

Edgar Allan Poe

Eureka



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Eureka

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"Eureka" (1848) is a lengthy non-fiction work by American author Edgar Allan Poe (1809–1849) which he subtitled "A Prose Poem", though it has also been subtitled as "An Essay on the Material and Spiritual Universe". Adapted from a lecture he had presented, Eureka describes Poe's intuitive conception of the nature of the universe with no antecedent scientific work done to reach his conclusions. He also discusses man's relationship with God, whom he compares to an author.

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Eureka

by Edgar Allan Poe

Preface

To the few who love me and whom I love – to those who feel rather than to those who think – to the dreamers and those who put faith in dreams as in the only realities – I offer this Book of Truths, not in its character of Truth-Teller, but for the Beauty that abounds in its Truth; constituting it true. To these I present the composition as an Art-Product alone – let us say as a Romance; or, if I be not urging too lofty a claim, as a Poem.

What I here propound is true – therefore it cannot die – or if by any means it be now trodden down so that it die, it will "rise again to the Life Everlasting."

Nevertheless it is as a Poem only that I wish this work to be judged after I am dead.

E. A. P.

Eureka: An Essay on the Material and Spiritual Universe

It is with humility really unassumed – it is with a sentiment even of awe – that I pen the opening sentence of this work: for of all conceivable subjects I approach the reader with the most solemn – the most comprehensive – the most difficult – the most august.

What terms shall I find sufficiently simple in their sublimity – sufficiently sublime in their simplicity – for the mere enunciation of my theme?

I design to speak of the *Physical, Metaphysical and Mathematical – of the Material and Spiritual Universe – of its Essence, its Origin, its Creation, its Present Condition and its Destiny*. I shall be so rash, moreover, as to challenge the conclusions, and thus, in effect, to question the sagacity, of many of the greatest and most justly revered of men.

In the beginning, let me as distinctly as possible announce – not the theorem which I hope to demonstrate – for, whatever the mathematicians may assert, there is, in this world at least, *no such thing* as demonstration – but the ruling idea which, throughout this volume, I shall be continually endeavoring to suggest.

My general proposition, then, is this – *In the Original Unity of the First Thing lies the Secondary Cause of All Things, with the Germ of their Inevitable Annihilation*.

In illustration of this idea, I propose to take such a survey of the Universe that the mind may be able really to receive and to perceive an individual impression.

He who from the top of Ætna casts his eyes leisurely around, is affected chiefly by the *extent* and *diversity* of the scene. Only by a rapid whirling on his heel could he hope to comprehend the panorama in the sublimity of its *oneness*. But as, on the summit of Ætna, *no* man has thought of whirling on his heel, so no man has ever taken into his brain the full uniqueness of the prospect; and so, again, whatever considerations lie involved in this uniqueness, have as yet no practical existence for mankind.

I do not know a treatise in which a survey of the *Universe*—using the word in its most comprehensive and only legitimate acceptance – is taken at all – and it may be as well here to mention that by the term "Universe," wherever employed without qualification in this essay, I mean to designate *the utmost conceivable expanse of space, with all things, spiritual and material, that can be imagined to exist within the compass of that expanse*. In speaking of what is ordinarily implied by the expression, "Universe," I shall take a phrase of limitation—"the Universe of stars." Why this distinction is considered necessary, will be seen in the sequel.

But even of treatises on the really limited, although always assumed as the *unlimited*, Universe of *stars*, I know none in which a survey, even of this limited Universe, is so taken as to warrant deductions from its *individuality*. The nearest approach to such a work is made in the "Cosmos" of Alexander Von Humboldt. He presents the subject, however, *not* in its individuality but in its generality. His theme, in its last result, is the law of *each* portion of the merely physical Universe, as this law is related to the laws of *every other* portion of this merely physical Universe. His design is simply synoeretical. In a word, he discusses the universality of material relation, and discloses to the eye of Philosophy whatever inferences have hitherto lain hidden *behind* this universality. But however admirable be the succinctness with which he has treated each particular point of his topic, the mere multiplicity of these points occasions, necessarily, an amount of detail, and thus an involution of idea, which precludes all *individuality* of impression.

It seems to me that, in aiming at this latter effect, and, through it, at the consequences – the conclusions – the suggestions – the speculations – or, if nothing better offer itself the mere guesses which may result from it – we require something like a mental gyration on the heel. We need so rapid

a revolution of all things about the central point of sight that, while the minutiae vanish altogether, even the more conspicuous objects become blended into one. Among the vanishing minutiae, in a survey of this kind, would be all exclusively terrestrial matters. The Earth would be considered in its planetary relations alone. A man, in this view, becomes mankind; mankind a member of the cosmical family of Intelligences.

And now, before proceeding to our subject proper, let me beg the reader's attention to an extract or two from a somewhat remarkable letter, which appears to have been found corked in a bottle and floating on the *Mare Tenebrarum*—an ocean well described by the Nubian geographer, Ptolemy Hephestion, but little frequented in modern days unless by the Transcendentalists and some other divers for crotchets. The date of this letter, I confess, surprises me even more particularly than its contents; for it seems to have been written in the year *two* thousand eight hundred and forty-eight. As for the passages I am about to transcribe, they, I fancy, will speak for themselves.

