Divine Name Verification: An Essay on Anti-Darwinism, Intelligent Design, and the Computational Nature of Reality

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All programs can be ultimately compiled into zeros and ones. It is not surprising then that it was Leibniz who can be said to be the first one to discover how to write numbers in binary form. Today, we can, of course, write any letter we want in binary form, much less any number. Letters are thereby, in this way, turned into binary digits. In Hebrew, this was already the case. Leibniz wanted a ‘universal characteristic,’ wherein any possible language could be transcribed. 0/1 is the closest we can get to that universal lettering system. It may be fair to say that no one after Shannon, Turing, and von Neumann has truly examined what a bit-string is, how it functions, and what its nature is more than one of today’s living geniuses, the inventor of Algorithmic Information Theory, Gregory Chaitin.

Chaitin has, in many ways, translated the paradoxes of incompleteness—such as Gödel’s incompleteness theorem and the liar’s paradox—into the field of computation directly. In this way, Chaitin has shown that there are non-computable numbers and that that is another sign that the universe is incomplete, does not activate all possibilities, etc. Chaitin’s work on irreducible complexity and non-computable reals deserves particular attention for us, since, if the divine name itself is the compressed form of being as
such, then Chaitin himself is the most prominent thinker of compression and the non-compressible. Chaitin has, according to his claims, exposed with his notion of the Omega number (Ω) an infinite real that is both non-computable and non-constructible.

The infinity of Ω is then more radical than the infinity one sees exhibited in the number π (also a real number) and the Cantorian transfinite. Although π cannot be expressed by a finite sequence, since it is an infinite number, π is still itself computable and constructible, since it is compressible, even in its infinite complexity, to the relation between the circumference and diameter of a circle. The numbers, therefore, of a π sequence, while seemingly random, are actually the result of a very clear rule. Chaitin speaks of how prime numbers appear in an apparently random way throughout the sequence of positive integers, and yet we can determine them.\(^{185}\) Prime numbers themselves show irreducible complexity, given that they can only be factored by themselves and the number one. Their being seemingly randomly distributed throughout the number line is, perhaps, true, but they can be computed, as we saw with the cicada. While even today’s computers have only been able to compute π to a relatively small number of decimal places, every additional decimal place is added per a clearly defined rule. In this way, one would learn what is, for instance, at the millionth decimal place, but, at the same time, the basic program and rule iterated would be the same. The π computation then determines an infinity of decimal places, the infinity of π contains an “infinity of information,” but, at the same time, it is always compressible to the same program, despite its randomness (RU 230).

Randomness means that there is no reason why one number or bit is in its place rather than another being in that place. Randomness means there is no reason for the bit or number that comes after the previous one and no indication it would be next in line. Everything is contingent here

and without reason. All is unpredictable. Notice the difference with Wolfram. Wolfram is not saying that all is unpredictable, but it is simply not knowable in advance. There is a reason why one thing follows another, and it is due to the iteration of rules. Things do emerge, since one has to run the program to see how the rules will play out. Here, emergent phenomena appear as a glider does in a cellular automaton, but it is from rules rather than a purely arbitrary occurrence. The infinity of, for example, positive integers is the same. There is a very simple rule for generating such numbers, even if each number has its own interesting properties. It is also not a random sequence. If one speaks about the infinity of odd numbers, one knows no number in that sequence is going to end with a two.

But with $\Omega$, one cannot make such claims. It is entirely opaque until one would begin delimiting particular decimal places, and, even then, one would have infinity to go. Chaitin’s $\Omega$ has no compressible program made up of simple rules. There is no shorter program for it. It is not compressible, and that means the number has as many bits as would describe it in the program itself. The program that would compute it is as infinite and as complexly as $\Omega$ itself. That is to say, an $\Omega$ number is a both a number and program bit string that is the same length and the same complexity. It is an infinite sequence of numbers and bits in random order that is not, in any way, reducible to a finite set of rules as, for instance, pi is. $\Omega$ thus has infinitely many digits, such that one cannot determine where they are if one is given even part of the bit string making up an $\Omega$ program. It would take an infinite amount of time to compute $\Omega$, and one would have to do it one step at a time. $\Omega$ thus names pure, infinite randomness and complexity. Even if one had, for instance, a million bits of an $\Omega$ number figured out, one would still have an infinity of bits to determine, and those bits would be in perfectly random order. $\Omega$ bit strings are thus indistinguishable from flipping a coin.

We can never know, then, the $\Omega$ number, but Chaitin argues we can know such numbers do exist and must exist.
Ω poses a problem even for God’s own omniscience, given that other infinite numbers as constructible are reducible to a knowable rule. Here one needs an infinity of time to construct the number. Of course, God, as timeless and eternal, would possibly grasp an infinity at once, such that even a random infinite would to be to God no different than the base-10 itself. Here, we can also wonder why anyone should even agree with Chaitin that Ω numbers exist. They cannot exist in a finite universe.

Chaitin believes that most real numbers are Ω numbers, such that numbers like pi are part of a negligible, almost non-existent set of real numbers—ones that are computable. Cantor’s argument that one always presupposes any number as preexisting in a predefined domain may not work with Ω, since the number itself cannot be produced. If the number cannot itself be produced or even written in the same way as, say, a number with a million digits can, then it is not clear why its existence must be presupposed. Ω itself may be nothing more than the program to flip a coin an infinite number of times. In fact, even in the infinity of Ω, we can still always know that 0/1 will happen ½ of the time. Thus, in its lawlessness, it is no more lawless than flipping a coin. Every time one did so, one would come up with a new Ω.

