

# Axioms as the Basis for All Understanding

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# 1 Introduction

Humankind has, from the earliest glimmerings of sentience on, endeavored to answer certain questions. What time is dinner? *What's* for dinner? Who caught dinner?

Once these questions were being answered satisfactorily and moderately regularly for at least a fraction of the proto-human population, we can only imagine that in that warm lull that follows a full belly around a fire beneath the stars, questioning thoughts turned to less important, but nevertheless intriguing, issues. I wonder what those little bitty lights are up there? I wonder how the fire comes *out* of chunks of cold rock or rubbing sticks? I wonder if I'll get dinner tomorrow, or turn out to *be* dinner for something else?

Eventually, humankind developed rudimentary societies, and for the first time at least the ruling class of those societies experienced the luxury of not having enough to do. Others in those societies *didn't* have that luxury but wanted to. Together they conspired to extend these questions still further, so that they could spend their overabundance of leisure time working hard trying to answer questions that had little to do, at first glance, with dinner.

Their experiment was wildly successful. It turned out that even the hardest of workers had an early form of "attention deficit disorder". We can speculate that their ready distractibility was an evolutionary advantage – it didn't do to become totally preoccupied with watching your prey in a world filled with *other* predators, or so engaged with your work at hand that you missed an opportunity for an easy meal. Also, even the hardest of workers in the hardest of times had *some* leisure, if only in that lull right after a big meal or when they were asleep.

It is only natural that right in the middle of a big hunt or while nursing a child or plowing a field, humans would suddenly stop, somewhat dazed, and wonder things like: Who am I? Why am I here? What *is* all this? Of course they had no time to think of *answers* to all of this, so the appearance of professionals that would try to answer them *for* them in exchange for food was a welcome relief.

The most profound of these is also the most unanswerable: Why Is There Being? (Also known as why are we here, where did all this come from, why is *God* there (if you believe in God and consider It the answer), why is *Physics* there (if you believe in Physics and consider It the answer).

This question has an infinity of possible answers, and over time we've cranked away at generating a tiny fraction of them for active consideration.

However, the task is fairly obviously doomed. In absolute terms the question *cannot be answered*. This is not because of the usual reason – that if we give any sort of an answer, the question can be repeated for the answer (ok, so the Universe is here because of the laws of physics, the laws of physics are there because of God, God is there because...).

The task is doomed at a *prior stage* in the cognitive reasoning process. It is doomed at the *epistemological* stage, by the nature of the word "why" (or its many counterparts, where, what, who). It is *natural* for us to use these words as they have meaning and relevance in our daily lives. We feel like all questions

should have answers, and when we look at them closely we find that certain questions, of certain kinds, *don't*. Here is one:

**Why should all questions (including this one) have answers?**

This is the kind of obnoxious question that parents eventually learn to answer (like all the rest of the related questions and question chains) with the simple word “because...”.

Which is, as any small child rapidly learns, code for “this question cannot be answered”. “Because” as an answer to a “big” question often means that *it isn't a question at all*. At least, not one that we can answer in the same way that we can give somebody the time upon request.

Such a “question” calls into question (sorry) the *foundation* of what we know, what it means to ask questions at all, and how we should cognitively interpret the answers (such as they are, if they exist). All of which leads us, by a roundabout way, to consider the issue of *axioms*.

## 2 Axioms

What is an axiom?

From Webster's Revised Unabridged Dictionary (1913) [web1913]:

Axiom, n.-- L. axioma, Gr.; that which is thought

worthy, that which is assumed, a basis of demonstration, a principle, fr.; to think worthy, fr.; worthy, weighing as much as; cf.; to lead, drive, also to weigh so much: cf F. axiome. See Agent.

1. (Logic and Math.) A self-evident and necessary truth, or a proposition whose truth is so evident as first sight that no reasoning or demonstration can make it plainer; a proposition which it is necessary to take for granted; as, ‘‘The whole is greater than a part;’’ ‘‘A thing can not, at the same time, be and not be.’’

2. An established principle in some art or science, which, though not a necessary truth, is universally received; as, the axioms of political economy.