"Do you know, my dear friend," says the writer, addressing, no doubt, a contemporary—"Do you know that it is scarcely more than eight or nine hundred years ago since the metaphysicians first consented to relieve the people of the singular fancy that there exist *but two practicable roads to Truth?* Believe it if you can! It appears, however, that long, long ago, in the night of Time, there lived a Turkish philosopher called Aries and surnamed Tottle." (*Here, possibly, the letter-writer means Aristotle; the best names are wretchedly corrupted in two or three thousand years.*) "The fame of this great man depended mainly upon his demonstration that sneezing is a natural provision, by means of which over-profound thinkers are enabled to expel superfluous ideas through the nose; but he obtained a scarcely less valuable celebrity as the founder, or at all events as the principal propagator, of what was termed the *deductive* or *à priori* philosophy. He started with what he maintained to be axioms, or self-evident truths – and the now well understood fact that *no* truths are *self-evident*, really does not make in the slightest degree against his speculations – it was sufficient for his purpose that the truths in question were evident at all. From axioms he proceeded, logically, to results. His most illustrious disciples were one Tuclid, a geometrician," (*meaning Euclid*) "and one Kant, a Dutchman, the originator of that species of Transcendentalism which, with the change merely of a C for a K, now bears his peculiar name.

"Well, Aries Tottle flourished supreme, until the advent of one Hog, surnamed 'the Ettrick shepherd,' who preached an entirely different system, which he called the *à posteriori* or *inductive*. His plan referred altogether to sensation. He proceeded by observing, analyzing, and classifying facts—*instantiae Naturæ*, as they were somewhat affectedly called – and arranging them into general laws. In a word, while the mode of Aries rested on *noumena*, that of Hog depended on *phenomena*; and so great was the admiration excited by this latter system that, at its first introduction, Aries fell into general disrepute. Finally, however, he recovered ground, and was permitted to divide the empire of Philosophy with his more modern rival – the savans contenting themselves with proscribing all *other* competitors, past, present, and to come; putting an end to all controversy on the topic by the promulgation of a Median law, to the effect that the Aristotelian and Baconian roads are, and of right ought to be, the solo possible avenues to knowledge – 'Baconian,' you must know, my dear friend," adds the letter-writer at this point, "was an adjective invented as equivalent to Hog-ian, and at the same time more dignified and euphonious.

"Now I do assure you most positively" – proceeds the epistle—"that I represent these matters fairly; and you can easily understand how restrictions so absurd on their very face must have operated, in those days, to retard the progress of true Science, which makes its most important advances – as all History will show – by seemingly intuitive *leaps*. These ancient ideas confined investigation to crawling; and I need not suggest to you that crawling, among varieties of locomotion, is a very capital thing of its kind;—but because the tortoise is sure of foot, for this reason must we clip the wings of the eagles? For many centuries, so great was the infatuation, about Hog especially, that a virtual stop was put to all thinking, properly so called. No man dared utter a truth for which he felt himself

indebted to his soul alone. It mattered not whether the truth was even demonstrably such; for the dogmatizing philosophers of that epoch regarded only *the road* by which it professed to have been attained. The end, with them, was a point of no moment, whatever – 'the means!' they vociferated —'let us look at the means!'—and if, on scrutiny of the means, it was found to come neither under the category Hog, nor under the category Aries (which means ram), why then the savans went no farther, but, calling the thinker a fool and branding him a 'theorist,' would never, thenceforward, have any thing to do either with *him* or with his truths.

"Now, my dear friend," continues the letter-writer, "it cannot be maintained that by the crawling system, exclusively adopted, men would arrive at the maximum amount of truth, even in any long series of ages; for the repression of imagination was an evil not to be counterbalanced even by *absolute* certainty in the snail processes. But their certainty was very far from absolute. The error of our progenitors was quite analogous with that of the wiseacre who fancies he must necessarily see an object the more distinctly, the more closely he holds it to his eyes. They blinded themselves, too, with the impalpable, titillating Scotch snuff of *detail*; and thus the boasted facts of the Hog-ites were by no means always facts – a point of little importance but for the assumption that they always *were*. The vital taint, however, in Baconianism – its most lamentable fount of error – lay in its tendency to throw power and consideration into the hands of merely perceptive men – of those inter-Tritonic minnows, the microscopical savans – the diggers and pedlers of minute *facts*, for the most part in physical science – facts all of which they retailed at the same price upon the highway; their value depending, it was supposed, simply upon the *fact of their fact*, without reference to their applicability or inapplicability in the development of those ultimate and only legitimate facts, called Law.

"Than the persons" – the letter goes on to say—"Than the persons thus suddenly elevated by the Hog-ian philosophy into a station for which they were unfitted – thus transferred from the sculleries into the parlors of Science – from its pantries into its pulpits – than these individuals a more intolerant – a more intolerable set of bigots and tyrants never existed on the face of the earth. Their creed, their text and their sermon were, alike, the one word '*fact*'—but, for the most part, even of this one word, they knew not even the meaning. On those who ventured to *disturb* their facts with the view of putting them in order and to use, the disciples of Hog had no mercy whatever. All attempts at generalization were met at once by the words 'theoretical,' 'theory,' 'theorist'—all *thought*, to be brief, was very properly resented as a personal affront to themselves. Cultivating the natural sciences to the exclusion of Metaphysics, the Mathematics, and Logic, many of these Bacon-engendered philosophers – one-ideal, one-sided and lame of a leg – were more wretchedly helpless – more miserably ignorant, in view of all the comprehensible objects of knowledge, than the veriest unlettered hind who proves that he knows something at least, in admitting that he knows absolutely nothing.

"Nor had our forefathers any better right to talk about *certainty*, when pursuing, in blind confidence, the *à priori* path of axioms, or of the Ram. At innumerable points this path was scarcely as straight as a ram's-horn. The simple truth is, that the Aristotelians erected their castles upon a basis far less reliable than air; *for no such things as axioms ever existed or can possibly exist at all*. This they must have been very blind, indeed, not to see, or at least to suspect; for, even in their own day, many of their long-admitted 'axioms' had been abandoned – '*ex nihilo nihil fit*,' for example, and a 'thing cannot act where it is not,' and 'there cannot be antipodes,' and 'darkness cannot proceed from light.' These and numerous similar propositions formerly accepted, without hesitation, as axioms, or undeniable truths, were, even at the period of which I speak, seen to be altogether untenable – how absurd in these people, then, to persist in relying upon a basis, as immutable, whose mutability had become so repeatedly manifest!