Ω is not compressible in any sense and infinitely so. Its randomness means it has no organizational pattern running throughout. Even if one did, by chance, find some pattern in it, there would still be infinitely more of it randomly to work out, thus rendering that local compression irrelevant. Of course, those advocating a multiverse have to advocate that if all of being is computation, then it is computing an Ω number. They would then have to argue that our universe is but a localized sequence of this infinite sequence. Our universe, then, might seem regular and structured, but within the context of a random and infinite bit string, it is but a blip that does not prevent its non-compression. If being can be characterized by an Ω computation, then the Name of God exists truly as something un-
knowable and ineffable. It exists as an infinite name—not a delimited, empty set that is also finite lettering. It also means, as per Meillassoux, that being itself is infinite and eternal and totally random. If all of being is infinite and computing an $\Omega$ computation, then it will never end, and anything is possible. Things that happen truly do not happen for any reason, and all is random. The universe has a program, but it is infinite, and there is no way we can conceptually compress it into something shorter than that infinity.

While I am not sure that Chaitin believes $\Omega$ characterizes all of being as Meillassoux does (Meillassoux never refers to Chaitin, even though Meillassoux’s interpreter and translator Ray Brassier does, as we shall see), Chaitin does believe that $\Omega$ characterizes numbers and mathematical reasoning as such. Chaitin believes that $\Omega$ shows that mathematics ultimately has no proper structure and no ordered reason for the way it is. It is not ultimately reducible, for instance, to the base-2 or the base-10 and its permutations. It is, for Chaitin, the other way around, just as for the multiverse theory. The base-2 and base-10 and all other numbers appear randomly out of the infinite background of $\Omega$. Just as for Meillassoux, anything that appears does so for no reason and without cause. There is total chaos that is purely random, even if it has local instances of structure, and out of this chaotic fount that is being comes the eminently compressible and finite world that we just happen to exist in, just as the mathematics that we engage in as children (and even later) is but a random blip in the sea of $\Omega$.

Interestingly, the only specific $\Omega$ that Chaitin has claimed to determine is the probability of the Turing Halting problem. Chaitin claims the probability of the Turing problem is itself an $\Omega$ number. That is, it is an infinite real number between 0 and 1 that cannot be fully known. If it were a program, it would itself never halt. It contains an infinity of bits. In claiming an $\Omega$ number characterizes the probability of the halting problem, Chaitin is saying that $\Omega$, despite its infinite randomness, can be defined and referred
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to as a particular number. This particular real number is, of course, called, appropriately, ‘Chaitin’s constant.’ Recall that the halting problem is the problem of knowing in advance if a program will stop and produce a result or go on forever, whether in a loop or simply by endlessly computing. Turing’s famous result was that one cannot know in advance if any program will itself halt or not. There is no program that can determinately compute for such information. As Brassier notes, this was stunning, given that a Turing machine illustrates universal computation

that could not be computed by finite means in order to show how even a ‘universal computing machine’ capable of duplicating the operations of any possible computer could not compute in advance whether or not a given program would carry out its task within a finite length of time or carry on indefinitely.186

In other words, we see that even the universality of the computer yields to the logic of exception. There is always at least one program that cannot be articulated and that is the program that would indicate if all can or cannot be computed in advance. If one did have such a program that could tell one in advance if programs could halt, one would not be able to check the program doing the checking; but then one needs a program for that program, etc. Of course, with programs of finite length, one can simply run the program and see if, in fact, it does halt or not. One may not know in advance; it would be computationally irreducible then, in Wolfram’s terms, but it is not impossible to know. It is because of infinity, of allowing programs to run over infinite time, that Turing was able to produce the problem he did.

Chaitin’s constant is about taking all of the infinite programs and randomly picking one. The constant tells one the probability that one has picked a program that halts. Following Brassier then, we can say that Chaitin’s constant is itself simply a reformulation of Turing’s halting problem paradox in algorithmic form. That is, there is a fundamental identity between Chaitin’s constant and paradoxes of incompleteness. Chaitin’s constant details the incomputable, but it also gives a numerical expression to what such paradoxes say. Incomputable numbers here mean nothing more than that there is not a finite set of rules for generating the number. Chaitin’s constant is thus another name for incompleteness itself. One could say that if the liar’s paradox were to be given mathematical expression, it would be, as a number, like the Chaitin constant. Just as the liar’s paradox is a restatement in common language of Gödel’s paradox, the incompleteness seen in the liar’s paradox is as incompressible as an $\Omega$ number yet different from Chaitin’s constant. They would be as equivalent as Gödel’s notion of incompleteness and the liar’s paradox. This may show that incompleteness haunts every and any inscription and writing.

More importantly, it shows us that incompleteness is not just connected to undecidability, but that it is connected to inconsistency in the sense of infinite randomness and complexity. Inconsistency is thus not simply another name for how things are collected into an extensional set, but also for how things are connected to the randomness of such a collecting as such. Insofar as incompleteness characterizes being, it means that the finitude of the world is connected to infinite complexity, even if finite is another name for its relationship to inconsistency. They are two sides of the same coin and, somehow, two names of the same thing. We can then agree and answer ‘yes’ to Brassier’s rhetorical question:

Isn’t there a case then for maintaining that \( \Omega \) indexes the ‘not-all-ness’ (*pas-tout*), the constitutive incompleteness whereby the Real punctures the consistency of the symbolic order, at least as much as the excess of the void does for Badiou?\(^{188}\)

Except for us, it is not a matter simply of the symbolic order, but of being itself. It is the Real here as impossible—the impossible otherness of God in God’s self-effacement—since it is something otherwise than being that ruptures the order of creation and renders it incomplete and fractured. That does not mean there is simply randomness as such, for finite bit strings, even if irreducibly complex, can be generated by rules. Their irreducibility is not then incompatible with rules and their iterations. This is another way of saying that contingency and creation are not incompatible with finitude and an ultimately compressible program for all of created being. Despite \( \Omega \), we do not find a world in which things randomly occur. All appears regular and patterned rather than the result of coin flips. There is undecidability and excess, but not in the sense of purely aleatory events that occur, and that is because the reverse side of \( \Omega \) is, again and always, the empty set. On the other side of inconsistency, there is the incompletion characterizing an incomplete and open universe with intensional sets and finite state machines.