These definitions are the root of much Evil in the worlds of philosophy, religion, and political discourse. These two definitions are both universally taught (generally in the first form, generally in Euclidean Geometry that is the only serious math course that nearly all citizens in at least the United States are *required* to take). A relatively few students may move on and hear the term used in the second, “wishful” sense (wishful in that by calling an established

principle an “axiom” one is generally trying to convince the listener that it is indeed a “self-evident and necessary truth”).

Alas, they are both *fundamentally incorrect* (although the second is closer than the first). When I say incorrect, I mean that they are *completely, formally, and technically incorrect*, not just a little bit wrong in detail. Neither of these is what an axiom is, *in mathematics* (from which *technical* usage the term’s definition is derived).

This can best be illustrated by means of a simple example, well known to anyone who studies mathematics beyond the elementary level. Everybody (as noted above) learns the geometry of Euclid, as the archetypical Axiomatic System. One begins with the Axioms of plane geometry and proceed to derive Theorems. Euclid (and his many overawed successors) did indeed hold the axioms to be self-evident truths, although one should carefully note that the Latin root means “*that which is assumed*” and *not* “that which is self-evidently known”.

Well then, what about *non-Euclidean* geometry?

As was long ago discovered, geometry on (say) the surface of a sphere is *not the same* as geometry on a plane. Unique parallel lines *always meet exactly twice*. Triangles have *more* than  $180^\circ$ , with  $180^\circ$  being a strict lower bound for “small” triangles that lie approximately in a plane. That isn’t to say that there *is no* geometry on the two-dimensional surfaces of spheres, or hyperboloids, or ellipsoids, or arbitrary amoeba-like-bloboids, only that it is *different* from geometry on the plane.

Different axioms, different theorems, different results, with all the axiomatic systems *equally empty* in terms of “meaning”.

This leads one to dangerous, convoluted reasoning. The axioms of mathematics themselves can become *variables* in a higher order application of mathematics. In some cases those axioms can be *quantified* (parametrically mapped into numbers) so that one can “dial a theory” by selecting a set of numerical parameters. In others the axioms cannot be sensibly denumerated (numeraled in an ordinal sense with any sort of metric of “closeness”) and are unique, disjoint, random.

Worse, once mapped into numbers, the axioms themselves can become *self-referential*. One can write axioms and reason axiomatically to derive theorems *about* the axioms. Alas, as Gödel observed many years ago while working all of this out, the resulting mathematical systems can easily become *fundamentally conflicted*, with true but unprovable propositions and propositions that “sound” like meaningful hypotheses which in fact cannot be proven true or false and somehow appear to be neither.

Why should questions (including this one) have answers? For any of a wide class of questions, especially including questions that might in any way direct or indirect refer to themselves (like this one) *they don’t*. That is, it is perfectly possible to formulate expressions that *look* like questions, *sound* like questions, *fool the mind* into thinking that they are questions to the extent that all sorts of time and energy are expended attempting to answer them, but that *are not questions* (or more generally, hypotheses, propositions, other entities whose

truth or falseness or relationships we might wish to explore).

Everybody is probably familiar with the old chestnut:

- The following statement is false.
- Was the preceding statement true?

(reformulated as a “question”). If you answer the question yes, it should have been no, which means that it should have been yes (ad infinitum) *if one orders the answer sequence in a temporal order*. Of course there is no reason to consider an answer and follow a sequential chain, especially in mathematics where logic should transcend sequence. This isn’t a question, it is a pseudoquestion. It has no answer because it isn’t a question. The answer isn’t “yes”, or “no”, or “because” – it is a great, rushing silence in response to a set of disjoint meaning fragments that, when integrated, have no meaning at all...

Unfortunately, *all propositions concerning the state of existence can be formulated as pseudoquestions*.

Not necessarily self-referential ones – psuedoquestions can easily appear to reference external ideas like “God” or “reality”. They are pseudoquestions in the sense that they have *no deriveable answer*. The only answers possible are then none at all or an *axiomatic* answer, and an axiomatic answer may or may not lead to a non-conflicted, consistent, complete deductive system when combined with other axioms.

It is amusing before moving on to recall a couple of the many times pseudoquestions like this have been used to destroy Evil Computers in books and movies. The Prisoner, for example, asking “The General” the one word question “Why?” The very question above causing an Evil Robot to melt down in the sequential cycle in the old television version of Lost in Space. Harlie (in Gerrold’s When Harlie was One) concluding that all one needs to answer this sort of question is an infinite amount of time and awareness, as it sets out to perpetuate its own, greatly augmented, existence for that purpose.