"But, even through evidence afforded by themselves against themselves, it is easy to convict these *à priori* reasoners of the grossest unreason – it is easy to show the futility – the impalpability of their axioms in general. I have now lying before me" – it will be observed that we still proceed with the letter—"I have now lying before me a book printed about a thousand years ago. Pundit assures

me that it is decidedly the cleverest ancient work on its topic, which is 'Logic.' The author, who was much esteemed in his day, was one Miller, or Mill; and we find it recorded of him, as a point of some importance, that he rode a mill-horse whom he called Jeremy Bentham – but let us glance at the volume itself!

"Ah! – 'Ability or inability to conceive,' says Mr. Mill very properly, 'is *in no case* to be received as a criterion of axiomatic truth.' Now, that this is a palpable truism no one in his senses will deny. *Not* to admit the proposition, is to insinuate a charge of variability in Truth itself, whose very title is a synonym of the Steadfast. If ability to conceive be taken as a criterion of Truth, then a truth to *David Hume* would very seldom be a truth to *Joe*; and ninety-nine hundredths of what is undeniable in Heaven would be demonstrable falsity upon Earth. The proposition of Mr. Mill, then, is sustained. I will not grant it to be an *axiom*; and this merely because I am showing that *no* axioms exist; but, with a distinction which could not have been cavilled at even by Mr. Mill himself, I am ready to grant that, *if* an axiom *there be*, then the proposition of which we speak has the fullest right to be considered an axiom – that no *more* absolute axiom *is*—and, consequently, that any subsequent proposition which shall conflict with this one primarily advanced, must be either a falsity in itself – that is to say no axiom – or, if admitted axiomatic, must at once neutralize both itself and its predecessor.

"And now, by the logic of their own propounder, let us proceed to test any one of the axioms propounded. Let us give Mr. Mill the fairest of play. We will bring the point to no ordinary issue. We will select for investigation no common-place axiom – no axiom of what, not the less preposterously because only impliedly, he terms his secondary class – as if a positive truth by definition could be either more or less positively a truth – we will select, I say, no axiom of an unquestionability so questionable as is to be found in Euclid. We will not talk, for example, about such propositions as that two straight lines cannot enclose a space, or that the whole is greater than any one of its parts. We will afford the logician *every* advantage. We will come at once to a proposition which he regards as the acme of the unquestionable – as the quintessence of axiomatic undeniability. Here it is – 'Contradictions cannot *both* be true – that is, cannot cōexist in nature.' Here Mr. Mill means, for instance, – and I give the most forcible instance conceivable – that a tree must be either a tree or *not* a tree – that it cannot be at the same time a tree *and* not a tree – all which is quite reasonable of itself and will answer remarkably well as an axiom, until we bring it into collation with an axiom insisted upon a few pages before – in other words – words which I have previously employed – until we test it by the logic of its own propounder. 'A tree,' Mr. Mill asserts, 'must be either a tree or *not* a tree.' Very well – and now let me ask him, *why*. To this little query there is but one response – I defy any man living to invent a second. The sole answer is this – 'Because we find it *impossible to conceive* that a tree can be any thing else than a tree or not a tree.' This, I repeat, is Mr. Mill's sole answer – he will not *pretend* to suggest another – and yet, by his own showing, his answer is clearly no answer at all; for has he not already required us to admit, *as an axiom*, that ability or inability to conceive is *in no case* to be taken as a criterion of axiomatic truth? Thus all – absolutely *all* his argumentation is at sea without a rudder. Let it not be urged that an exception from the general rule is to be made, in cases where the 'impossibility to conceive' is so peculiarly great as when we are called upon to conceive a tree *both* a tree and *not* a tree. Let no attempt, I say, be made at urging this sotticism; for, in the first place, there are no *degrees* of 'impossibility,' and thus no one impossible conception can be *more* peculiarly impossible than another impossible conception – in the second place, Mr. Mill himself, no doubt after thorough deliberation, has most distinctly, and most rationally, excluded all opportunity for exception, by the emphasis of his proposition, that, *in no case*, is ability or inability to conceive, to be taken as a criterion of axiomatic truth – in the third place, even were exceptions admissible at all, it remains to be shown how any exception is admissible *here*. That a tree can be both a tree and not a tree, is an idea which the angels, or the devils, *may* entertain, and which no doubt many an earthly Bedlamite, or Transcendentalist, *does*.

"Now I do not quarrel with these ancients," continues the letter-writer, "*so much* on account of the transparent frivolity of their logic – which, to be plain, was baseless, worthless and fantastic altogether – as on account of their pompous and infatuate proscription of all *other* roads to Truth than the two narrow and crooked paths – the one of creeping and the other of crawling – to which, in their ignorant perversity, they have dared to confine the Soul – the Soul which loves nothing so well as to soar in those regions of illimitable intuition which are utterly incognizant of '*path*.'