The world itself is not random, by all appearances, which means that inconsistency and incompletion are themselves not incompatible with the divine Name of God, with a world that is itself the articulation of a particular finite program. Given its random infinity and non-compression, \( \Omega \) is strictly esoteric, unknowable, and impenetrable. Only an infinite mathematics would be able to truly comprehend it, and not any finite program that we can construct or any set of mathematical axioms we could

\(^{188}\) Brassier, “Nihil Unbound,” 57.
list. Of course, all the programs we work with, no matter how long, are ultimately finite. Most are compressible to smaller programs. There is then a finite sense of non-compression. A finite program is non-compressible if it cannot be seen as the iteration of a smaller program or defined using fewer bits. Science itself likes to find reducible programs that will show how many other phenomena arise. When we say that our universe is intelligible, we mean that it is not random and has order and structure, but that it is compressible.

Ω, on the other hand, is the secret number that cannot be written and cannot be known. If Ω, as infinite, occurs without reason and as pure randomness, then, by relation, we can see finite incompressible bit strings as themselves existing without reason and perhaps on the very basis of Ω. Given the randomness and infinity of Ω, we cannot predict what the next bit would be, even if we had already written down a million of its bit places. That means the next bit will appear as randomly as tossing a coin. There is no prediction, then. Ω renders predictability null. Ω is thus a purely mystical (some will say mythical) number that is ineffable. It can be posited, but not truly known. Ω would then seem to be a very good candidate for the Name of God—perhaps even a better one than YHVH. Ω contains much more interest as a candidate than YHVH, it would seem, since it involves total ineffability, total mystery, etc. Perhaps, we could say that Ω expresses the name of God in its infinite dimension while YHVH does so in its finite dimension. The problem is that if Ω characterizes the universe and being as such, then being has no purpose, no sense, and no structure. All is random existing things. It thereby seems to preclude God himself.

Chaitin, using mathematics and his own human cognitive powers, speaks of Ω, but even Chaitin cannot know what Ω is as such. If Ω is the name of God, it means that God left us with an arbitrary world. One we should not, in principle, have any hope of understanding. Any local principles we could delineate would themselves just be one ran-
dom result in an endless chain of results. Of course, given the infinite randomness of $\Omega$ and its inscrutability, one can only point to it. One has taken, on faith alone, that it does exist. If it is, it just is in its infinity. After all, one can never know one has named it or that one is inside of it (if it is the program all of being is computing). Given its infinity, it is not clear why it would not contain all possible information, all possible numbers, and all of mathematics, for example. Nonetheless, it is a wisdom we cannot access, because we cannot ever know its full, infinite computation and thereby cannot know what parts of it are to mean. No one can delimit and define $\Omega$, so no one can say if it does exist.

$\Omega$ would thereby be interpreted by Meillassoux (if he were ever to engage with it) as not the Name of God, but what substitutes for God himself. $\Omega$ would then be God and not the name of God as we understand the term. $\Omega$ is a way of stating, again, the absolute infinite, it would seem, an infinite so infinite in its meaning that it is beyond the transfinite and definable and constituted infinite itself. This is why $\Omega$ does not pertain to our world, it is Other than our world.

$\Omega$ is proposed on this reading as the creator. We can then say that $\Omega$ is a Name of God, but only in the sense that it names God in his absolute infinity without relating that to God’s actual creation of this world. This world is finite, such that if $\Omega$ expressed how this world works, it would be random and structureless. Given the pattern and order we see in this world, $\Omega$ cannot be the Name of God as we have defined it. $\Omega$ names God as absolutely infinite. Whereas aleph and lowercase omega named the transfinite for Cantor, Cantor reserved the term ‘absolute infinite’ for God. $\Omega$ is another name for this absolute infinity. It is an infinity treated as such as to be so infinite it cannot be comprehended and known. It is beyond any constructible infinite and beyond any computable set of rules. It therefore could not name anything that occurs in being, as such, and only what insists beyond and outside of Being. This is why finite and irreducibly complex bit strings on the background of $\Omega$
appear to appear for no reason. They are created. If something happens for no reason, it comes from nothing as such. There is no true preexisting cause.

Omega itself as a number, as infinite bit string, cannot rule out the void. It is based on nothing, on the void, insofar as it is based on an iteration of bits, even if infinite and random in length. Thus, the empty set is itself from nothing; the nothing is before the empty set, and is irreducibly complex as a bit string, whether we write it as 0 or 01. In other words, the bit string 0 is irreducibly complex and thereby appears for no reason. It is created from nothing. Even an infinite bit string that is irreducibly complex made of 0 and 1 is still something created out of nothing. Brassier discusses the relation between irreducibility and what we discover in the world in this way: “There are non-reducible, improbable mathematical truths everywhere, quasi-empirical ‘facts’ that are gratuitously or randomly true and that can only be integrated by being converted into supplementary axioms.”189 Brassier believes Chaitin shows this by showing that in an $\Omega$ bit string one still cannot say in advance what irreducible bit strings, even if finite, would belong to that set. However, it appears that we can say that, as infinite, an $\Omega$ bit string would have to, at least, include any bit string. In other words, if we take all the subsets of $\Omega$, they would contain, by force of $\Omega$’s own infinity, all possible numbers and finite, irreducible bit strings. That is why $\Omega$ is not God and only the name of God, concerning God’s absolute infinity. The world we have is not an embodiment of God in this absolute infinity. It is a creation of that absolute infinity.

