from definitions in an ideal language. Put differently, perhaps his formal theory of contingency is rooted in the thought that necessary truths – like the truths of algebra – can be algorithmically decided from definitions alone, while contingent truths – truths about the weather and birthdays – cannot be so decided from definitions alone. To settle disputes about necessary truths, we need only avail ourselves of definitions and logical analysis. Turn the crank enough times and we are guaranteed an answer. To settle disputes about contingent truths, we must reach beyond a priori definitions. To settle disputes about the weather and birthdays we must appeal, at some point, to experience. Turn the crank forever and we might still never find an answer. In short: necessary truths are "decidable" a priori, contingent truths are not. Because it appeals not just to proofs but to properties about proofs, such an interpretation might be a called a *meta-logical interpretation*.

The prospects of a meta-logical interpretation of Leibniz's formal theory of contingency have been less fully explored than those of other interpretations. Some will no doubt object that such an interpretation does not block the possibility of a lucky proof. If a proof is understood as nothing more

than a string of transformations starting with definitions and yielding an explicit identity statement then the objection – as far as it goes – is surely correct. But there are clear avenues of response to explore. Leibniz could, for example, demand that a proof is not just a string of formal manipulations that one chances upon, but rather a string that can be systematically derived, a string that is generated by algorithmic procedure or rule. Others may object that a meta-logical interpretation requires resources beyond Leibniz's ken. And indeed it should be granted that the formal notions that it relies on were not worked out in full rigor before the early twentieth century and are unlikely at any rate to fully vindicate Leibniz's position. Nonetheless, it is undeniable that Leibniz was almost eerily prescient concerning related mathematical and logical matters, and it is no stretch at all to suppose that he might have had at least an intuitive grasp of the technical notions presupposed by a meta-logical interpretation. Even if Leibniz wasn't in a position to work out all the technical details himself, it is hard not to admire the ingenuity of his formal theory of contingency. It is hard not to appreciate his insight that our concept of contingency has roots extending beyond its implications for freedom and necessitarianism. It is hard not to respect his willingness to revisit even those further implications in the search of a useful conception of contingency.

Conclusion

Leibniz's work on freedom and contingency is striking, challenging and deep. Where other philosophers might be content to explicate our everyday intuitions concerning freedom and contingency, Leibniz presses further. He asks not just what our concepts of freedom and contingency are, but what they should be. He aims to reshape our understanding of what it means for an agent to be free and for something to be contingent in the hopes of improving our overall philosophical outlook. The results can be jarring. We are tempted to object that Leibniz's freedom is no freedom at all. That his contingency is contingency in name only. But Leibniz's thoughts on this topic, as on so many others, repay careful attention. But Leibniz's thoughts on this topic, as on so many others, repay careful attention. Even if we are not won over, seeing how Leibniz proposes to shape concepts of freedom and contingency to suit his purposes, may lead us to wonder how well our concepts are suited to our purposes. Witnessing Leibniz's efforts to reengineer concepts of freedom and contingency may embolden us to do the same.

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