"By the bye, my dear friend, is it not an evidence of the mental slavery entailed upon those bigoted people by their Hogs and Rams, that in spite of the eternal prating of their savans about *roads* to Truth, none of them fell, even by accident, into what we now so distinctly perceive to be the broadest, the straightest and most available of all mere roads – the great thoroughfare – the majestic highway of the *Consistent*? Is it not wonderful that they should have failed to deduce from the works of God the vitally momentous consideration that *a perfect consistency can be nothing but an absolute truth*? How plain – how rapid our progress since the late announcement of this proposition! By its means, investigation has been taken out of the hands of the ground-moles, and given as a duty, rather than as a task, to the true – to the *only* true thinkers – to the generally-educated men of ardent imagination. These latter – our Keplers – our Laplaces—'speculate'—'theorize'—these are the terms – can you not fancy the shout of scorn with which they would be received by our progenitors, were it possible for them to be looking over my shoulders as I write? The Keplers, I repeat, speculate – theorize – and their theories are merely corrected – reduced – sifted – cleared, little by little, of their chaff of inconsistency – until at length there stands apparent an unencumbered *Consistency*—a consistency which the most stolid admit – because it *is* a consistency – to be an absolute and an unquestionable *Truth*.

"I have often thought, my friend, that it must have puzzled these dogmaticians of a thousand years ago, to determine, even, by which of their two boasted roads it is that the cryptographist attains the solution of the more complicate cyphers – or by which of them Champollion guided mankind to those important and innumerable truths which, for so many centuries, have lain entombed amid the phonetical hieroglyphics of Egypt. In especial, would it not have given these bigots some trouble to determine by which of their two roads was reached the most momentous and sublime of *all* their truths – the truth – the fact of *gravitation*? Newton deduced it from the laws of Kepler. Kepler admitted that these laws he *guessed*—these laws whose investigation disclosed to the greatest of British astronomers that principle, the basis of all (existing) physical principle, in going behind which we enter at once the nebulous kingdom of Metaphysics. Yes! – these vital laws Kepler *guessed*—that is to say, he *imagined* them. Had he been asked to point out either the *deductive* or *inductive* route by which he attained them, his reply might have been—'I know nothing about *routes*—but I *do* know the machinery of the Universe. Here it is. I grasped it with *my soul*—I reached it through mere dint of *intuition*.' Alas, poor ignorant old man! Could not any metaphysician have told him that what he called 'intuition' was but the conviction resulting from *deductions* or *inductions* of which the processes were so shadowy as to have escaped his consciousness, eluded his reason, or bidden defiance to his capacity of expression? How great a pity it is that some 'moral philosopher' had not enlightened him about all this! How it would have comforted him on his death-bed to know that, instead of having gone intuitively and thus unbecomingly, he had, in fact, proceeded decorously and legitimately – that is to say Hog-ishly, or at least Ram-ishly – into the vast halls where lay gleaming, untended, and hitherto untouched by mortal hand – unseen by mortal eye – the imperishable and priceless secrets of the Universe!

"Yes, Kepler was essentially a *theorist*; but this title, *now* of so much sanctity, was, in those ancient days, a designation of supreme contempt. It is only *now* that men begin to appreciate that divine old man – to sympathize with the prophetic and poetical rhapsody of his ever-memorable words. For *my* part," continues the unknown correspondent, "I glow with a sacred fire when I even think of them, and feel that I shall never grow weary of their repetition – in concluding this letter, let me have the real pleasure of transcribing them once again – '*I care not whether my work be read now*

or by posterity. I can afford to wait a century for readers when God himself has waited six thousand years for an observer. I triumph. I have stolen the golden secret of the Egyptians. I will indulge my sacred fury."

Here end my quotations from this very unaccountable and, perhaps, somewhat impertinent epistle; and perhaps it would be folly to comment, in any respect, upon the chimerical, not to say revolutionary, fancies of the writer – whoever he is – fancies so radically at war with the well-considered and well-settled opinions of this age. Let us proceed, then, to our legitimate thesis, *The Universe*.

This thesis admits a choice between two modes of discussion – We may *ascend* or *descend*. Beginning at our own point of view – at the Earth on which we stand – we may pass to the other planets of our system – thence to the Sun – thence to our system considered collectively – and thence, through other systems, indefinitely outwards; or, commencing on high at some point as definite as we can make it or conceive it, we may come down to the habitation of Man. Usually – that is to say, in ordinary essays on Astronomy – the first of these two modes is, with certain reservation, adopted – this for the obvious reason that astronomical *facts*, merely, and principles, being the object, that object is best fulfilled in stepping from the known because proximate, gradually onward to the point where all certitude becomes lost in the remote. For my present purpose, however, – that of enabling the mind to take in, as if from afar and at one glance, a distinct conception of the *individual* Universe – it is clear that a descent to small from great – to the outskirts from the centre (if we could establish a centre) – to the end from the beginning (if we could fancy a beginning) would be the preferable course, but for the difficulty, if not impossibility, of presenting, in this course, to the unastronomical, a picture at all comprehensible in regard to such considerations as are involved in *quantity*—that is to say, in number, magnitude and distance.

Now, distinctness – intelligibility, at all points, is a primary feature in my general design. On important topics it is better to be a good deal prolix than even a very little obscure. But abstruseness is a quality appertaining to no subject *per se*. All are alike, in facility of comprehension, to him who approaches them by properly graduated steps. It is merely because a stepping-stone, here and there, is heedlessly left unsupplied in our road to the Differential Calculus, that this latter is not altogether as simple a thing as a sonnet by Mr. Solomon Seesaw.

By way of admitting, then, no *chance* for misapprehension, I think it advisable to proceed as if even the more obvious facts of Astronomy were unknown to the reader. In combining the two modes of discussion to which I have referred, I propose to avail myself of the advantages peculiar to each – and very especially of the *iteration in detail* which will be unavoidable as a consequence of the plan. Commencing with a descent, I shall reserve for the return upwards those indispensable considerations of *quantity* to which allusion has already been made.