Zero itself is not compressible, because it cannot be described in fewer bits than the thing itself. It is therefore, in Chaitin’s terms, a random number. Randomness has been identified with the incompressible. Many other numbers are therefore also irreducibly complex, insofar as their bit strings cannot be further compressed. They thus are, for

189 Brassier, “Nihil Unbound,” 57.
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no reason, on this reading. But if that were true, then things would suddenly pop into existence. We know that there are random bit strings expressing integers, and those bit strings are irreducible, and yet all positive integers are themselves produced by iterations of the empty set. This means that there is a finitude adhering to all numbers and things, despite $\Omega$, and that we cannot rule out that $\Omega$ is nothing more than the idea of randomly iterating 0/1 over infinity (merely a program that states to infinitely flip a coin). Chaitin himself has put forth that, even if we can say that any irreducibly complex bit string is for no reason, we can only grasp a finite number of such bit strings by way of any finite program. In other words, in any n-bit bit string and program, one can only discuss and show an irreducibly complex bit string of no more than n bits. This seems wrong insofar as, with 0 alone and its iteration, we can be lead to bit strings that are irreducibly complex and much more than 1 bit. That is to say, Chaitin, like multiverse theory, is arguing that $\Omega$ exists and precedes any finite entity. For us, it is actually the reverse. This is why one needs to first examine $\Omega$ by way of the program stating to flip a coin infinitely many times or to express every possible point on a number line or relation between points on a curved surface.

Even if $\Omega$ itself presupposes the primordial bit 0/1, $\Omega$ is a name of God, but it is not a name more profound or important than YHVH. God has many names, and these names, other than YHVH, refer to God’s attributes. $\Omega$ is thus an attribute, as we have stated. It is God as absolute infinite, as absolute creator. $\Omega$ does not exist beyond this naming. $\Omega$ refers to that which is, in itself, beyond Being. $\Omega$, as a name, is itself bound by the finite, like any other name. $\Omega$ is then, in this world, only a name of what cannot be known. $\Omega$ does not exist in this world. $\Omega$ only insists from outside of being, and that is because $\Omega$ names God as infinite creator. I believe this is the conclusion Cantor would come to. There is no $\Omega$ in this world, just as there is no set of all sets. Certainly, one can refer to this idea and
attempt to define it. However, the very idea proves itself unable to be rendered in this world.

God is often identified, especially by pantheists, with the set of all sets. Rather than approach God in this manner, Cantor, of course, approached God as the absolute infinite beyond any transfinite cardinality. $\Omega$ is the ultimate transfinite. It is the transfinite of complete disorder and chaos, the transfinite as perfect entropy. Now, some will say that there are an infinite number of $\Omega$ numbers insofar as an uncountable infinity of reals can be $\Omega$. True enough, on the face of it. However, keep in mind that, in a sense, this was already known by way of number lines, once real numbers were known. Between zero and one, there is an infinity of infinities of real numbers. The same is true of all spaces between any positive integers on a number line. Such a view presupposes that one can divide a number line infinitely. Beyond this not being possible in physical reality (given that one would need to somehow get past the Planck length, need an infinitely shrinking knife, etc.), this viewpoint simply repeats Zeon’s paradoxes. Reality is discrete, but it is also continuous. That continuity means that we have to, at some point, show how the discrete lead to continuous. Otherwise, those arguing that the continuous is primary will win the day and point to such infinities as abstractions.

All of these infinite reals are themselves random, infinite bit strings. They are therefore made of the finite, which explains the self-delimitation into finite numbers, a finite world, and finite mathematics and why there will only ever be one $\Omega$ ever discovered. Any other $\Omega$ derived by future mathematicians, such as Chaitin’s constant, will be soon revealed to be the same exact number and indistinguishable from Chaitin’s constant. That is, even if Chaitin’s constant must be, for instance, a number between 0 and 1 as the probability of a computer program halting, if one had the infinite bit strings of each $\Omega$, many would say one could differentiate them through diagonalization. If one uses base-10 numbers instead, the diagonalization seems as ob-
vious as it does for differentiating even and odd transfinite sets. However, all the $\Omega$ numbers have the same cardinality, and that is why, at one level, they are equivalent. They cannot have a different cardinality than the set of positive integers. Diagonalization, of course, cannot be completed by us. We could never do an infinite diagonalization between the omega numbers. It is only by noting the lowercase omega that we could stop numbering, and by writing the aleph that we could note the equivalence between lowercase omegas. In this way, Chaitin’s $\Omega$ is no different than Cantor’s aleph, insofar as it is a written number. It is rather the randomness that is unique here. We cannot come to the non-computable real. It will never compute. That is why we are left with the symbol $\Omega$, just as we are left with the lowercase omega and the aleph for Cantor. Also, because it relates to the halting problem, it then shows us the failure of diagonalization to be truly done by us, until its end reflects on the nature of finite numbers and finite programs. We cannot know in advance if a program will halt, even though it is finite. Finite, irreducible bit strings appear as if for no reason. Chaitin is thereby in agreement with Wolfram’s notion of computational irreducibility. One cannot know what will happen until the thing plays out. One cannot know in advance where things are going.

That one cannot complete diagonalization means one has to count numbers themselves to see where they will lead. One must write them. Inscribing them is irreducible. One has to put in an effort to get any number, even if one does so on the basis of other numbers. To know how to compile a specific program into zeros and ones, one needs to specify it as such and list all the bits. All information is irreducible—not just mathematical information—even when it is finite. Nonetheless, this irreducibility of information does not preclude that there are programs that produce results.

Any specific set of zeros and ones is a structured set of integers and can itself express an integer in binary form. We know, at the same time, that one has rules for the gen-
eration of any and all integers. For this reason, at the same time as accepting what Chaitin has said, we can say that n bits can yield for us much more than n bits of information. Or we need to say that all information itself is compressible to the primordial bit itself, just as all integers can be generated by iterations of 0. There is no structure in 0, for example, just as there is no structure in any other finite, irreducibly complex bit string. They do not have any structure. However, that does not mean they are not produced and made possible by a structure.

There is no pattern at the level of the bit string in its irreducible complexity as a thing. Irreducible bit strings are things, in themselves, without structure. Notwithstanding, even those things in themselves are made up of bit strings and can give way to a rule that yields them. We can comprehend such finite bit strings, even if we cannot comprehend \( \Omega \) numbers with their structureless, infinite strings. Knowing where any particular bit is, even in an infinite bit string of this type, is a matter of chance. We can only know what it is listed out. Deductive reasoning does not get us anywhere here, despite these things being part of mathematics. At some point, certain things have to be accepted as they are. That is why, despite all the numerology throughout human history, it was not until Peano that one truly understood how all numbers are generated by 0 itself. The numbers were things in themselves that appeared for no reason. Several theories had to be tried, until, finally, the code was cracked. This is also why the insight that all can be mathematized—that anything can be expressed in mathematical terms and as a mathematical structure—is so important for metaphysics and theologies, even if it is not important to the scientist. It shows that anything in its thing-ness is such due to this quality. It is a finite bit string as such—and probably irreducibly complex.