Let us begin, then, at once, with that merest of words, "Infinity." This, like "God," "spirit," and some other expressions of which the equivalents exist in all languages, is by no means the expression of an idea – but of an effort at one. It stands for the possible attempt at an impossible conception. Man needed a term by which to point out the *direction* of this effort – the cloud behind which lay, forever invisible, the *object* of this attempt. A word, in fine, was demanded, by means of which one human being might put himself in relation at once with another human being and with a certain *tendency* of the human intellect. Out of this demand arose the word, "Infinity;" which is thus the representative but of the *thought of a thought*.

As regards *that* infinity now considered – the infinity of space – we often hear it said that "its idea is admitted by the mind – is acquiesced in – is entertained – on account of the greater difficulty which attends the conception of a limit." But this is merely one of those *phrases* by which even profound thinkers, time out of mind, have occasionally taken pleasure in deceiving *themselves*. The quibble lies concealed in the word "difficulty." "The mind," we are told, "entertains the idea of *limitless*, through the greater *difficulty* which it finds in entertaining that of *limited*, space." Now, were

the proposition but fairly *put*, its absurdity would become transparent at once. Clearly, there is no mere *difficulty* in the case. The assertion intended, if presented *according* to its intention and without sophistry, would run thus – "The mind admits the idea of limitless, through the greater *impossibility* of entertaining that of limited, space."

It must be immediately seen that this is not a question of two statements between whose respective credibilities – or of two arguments between whose respective validities – the *reason* is called upon to decide – it is a matter of two conceptions, directly conflicting, and each avowedly impossible, one of which the *intellect* is supposed to be capable of entertaining, on account of the greater *impossibility* of entertaining the other. The choice is *not* made between two difficulties;—it is merely *fancied* to be made between two impossibilities. Now of the former, there *are* degrees – but of the latter, none – just as our impertinent letter-writer has already suggested. A task *may* be more or less difficult; but it is either possible or not possible – there are no gradations. It *might* be more *difficult* to overthrow the Andes than an ant-hill; but it *can* be no more *impossible* to annihilate the matter of the one than the matter of the other. A man may jump ten feet with less *difficulty* than he can jump twenty, but the *impossibility* of his leaping to the moon is not a whit less than that of his leaping to the dog-star.

Since all this is undeniable: since the choice of the mind is to be made between *impossibilities* of conception: since one impossibility cannot be greater than another: and since, thus, one cannot be preferred to another: the philosophers who not only maintain, on the grounds mentioned, man's *idea* of infinity but, on account of such supposititious idea, *infinity itself*—are plainly engaged in demonstrating one impossible thing to be possible by showing how it is that some one other thing – is impossible too. This, it will be said, is nonsense; and perhaps it is – indeed I think it very capital nonsense – but forego all claim to it as nonsense of mine.

The readiest mode, however, of displaying the fallacy of the philosophical argument on this question, is by simply adverting to a *fact* respecting it which has been hitherto quite overlooked – the fact that the argument alluded to both proves and disproves its own proposition. "The mind is impelled," say the theologians and others, "to admit a *First Cause*, by the superior difficulty it experiences in conceiving cause beyond cause without end." The quibble, as before, lies in the word "difficulty" – but *here* what is it employed to sustain? A First Cause. And what is a First Cause? An ultimate termination of causes. And what is an ultimate termination of causes? Finitude – the Finite. Thus the one quibble, in two processes, by God knows how many philosophers, is made to support now Finitude and now Infinity – could it not be brought to support something besides? As for the quibblers—*they*, at least, are insupportable. But – to dismiss them – what they prove in the one case is the identical nothing which they demonstrate in the other.

Of course, no one will suppose that I here contend for the absolute impossibility of *that* which we attempt to convey in the word "Infinity." My purpose is but to show the folly of endeavoring to prove Infinity itself or even our conception of it, by any such blundering ratiocination as that which is ordinarily employed.

Nevertheless, as an individual, I may be permitted to say that *I cannot* conceive Infinity, and am convinced that no human being can. A mind not thoroughly self-conscious – not accustomed to the introspective analysis of its own operations – will, it is true, often deceive itself by supposing that it *has* entertained the conception of which we speak. In the effort to entertain it, we proceed step beyond step – we fancy point still beyond point; and so long as we *continue* the effort, it may be said, in fact, that we are *tending* to the formation of the idea designed; while the strength of the impression that we actually form or have formed it, is in the ratio of the period during which we keep up the mental endeavor. But it is in the act of discontinuing the endeavor – of fulfilling (as we think) the idea – of putting the finishing stroke (as we suppose) to the conception – that we overthrow at once the whole fabric of our fancy by resting upon some one ultimate and therefore definite point. This fact, however, we fail to perceive, on account of the absolute coincidence, in time, between the settling

down upon the ultimate point and the act of cessation in thinking. – In attempting, on the other hand, to frame the idea of a *limited* space, we merely converse the processes which involve the impossibility.

We *believe* in a God. We may or may not *believe* in finite or in infinite space; but our belief, in such cases, is more properly designated as *faith*, and is a matter quite distinct from that belief proper – from that *intellectual* belief – which presupposes the mental conception.

The fact is, that, upon the enunciation of any one of that class of terms to which "Infinity" belongs – the class representing *thoughts of thought*—he who has a right to say that he thinks *at all*, feels himself called upon, *not* to entertain a conception, but simply to direct his mental vision toward some given point, in the intellectual firmament, where lies a nebula never to be resolved. To solve it, indeed, he makes no effort; for with a rapid instinct he comprehends, not only the impossibility, but, as regards all human purposes, the *inessentiality*, of its solution. He perceives that the Deity has not *designed* it to be solved. He sees, at once, that it lies *out* of the brain of man, and even *how*, if not exactly *why*, it lies out of it. There *are* people, I am aware, who, busying themselves in attempts at the unattainable, acquire very easily, by dint of the jargon they emit, among those thinkers-that-they-think with whom darkness and depth are synonymous, a kind of cuttle-fish reputation for profundity; but the finest quality of Thought is its self-cognizance; and, with some little equivocation, it may be said that no fog of the mind can well be greater than that which, extending to the very boundaries of the mental domain, shuts out even these boundaries themselves from comprehension.

It will now be understood that, in using the phrase, "Infinity of Space," I make no call upon the reader to entertain the impossible conception of an *absolute* infinity. I refer simply to the "*utmost conceivable expanse*" of space – a shadowy and fluctuating domain, now shrinking, now swelling, in accordance with the vacillating energies of the imagination.

Hitherto, the Universe of stars has always been considered as coincident with the Universe proper, as I have defined it in the commencement of this Discourse. It has been always either directly or indirectly assumed – at least since the dawn of intelligible Astronomy – that, were it possible for us to attain any given point in space, we should still find, on all sides of us, an interminable succession of stars. This was the untenable idea of Pascal when making perhaps the most successful attempt ever made, at paraphrasing the conception for which we struggle in the word "Universe." "It is a sphere," he says, "of which the centre is everywhere, the circumference, nowhere." But although this intended definition is, in fact, *no* definition of the Universe of *stars*, we may accept it, with some mental reservation, as a definition (rigorous enough for all practical purposes) of the Universe *proper*—that is to say, of the Universe of *space*. This latter, then, let us regard as "*a sphere of which the centre is everywhere, the circumference nowhere.*" In fact, while we find it impossible to fancy an *end* to space, we have no difficulty in picturing to ourselves any one of an infinity of *beginnings*.

As our starting-point, then, let us adopt the *Godhead*. Of this Godhead, *in itself*, he alone is not imbecile – he alone is not impious who propounds – nothing. "*Nous ne connaissons rien,*" says the Baron de Bielfeld—" *Nous ne connaissons rien de la nature ou de l'essence de Dieu – pour savoir ce qu'il est, il faut être Dieu même.*"—"We know absolutely *nothing* of the nature or essence of God – in order to comprehend what he is, we should have to be God ourselves."

"*We should have to be God ourselves!*" – With a phrase so startling as this yet ringing in my ears, I nevertheless venture to demand if this our present ignorance of the Deity is an ignorance to which the soul is *everlastingly* condemned.

By *Him*, however—*now*, at least, the Incomprehensible – by *Him* – assuming him as *Spirit*—that is to say, as *not Matter*—a distinction which, for all intelligible purposes, will stand well instead of a definition – by *Him*, then, existing as Spirit, let us content ourselves, to-night, with supposing to have been *created*, or made out of Nothing, by dint of his Volition – at some point of Space which we will take as a centre – at some period into which we do not pretend to inquire, but at all events immensely remote – by *Him*, then again, let us suppose to have been created—*what?* This is a vitally

momentous epoch in our considerations. *What* is it that we are justified – that alone we are justified in supposing to have been, primarily and solely, *created*?

We have attained a point where only *Intuition* can aid us – but now let me recur to the idea which I have already suggested as that alone which we can properly entertain of intuition. It is but *the conviction arising from those inductions or deductions of which the processes are so shadowy as to escape our consciousness, elude our reason, or defy our capacity of expression*. With this understanding, I now assert – that an intuition altogether irresistible, although inexpressible, forces me to the conclusion that what God originally created – that that Matter which, by dint of his Volition, he first made from his Spirit, or from Nihility, *could* have been nothing but Matter in its utmost conceivable state of – what? – of *Simplicity*?

This will be found the sole absolute *assumption* of my Discourse. I use the word "assumption" in its ordinary sense; yet I maintain that even this my primary proposition, is very, very far indeed, from being really a mere assumption. Nothing was ever more certainly – no human conclusion was ever, in fact, more regularly – more rigorously *deduced* – but, alas! the processes lie out of the human analysis – at all events are beyond the utterance of the human tongue.

Let us now endeavor to conceive what Matter must be, when, or if, in its absolute extreme of *Simplicity*. Here the Reason flies at once to Impartiality – to a particle – to *one* particle – a particle of *one* kind – of *one* character – of *one* nature – of *one* size—of one form – a particle, therefore, "*without* form and void" – a particle positively a particle at all points – a particle absolutely unique, individual, undivided, and not indivisible only because He who *created* it, by dint of his Will, can by an infinitely less energetic exercise of the same Will, as a matter of course, divide it.

Oneness, then, is all that I predicate of the originally created Matter; but I propose to show that this *Oneness* is a principle abundantly sufficient to account for the constitution, the existing phenomena and the plainly inevitable annihilation of at least the material Universe.

The willing into being the primordial particle, has completed the act, or more properly the *conception*, of Creation. We now proceed to the ultimate purpose for which we are to suppose the Particle created – that is to say, the ultimate purpose so far as our considerations *yet* enable us to see it – the constitution of the Universe from it, the Particle.

This constitution has been effected by *forcing* the originally and therefore normally *One* into the abnormal condition of *Many*. An action of this character implies reaction. A diffusion from Unity, under the conditions, involves a tendency to return into Unity – a tendency ineradicable until satisfied. But on these points I will speak more fully hereafter.

The assumption of absolute Unity in the primordial Particle includes that of infinite divisibility. Let us conceive the Particle, then, to be only not totally exhausted by diffusion into Space. From the one Particle, as a centre, let us suppose to be irradiated spherically – in all directions – to immeasurable but still to definite distances in the previously vacant space – a certain inexpressibly great yet limited number of unimaginably yet not infinitely minute atoms.