While Chaitin often speaks as though he is the true heir of Leibniz, he actually is striking a blow at Leibniz and the principle of sufficient reason. He wants us to see the irreducibly complex as appearing for no reason, as just being
there. However, as we saw, irreducible complexity is not itself incompatible with there being simple rules for generating it. These are two sides of the same coin. From the one side, things are singularities, and on the other side they are a function of iteration. In this way, as Paul Davies argues, Chaitin’s theory leads to the need for empirically discovering mathematical truths rather than deducing them.\textsuperscript{190} Incompletion and randomness in mathematics mean that we discover things through brute repetition, iteration, discovery, observation, etc. If we cannot know things in advance, that is not because the answers will be random and inconsistent as such, but due to the need to see how things are actually computed.

The properties of numbers on this view are empirical. This is why we say they are created rather than being eternal. This is precisely what the positive integers always reflected back at us. The number seven has properties which lead to all sorts of numerological attributions of perfection (it is prime and yet the sum of 3 and 4, which are the end part of the sequence 1234, which adds up to 10, and therefore, unlike 5, is perfect, as 5 is only 3 plus 2) and, at the same time, is a brute fact. The principle of sufficient reason is therefore not truly overturned here, because there is no $\Omega$ in our world. To say that our knowledge is limited is not interesting. What is interesting is to find the limits of being and existence themselves. To find the origins and limits of being is what is at stake truly, and not what limited human cognition can know. Integers then, for instance, insofar as they can be articulated as irreducibly complex bit strings, appear for no reason. At the time, like any other integer, they are part of a clear and definable sequence. This is also why creationism seemed to be the only possible answer for explaining living organisms. Each living organism is an irreducible bit string, for instance, in its DNA sequence. It therefore appears, for no reason, as created.

\textsuperscript{190} Paul Davies, \textit{The Mind of God: The Scientific Basis for a Rational World} (New York: Simon and Schuster, 1993), 133.
Since chance itself cannot reasonably account for such complexity, one needed to posit God. We are suggesting that God is always in the picture as creator, precisely because, in addition to this irreducible complexity, there is the Name of God, the compressible program that the universe is running. Life itself, as we suggested, in its entirety is compressible into the first cell out of which all of Gaia arose. In this way, even if one can epistemologically posits an infinity of irreducible, finite bit strings, this does not exclude that there is a program for generating them. That seems illogical, given their irreducibility, which is why informational irreducibility must be seen as not simply expressing or relating to $\Omega$, but also to Wolfram’s notion of computational irreducibility. In other words, we have irreducibility in the sense of not knowing in advance how a program will unfold and that the results of that program itself might be so complex as to not be compressible, despite arising out of other things.

$\Omega$ names an incomputable real. We should take that literally. It names God as incomputably real beyond being. Creation, in its dynamic computation, is thereby always fueled by that self-withdrawn real. It automates and structures creation while also allowing it to count and produce the contingent. It will be precisely errant, while, at the same time, being a product of rules. God’s self-withdrawal strikes being with the void and, in doing so, maintains God at an unreachable distance and enables the nameless one, whose very name comprehends the world itself. By naming the void in being, one comes as close to the truth as one can. Just by naming $\Omega$, we do so, as well. God is thus that which must be acknowledge and cannot just be a name, as with $\Omega$, since if God is possible, God is necessary. God is unthinkable and yet makes all being possible and intelligible by leaving behind his name in His act of self-bracketing. The unthinkable as the inscrutable is therefore the source of delimitation itself. God self-delimits himself in order to enable the finite, which itself is an elaboration upon the void, the primordial bit, 0/1.
0/1 is itself not compressible, such that we see here how the finite and infinite cross each other through this idea of irreducible complexity. Notice that, per Chaitin’s theory, something that cannot be compressed must be taken as random. For Chaitin, $\Omega$ is an example of perfect randomness that is unpredictable and inconsistent. We say that inconsistence is part of divine insistence itself. It is another name for the pure excess of creation from the void. What is on the other side of the void itself is inscrutable and in the excess of the creation. It renders creation itself incomplete and leads to the undecidable and the open. We are always caught between the absolute infinitude of the Other and the finitude of the computational universe. There is an abyss between the two. We will have to ask if we should simply shrug our shoulders and say that the abyss is unreachable or if being is headed in another direction, the Omega Point. That is an omega that may in itself be a name for how Chaitin’s omega itself can be real and part of this world—no longer unknowable, but now actualized in some sense. Nonetheless, we are on this side of that Omega Point, for now.

For Chaitin, as far as $\Omega$ is concerned, any real number does not have a finite representation, like pi. For us, $\Omega$ is just another name for the program that randomly flips a coin endlessly. The symbol is a finite presentation of the real number itself. Every time it runs, $\Omega$ appears. If we ran it infinitely, we would reach all the possible $\Omega$ numbers. This is why Fredkin says that real numbers and the transfinite can exist in Digital Philosophy, despite its notion of finite nature.191 In our world, then, we can agree with Dembski, who says that, “Noncomputable functions are an abstraction. To be non-computable, functions have to operate on infinite sets” (ID 220). The only way in which there are infinite sets, for us, is in terms of their radical openness.

and not in terms of their having an actual infinite number of members. That is why, when we actually compute, we use integers and numbers and thus work on finite sets and run finite programs with finite bit strings. It is not here just a matter of abstraction, as we are arguing that such infinite sets are themselves a function of the finite. They are a function of 0/1. They therefore exist as names, and can name even that which only insists.