Now, of these atoms, thus diffused, or upon diffusion, what conditions are we permitted – not to assume, but to infer, from consideration as well of their source as of the character of the design apparent in their diffusion? *Unity* being their source, and *difference from Unity* the character of the design manifested in their diffusion, we are warranted in supposing this character to be at least *generally* preserved throughout the design, and to form a portion of the design itself – that is to say, we shall be warranted in conceiving continual differences at all points from the unicity and simplicity of the origin. But, for these reasons, shall we be justified in imagining the atoms heterogeneous, dissimilar, unequal, and inequidistant? More explicitly – are we to consider no two atoms as, at their diffusion, of the same nature, or of the same form, or of the same size? – and, after fulfilment of their diffusion into Space, is absolute inequidistance, each from each, to be understood of all of them? In such arrangement, under such conditions, we most easily and immediately comprehend the subsequent most feasible carrying out to completion of any such design as that which I have suggested

– the design of variety out of unity – diversity out of sameness – heterogeneity out of homogeneity – complexity out of simplicity – in a word, the utmost possible multiplicity of *relation* out of the emphatically irrelative *One*. Undoubtedly, therefore, we *should* be warranted in assuming all that has been mentioned, but for the reflection, first, that supererogation is not presumable of any Divine Act; and, secondly, that the object supposed in view, appears as feasible when some of the conditions in question are dispensed with, in the beginning, as when all are understood immediately to exist. I mean to say that some are involved in the rest, or so instantaneous a consequence of them as to make the distinction inappreciable. Difference of *size*, for example, will at once be brought about through the tendency of one atom to a second, in preference to a third, on account of particular inequidistance; which is to be comprehended as *particular inequidistances between centres of quantity, in neighboring atoms of different form*—a matter not at all interfering with the generally-equable distribution of the atoms. Difference of *kind*, too, is easily conceived to be merely a result of differences in size and form, taken more or less conjointly – in fact, since the *Unity* of the Particle Proper implies absolute homogeneity, we cannot imagine the atoms, at their diffusion, differing in kind, without imagining, at the same time, a special exercise of the Divine Will, at the emission of each atom, for the purpose of effecting, in each, a change of its essential nature – so fantastic an idea is the less to be indulged, as the object proposed is seen to be thoroughly attainable without such minute and elaborate interposition. We perceive, therefore, upon the whole, that it would be supererogatory, and consequently unphilosophical, to predicate of the atoms, in view of their purposes, any thing more than *difference of form* at their dispersion, with particular inequidistance after it – all other differences arising at once out of these, in the very first processes of mass-constitution – We thus establish the Universe on a purely *geometrical* basis. Of course, it is by no means necessary to assume absolute difference, even of form, among *all* the atoms irradiated – any more than absolute particular inequidistance of each from each. We are required to conceive merely that no *neighboring* atoms are of similar form – no atoms which can ever approximate, until their inevitable réunion at the end.

Although the immediate and perpetual *tendency* of the disunited atoms to return into their normal Unity, is implied, as I have said, in their abnormal diffusion; still it is clear that this tendency will be without consequence – a tendency and no more – until the diffusive energy, in ceasing to be exerted, shall leave *it*, the tendency, free to seek its satisfaction. The Divine Act, however, being considered as determinate, and discontinued on fulfilment of the diffusion, we understand, at once, a *réaction*—in other words, a *satisfiable* tendency of the disunited atoms to return into *One*.

But the diffusive energy being withdrawn, and the *réaction* having commenced in furtherance of the ultimate design—*that of the utmost possible Relation*—this design is now in danger of being frustrated, in detail, by reason of that very tendency to return which is to effect its accomplishment in general. *Multiplicity* is the object; but there is nothing to prevent proximate atoms, from lapsing *at once*, through the now satisfiable tendency—*before* the fulfilment of any ends proposed in multiplicity – into absolute oneness among themselves – there is nothing to impede the aggregation of various *unique* masses, at various points of space – in other words, nothing to interfere with the accumulation of various masses, each absolutely *One*.

For the effectual and thorough completion of the general design, we thus see the necessity for a repulsion of limited capacity – a separative *something* which, on withdrawal of the diffusive Volition, shall at the same time allow the approach, and forbid the junction, of the atoms; suffering them infinitely to approximate, while denying them positive contact; in a word, having the power—*up to a certain epoch*—of preventing their *coalition*, but no ability to interfere with their *coalescence* in any respect *or degree*. The repulsion, already considered as so peculiarly limited in other regards, must be understood, let me repeat, as having power to prevent absolute coalition, *only up to a certain epoch*. Unless we are to conceive that the appetite for Unity among the atoms is doomed to be satisfied *never*;—unless we are to conceive that what had a beginning is to have no end – a conception which cannot *really* be entertained, however much we may talk or dream of entertaining it – we are forced

to conclude that the repulsive influence imagined, will, finally – under pressure of the *Unitendency collectively* applied, but never and in no degree *until*, on fulfilment of the Divine purposes, such collective application shall be naturally made – yield to a force which, at that ultimate epoch, shall be the superior force precisely to the extent required, and thus permit the universal subsidence into the inevitable, because original and therefore normal, *One*. – The conditions here to be reconciled are difficult indeed – we cannot even comprehend the possibility of their conciliation;—nevertheless, the apparent impossibility is brilliantly suggestive.