The Name of God is thus an irreducibly complex but finite bit string. Our world is not an infinite omega. There is thus, at least at first, only one universe. There is no multiverse. The void itself strikes it down. Our world exhibits reducibility and compression according to all our observations. Observation itself is coupled with such reducibility. Observation will not happen in Omega. Irreducible complexity, in its finite form, does refer to brute facts, but that is only one side of the Janus face. They hold as irreducibly complex and appear in their glory as things in themselves. Nevertheless, that does not mean they are not also part of the world, at the same time.

It is interesting at this point to bring the Anthropic Principle into play; for if the multiverse or being itself is somehow characterized by $\Omega$, then the type of universe we have is infinitesimally possible. It is then wondrous and miraculous that we actually exist in it. Life would be incompatible with other possible universes. One can imagine given this sort of infinity—one with totally random occurrences at all times, such things as people suddenly floating away. One can imagine a universe with just a single, living, Boltzmann brain. That we happen to live in a universe so well-ordered that leads to life is then truly inexplicable from an $\Omega$ perspective. The appeal of $\Omega$ is that it seems to exclude beginnings and ends and, in its infinity, renders being eternal. Since the only way to make and construct the omega numbers is to list them bit by bit, they will never end. If it never ends, it may never have begun. If reality is infinite and one is within such a computation, it would presumably not have a beginning either. This is why its
dependence on being counted out must be seen from the perspective of the bits themselves. The empty set, 0, always presupposes the void it includes (it’s a set containing nothing). It involves, necessarily, a relation to absence and negation in its very structure. It is always related to its place. And that relation to nothing is what requires anything built out of it to be ultimately finite—even \( \Omega \).

While Chaitin wants to see \( \Omega \) in its infinite irreducibility and complexity as showing, like Gödel did, that a total theory of mathematics and existence is not possible, that view looks at things from the perspective of axioms rather than from the perspective of the very material that axioms can themselves ever regulate. For Chaitin, the infinity of bits in \( \Omega \) are irreducible brute facts that one cannot deduce from any principle, but that does not mean that, as stated, written, or produced, such facts do not themselves depend on a minimum materiality—the minimal materiality of the empty set. We account for what appears for no reason with numbers, sets, and computation itself.

These points are similar to the points we are trying to make with evolution. Evolution itself might lead to irreducibly complex organisms, but it is on the basis of a program, not on the basis of pure chance. In this way, there is a something simpler than an infinite and random bit string itself, and that will always be the bit itself. Mathematics, as an axiomatic theory, might have infinite complexity in the sense of being incomplete, but one only needs a finite theory of everything to engage the finite complexity of being that we see around us. The plenitude of an \( \Omega \) world does not actualize itself. Our world will not capture the excess of \( \Omega \), but it only needs to have the sources for noting that and for noting the tools for which any possible mathematical fact could be written. It does not need all numbers. It does not need even the base-10, only the base-2.

It is the same with language. If one allowed for words to be infinite in length, then the English language would have an infinity of words. No one would ever read them. No one would ever hear them spoken. They would sound like pure
noise. And that pure noise is the very voice of God, the one 'seen' at Sinai. As is well known, at Sinai, the Jewish people saw the voice of God. That means they saw the voice as text. That voice was too terrible to be taken in, and so they only recognized it as the voice of God (they only heard the first two commandments—"This is God, and there is no other"), and left to Moses the job of making sense out of the pure sonic boom. That is also why it is said that they saw the voice. We see the voice when we see letters. One cannot hear an infinity, but one can recognize an infinity just by seeing a finite number of letters. Those letters can then be permuted. For this reason, in our theology, the only way can actually take place is as the words of a sacred text.

In Judaism, that text is called Torah. Torah is then $\Omega$. Of course, the Torah we have is made up of a finite number of letters. Each letter is itself a number. In this way, the Torah is itself a listing of numbers. There would be several ways to write those numbers, given the combinations one makes. It also can be seen as a number between 0 and 1. The holy Zohar asks a simple and famous question near its beginning that even one first learning Kabbalah is taught. Why does the Torah, if it’s the book of books, not start with the first letter of the alphabet (aleph), but instead start with the second (bet)? The reason given is that the shape of this second letter is such that it seals off what came before. The second letter then cuts off the one, the first letter, and renders a point—a point beyond which nothing can be said. At the same time, the Torah is a finite number of letters. It is a finite set of integers. But that means it is only part of an infinite bit sequence, the voice of God that was seen. That bit sequence is perfectly random from the perspective of numbers. Even though the letters combine into words that make sense, if one listed the numbers, I do not know of any simple and finite set of rules that would generate such a sequence.

This is why the Kabbalah often speaks of the Torah itself when all its letters are taken together as the Name of God. It is the Name of God as $\Omega$, as a reference to pure
noise and creativity, of infinities of infinities out of which emerges the finite. We only have part of this $\Omega$ sequence. Perhaps, more parts of it will be revealed, but that would only be done letter by letter. In this way, we are saying that, paradoxically, the universe is less complex and more reducible than the Torah itself. Torah is only the finite parts we can detect of an infinite random sequence. We have been, for a long time, engaged in the attempt to do nothing other than try to decode and delineate the sequence that has been given. We want to understand it, and the amazing thing is that, despite its being an Omega, we can. It is a message that makes sense. However, a random and chaotic sequence should be undecodable and completely opaque.

There are, of course, more real numbers than texts that can be written in any language. If Torah is $\Omega$, then it would lead one to think that there are many Torahs. Notwithstanding, for the text to be truly the Torah, it needs to have those letters combine into words and sentences that are intelligible. That is the Torah we have—the one that begins “In the beginning . . . ,” rather than being a nonsense string of letters. Here, the Hebrew language is unique when compared to languages like English. Each letter is itself a number and a way of inscribing them. Omega is mainly unknowable and has no structure, so the Torah itself looks the way it does as digits—as one random number after another—since it’s a finite part of that $\Omega$ sequence. Even in that structureless infinity, in the finite part, we have the miracle that the words make sense. That would be true of close to zero of such $\Omega$ texts.

For Chaitin, $\Omega$, as infinite without structure, meant that mathematical truths have no pattern, and we are never going to have a final, axiomatic system for comprehending all mathematical truths. The same is true of Torah. We will never be done with it. It is eternal. Even if we know the first million letters, there would be a next one. One we cannot know. One that would appear in the same way as one would toss a 22-sided coin. We cannot know what the next letter will be or when it will be revealed, and yet there is the
Torah, just as there is $\Omega$ alongside pi as infinite reals. If the Torah is the word of God, given God’s status as absolute infinite, the Torah could only be an infinite sequence. If it were an infinite sequence, like the positive integers, it would be supremely reducible. It is an infinity of the $\Omega$ type that allows for the Torah itself to be both a mystery and achieve full complexity. The Torah as $\Omega$ is then infinitely complex and irreducible, and that means it is true for no reason. The Torah could only be handed down by God, from the voice of God. It could only be spoken to us out of the fire, as God did at Sinai. It is only something created. That means we would never know, just by looking at it, why it is the way it is. It is pure creation. It arose out of nothing. There is no sufficient reason for it in this world. This Torah is true for no reason other than its having been given. It is like a pure accident. There is no proof for it other than the revelation itself. It must be revealed. There must be an event in which God spoke to make it known. Otherwise, it would not be knowable without searching endlessly for it. The Torah is therefore revealing to us the light of wisdom and also showing to us what we cannot know and what the limits of our knowledge are. There is no upper bound on $\Omega$, just as there is no upper bound on divine wisdom. Divine wisdom, for us, looks like $\Omega$. Omega is the closest we can get to it. For the eternal Other, the lack of an upper bound means simply that it is only from the perspective of the timeless that its wisdom is fully revealed.

$\Omega$ is taken by some to be proof that there is no set of all and thereby nothing outside this world, which is itself infinite. They would be right if they were looking for axiomatics, but not if they are looking for the divine code that masters our world and not if one is looking for the manifestation of divine wisdom in our world. $\Omega$ is a name of God and does not preclude the Name of God. $\Omega$ is the name of God’s wisdom, of his absolute creativity, and of his transcendence. The Torah itself is not the code of the universe, unless one takes it as a finite set of simple rules. There are, of course, times when the Kabbalah speaks in this man-
— that God looked into the Torah before creating the world to know how to create the world. But I do not think the finite set of rules coding our world is quite so long. Rather, $\Omega$ names God in himself as pure creation.

The universe demonstrates reducibility in its regularity and order. This regularity means that repeated patterns do not truly add new info to the universe, as all is reducible and compressible. Only the Torah is a mystery that cannot be obtained through rational means and the type of computation we see at work in natural phenomena. Most incomputable reals will never be specified or even given names. Torah is one of the few. For Chaitin, no system could be constructed that could survey all possible incomputable reals. That means, even if there is an infinite number of Torah’s, we will never know them.

The universe cannot be $\Omega$, primarily due to its regularity. Only by positing a multiverse would $\Omega$ obtain. However, the multiverse is struck down by its dependence on the false vacuum, the empty set, and its failure to be eternal. Once we have compressed part of our world, we have shown it is not $\Omega$, since the only way to overcome that compression is to say that, from the perspective of infinity, it is but a drop in the bucket. There is a still an infinity of complexity. We say that infinite complexity is scalar and is built up from the finite as its permutation and its articulation. It is built on taking the discrete nature of the world as itself infinite when that discrete nature is a demonstration of the world’s finitude. We thus side with Wolfram over Chaitin. If Wolfram is right, $\Omega$ is just another example of computational irreducibility. One can see Wolfram and Chaitin, perhaps the two most important metaphysicians currently living, as two sides of the same coin. Wolfram names the compression of the world, in its finitude, to an ultimate program, while Chaitin points to the way in which the world is always open, due to its incompletion, and made up of irreducible complexities.

Of course, many will here argue that Chaitin swallows up Wolfram. They will say that if being includes $\Omega$ and $\Omega$...
numbers, then it is, in itself, $\Omega$. That would mean our world should not look like it does. This is why, perhaps, the ultimate proof of our view will only come at the end, at the Omega point. If the world ends in heat death, then it would prove that $\Omega$ was always there as part of things, that the beautiful flower blooming that we see as we look around our universe was only a blip in a sea of noise. To stave off $\Omega$, one then needs to argue for the inevitability of the Omega point, and perhaps we are already at that point—for $\Omega$ would, in and of itself, preclude such an end. It would do so, since the Omega point means there is, in some sense, an infinity of finite complexity and that the world itself is not purely random and disordered. The stakes are then high. One needs to demonstrate the Omega point in order to avoid $\Omega$ itself from swallowing up the world. To say that the world is $\Omega$ is to say that it comes from and returns to pure entropy. Thus, its returning to pure entropy would show it was just a fluctuation of an infinite background of noise.

We have already argued that pure entropy will not give rise to our world, but we will also need to argue it is not its endpoint. Our universe is a collection of the compressible and the result of compression with such a small probability of being that only an actual infinity would make it seem possible. But if that infinity is itself noise, then it is clear where it comes from and why it persists. Only with the Omega point does the world make sense. An $\Omega$ world is one in which there is no design and where the laws of nature suddenly change for no reason at any time. Time will abruptly run in reverse. Everything could happen and would happen. In this way, an Omega point universe would be nicely suited to the special creation of life. It would not rule out God suddenly creating the human, for example. The human could simple occur for no reason.

In our world, not everything does happen, due to the self-delimitation related to the incompleteness of the transfinite release upon our own world. The only things that must be are God and numbers for us. With the name of God,
history itself is unavoidable. God is not His Name. God is unique in being exceptional, and there is no unity in this world like this exceptional one, who is unique and indestructible. Everything has a history and has to happen one step at a time. In an Omega world, history becomes senseless. The Name of God, as we render it, is, in part, nothing more than to say that the world is intelligible and makes sense. The world has sense, as the universe is not an $\Omega$ computation. It is computing a finite set of rules. It is not random and not a result of chaos. That Name of God is irreducibly complex, but it is finite and only ever $n$ bits long.