That the repulsive something actually exists, *we see*. Man neither employs, nor knows, a force sufficient to bring two atoms into contact. This is but the well-established proposition of the impenetrability of matter. All Experiment proves – all Philosophy admits it. The *design* of the repulsion – the necessity for its existence – I have endeavored to show; but from all attempt at investigating its nature have religiously abstained; this on account of an intuitive conviction that the principle at issue is strictly spiritual – lies in a recess impervious to our present understanding – lies involved in a consideration of what now – in our human state – is *not* to be considered – in a consideration of *Spirit in itself*. I feel, in a word, that here the God has interposed, and here only, because here and here only the knot demanded the interposition of the God.

In fact, while the tendency of the diffused atoms to return into Unity, will be recognized, at once, as the principle of the Newtonian Gravity, what I have spoken of as a repulsive influence prescribing limits to the (immediate) satisfaction of the tendency, will be understood as *that* which we have been in the practice of designating now as heat, now as magnetism, now as *electricity*; displaying our ignorance of its awful character in the vacillation of the phraseology with which we endeavor to circumscribe it.

Calling it, merely for the moment, electricity, we know that all experimental analysis of electricity has given, as an ultimate result, the principle, or seeming principle, *heterogeneity*. *Only* where things differ is electricity apparent; and it is presumable that they *never* differ where it is not developed at least, if not apparent. Now, this result is in the fullest keeping with that which I have reached unempirically. The design of the repulsive influence I have maintained to be that of preventing immediate Unity among the diffused atoms; and these atoms are represented as different each from each. *Difference* is their character – their essentiality – just as *no-difference* was the essentiality of their source. When we say, then, that an attempt to bring any two of these atoms together would induce an effort, on the part of the repulsive influence, to prevent the contact, we may as well use the strictly convertible sentence that an attempt to bring together any two differences will result in a development of electricity. All existing bodies, of course, are composed of these atoms in proximate contact, and are therefore to be considered as mere assemblages of more or fewer differences; and the resistance made by the repulsive spirit, on bringing together any two such assemblages, would be in the ratio of the two sums of the differences in each – an expression which, when reduced, is equivalent to this – *The amount of electricity developed on the approximation of two bodies, is proportional to the difference between the respective sums of the atoms of which the bodies are composed*. That *no* two bodies are absolutely alike, is a simple corollary from all that has been here said. Electricity, therefore, existing always, is *developed* whenever *any* bodies, but *manifested* only when bodies of appreciable difference, are brought into approximation.

To electricity – so, for the present, continuing to call it – we *may* not be wrong in referring the various physical appearances of light, heat and magnetism; but far less shall we be liable to err in attributing to this strictly spiritual principle the more important phænomena of vitality, consciousness and *Thought*. On this topic, however, I need pause *here* merely to suggest that these phænomena, whether observed generally or in detail, seem to proceed *at least in the ratio of the heterogeneous*.

Discarding now the two equivocal terms, "gravitation" and "electricity," let us adopt the more definite expressions, "*attraction*" and "*repulsion*." The former is the body; the latter the soul: the one is the material; the other the spiritual, principle of the Universe. *No other principles exist. All*

phænomena are referable to one, or to the other, or to both combined. So rigorously is this the case – so thoroughly demonstrable is it that attraction and repulsion are the *sole* properties through which we perceive the Universe – in other words, by which Matter is manifested to Mind – that, for all merely argumentative purposes, we are fully justified in assuming that matter *exists* only as attraction and repulsion – that attraction and repulsion *are* matter – there being no conceivable case in which we may not employ the term "matter" and the terms "attraction" and "repulsion," taken together, as equivalent, and therefore convertible, expressions in Logic.

I said, just now, that what I have described as the tendency of the diffused atoms to return into their original unity, would be understood as the principle of the Newtonian law of gravity: and, in fact, there can be little difficulty in such an understanding, if we look at the Newtonian gravity in a merely general view, as a force impelling matter to seek matter; that is to say, when we pay no attention to the known *modus operandi* of the Newtonian force. The general coincidence satisfies us; but, upon looking closely, we see, in detail, much that appears *incoincident*, and much in regard to which no coincidence, at least, is established. For example; the Newtonian gravity, when we think of it in certain moods, does *not* seem to be a tendency to *oneness* at all, but rather a tendency of all bodies in all directions – a phrase apparently expressive of a tendency to diffusion. Here, then, is an *incoincidence*. Again; when we reflect on the mathematical *law* governing the Newtonian tendency, we see clearly that no coincidence has been made good, in respect of the *modus operandi*, at least, between gravitation as known to exist and that seemingly simple and direct tendency which I have assumed.

In fact, I have attained a point at which it will be advisable to strengthen my position by reversing my processes. So far, we have gone on *à priori*, from an abstract consideration of *Simplicity*, as that quality most likely to have characterized the original action of God. Let us now see whether the established facts of the Newtonian Gravitation may not afford us, *à posteriori*, some legitimate inductions.

What does the Newtonian law declare? – That all bodies attract each other with forces proportional to their quantities of matter and inversely proportional to the squares of their distances. Purposely, I have here given, in the first place, the vulgar version of the law; and I confess that in this, as in most other vulgar versions of great truths, we find little of a suggestive character. Let us now adopt a more philosophical phraseology – *Every atom, of every body, attracts every other atom, both of its own and of every other body, with a force which varies inversely as the squares of the distances between the attracting and attracted atom.* – Here, indeed, a flood of suggestion bursts upon the mind.

But let us see distinctly what it was that Newton *proved*—according to the grossly irrational definitions of *proof* prescribed by the metaphysical schools. He was forced to content himself with showing how thoroughly the motions of an imaginary Universe, composed of attracting and attracted atoms obedient to the law he announced, coincide with those of the actually existing Universe so far as it comes under our observation. This was the amount of his *demonstration*

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