At the Omega point, we will know not $\Omega$, not a pure randomness and disorder, not heat death and pure radiation. We will know eternity and the infinite in another sense. If things in the world or the Omega point appear random, that would only ever be the randomness of pi, which is generated by a program $n$ bits long. This is all opaque to us now, as we are on the other side of the point at which the Omega point is revealed. The Name of God insists on a Wolframian solution to being. Wolfram showed, with his Rule 30 discovery, that things can be both random and compressible at the same time, random and inherently rule-based at the same time. To say our world is computing the Name of God is to say it exhibits finite perfection despite incompletion showing its imperfection. A perfect number is, of course, a number in which all its factors, when added up, yield that number (1, 2, 3 divide into 6, and 1 plus 2 plus 3 equals 6). The world’s relation to the void enables the same relation. Six is, of course, not the only number of this type. There is one that is 35 digits long. Those digits look perfectly random when listed. Nonetheless, it is a number as perfect as six. The universe, too, may look like this number, but it is compressible.

The finite, first part of $\Omega$ would have to be incompressible; otherwise we would know we are not in the midst of $\Omega$. An Omega universe still would allow life’s tape to replay. That is because even if Omega cannot be computed, it is
still a computation as such. It is a real number, differentiable from the other reals. We than have contingencies, but always the same contingencies over and over again if we were able to replay or recount the Omega sequence. It therefore looks purposeless, but at the same time cannot be altered. Stephen J. Gould said we would not see the same thing happen if we ran the tape of life over again due to contingency. Here we have the most random description of the universe possible and see that that would not be the case.

Evolution and any competing theory will one day be tested by computer simulation or emulation. That is ultimately the only way to test these things. It may not be possible to replay the entirety of life, but it will be possible to replay at least significant parts of it. If one sees the same things occurring over and over, no matter how one realistically allows for random variation, then I will be proven right. If one receives different results each time a true simulation is run, Gould will have been proven right. I am not very worried about being proven wrong. That means even if the things we witness from an Omega universe were random, they would still always follow the same random sequence.

The Name of God is an elegant program. The Name of God is the truth of the universe. It is its mystery and its revealed face. But to know it, we would have to simulate the universe itself. That is a sense of inscrutability different than Chaitin’s Omega; if the universe were describable by Omega, the ultimate secret of the universe would be, in the end, completely and totally inscrutable as such. Davies himself says that Omega is a “magic number” in the ancient Greek sense and a Kabbalistic number, such that when we speak of Omega, we have entered the field of “mystical revelation,” given Omega’s inscrutability.\(^{192}\) One needs mystical revelation, because the number can only be partly determined, due to its infinity. Davies also interestingly

\(^{192}\) Davies, *The Mind of God*, 134.
says that,

> even if we were to be given Omega by divine transmission, we would not recognize it for what it was, because, being a random number, it would not commend itself to anything special in any respect.\textsuperscript{193}

Due to the impenetrable nature of Omega and the fact that there are infinitely many incomputable reals, we can easily say that any sequence of bits we would randomly generate through flipping them is the opening sequence of some Omega.

One does not need to know all possible elegant programs to know the Name of God. There may be, in principle, infinitely many such elegant programs. We only need to find the one matching our world. Being is a universal computer, so it can compute any reality, but it does not—at least not yet. And that is also proof of the Name of God. This is the most exalted name there is, for it’s the name for the nameless at its core and thereby at the heart of every other name. It is woven within them. Rashi himself said that life comes from the earth, and that all is already concealed in its becoming actual of what was previously. The emergence of new things is then the unraveling of what was hidden in what already was. In that way, everything was created already in the first creation, since one only had to bring it forth. The Talmud calls the temple the “foundation stone” (\textit{Yoma} 53b), meaning it was the first part of the earth created by God. We then see here how there is planet formation theory based on concretion around a first particle. All others that are named are named by it and in relation to it.

Others might call the Name of God simply the equation for everything that is in the universe. This equation would then be everywhere we look. It is expressible mathematical-

\textsuperscript{193} Davies, \textit{The Mind of God}, 134.
ly, because all is mathematizable. Numbers are built into nature. Gravity, for instance, affects things by curving them, but such a parabolic shape is expressed using a simple equation. All things are, at bottom, nothing more than information and structured sets of integers adhering to simple rules. At bottom is the bit, which means math itself. This is why speaking of the Name of God requires, at the very least, a commitment to a realism concerning integers. The Kabbalah taught us long ago that the four-letter name of God is the true path of divine revelation and of the meaning of all that is. This name irrigates the tree of the base-10, the ten sefirot:

It is you who brought forth ten emanations we call them the ten sefirot to direct the worlds that are hidden, not revealed and worlds that are revealed. Through them you conceal yourself from human beings, but it is you who connects them and unites them and because you are within them anyone who seeks to separate one from another of these ten sefirot is regarded as if he had caused a separation within you. It is the four-letter name which is the path of spiritual emanation. This name irrigates the tree of the Sefirot with its arms and branches, like water that irrigates a tree that then grows through that irrigation. O master of the universe, You are the cause of all causes and reason of all reason who irrigates the tree through that spring. That spring it is the spring like the soul to the body, in that it gives life to the body. Regarding the sefirot each one has its name which is specific and with those names are identified the angels but you do not have a name that is specific for your essence saturates all names. It is you who gives perfection to them all. When you
withdraw from what remains of all their names are like a body without a soul.\textsuperscript{194}

Often, people speak of things like energy, force, and charge as if they were just ‘things,’ but, at bottom, such things are numbers themselves. In this way, it is not enough to speak of finding an equation for being unless one commits oneself to the corresponding metaphysics.

\textsuperscript{194} Machzor for Rosh Hashanah, ed. Rabbi Menachem Davis (New York: Artscroll, 2003), 215–217.