Hah. Good Luck Harlie.

All of this digression is really only intended show that axioms, far from being “self-evident truths” or even the gentler “established principles” are, in both mathematics and derived usage in physics, science, philosophy and other disciplines nothing greater than *assumptions*. There is nothing more dangerous or powerful in the philosophical process than selecting one’s axioms. There is nothing more useless than engaging in philosophical, religious, or social debate with another person whose axioms differ from one’s own.

An axiom is at heart something that *cannot be proven*. It is something whose truth or falsehood *cannot even be addressed* (except, of course, in any of a variety pseudoquestions and additional axiomatically derived answers that will soon have all the participants melting down in a puff of smoke or writing grants for the purpose of perpetuating existence while working out the “answers”). An axiom is a *free choice*, a selection out of an infinite space of possibilities, upon the back of which which we will *choose* to derive our system of so-called

reasoning, dealing with contradictions and inconsistencies as best we can – or just ignoring them.

How to convince you of the *importance* of coming to a full, conscious realization of the truth of this observation in real human affairs? We have to take a journey of two parts. The first is through a historical exploration of fundamental axioms of The Cosmic All, with David Hume as our tour guide (accompanied by his two clowns, Decartes and Berkeley). The second is through a very much *current* exploration of genetic optimization, self-organized structure, and social geneto-memetics.

Yes, sorry, this may or may not be easy for you (depends, for example, on whether or not you are fully sentient or just pretending) but there is little alternative. If you've been paying attention and haven't already figured out where I'm going with everything to the point where you are horribly bored, you should now be intellectually poised above a pit of existential despair.

I hate to leave you poised there (so I'll write on and possibly give you something a bit more comforting than existentialism at the end of it all). However, I equally well hate for you to be going "huh" and scratching your head, when you are *supposed* to be poised and screaming at glimpse of philosophical Nothingness beneath, so permit me to get out the block and tackle and tie this rope around your feet – there, comfy now? Now we'll just swing you out over this pit, hold on to your loose change. There. Now look up – errr – down.

Note that *all the questions that you hold most dear* (no matter what they are) have just had their legs kicked out from under them – if *all* the fundamental questions are really *pseudoquestions*, is it not the case that we can build little chains of sensible-sounding questions leading from any tiny question to one of the biggies? It is.

Ah, you begin to see the pit? Don't whimper too much, now. Consider:

How can we ask whether we should have a reuben or a grilled cheese sandwich for lunch when we can't answer the pseudoquestion at the base of the whole question chain of why eat lunch in the first place (to stay alive), why stay alive (because god wants me to, because I'm evolved want to), why did I evolve, why are there laws of physics, why is there a God? Psuedoquestions. There is basically *no reason* to choose between reuben, grilled cheese, or a hot shit on marble sandwich for lunch until we find a *pragmatic* way of dealing with this issue.

Note that a variety of smart-ass solipsistic answers work, but only if you are *already living* on the *bottom* of the pit of existential despair. After all, the solipsists get to choose whether or not to continue imagining that they're reading all of these words that they were clever enough to think up in third person. Surely they can imagine some way to make hot shit tasty.

The rest of us have no Good Reason for Doing Anything without *first* having a good reason for being, and right about there we run into trouble as *reason* and *being* in a single proposition is totally pseudo. Yet we generally *do* choose a sandwich, and that choice sometimes even works out well for us. We only get in trouble if we think too deeply about it and the waiter starts to fidget and look around longingly at his other tables. And of course there are days that you

choose grilled cheese but the cook prepares grilled shit...

This is more than a bit of a shame; so much so that sensitive souls literally go mad over it. What is the suicide's standard apology? I have no reason for living. Surrounded by choice, a mentally ill person often has little to no free will. Confronted by an endless parade of choices big and small we make them, badly and well, for better or worse, yet *most* humans never work out *why* they do what they do from the beginning (the most fundamental of questions that underlie those decisions) to the end (the choice of lunch today). At best their choices work if not examined too closely or deeply, lest they fall into the Pit.

We should be able to do better.

This is why it is *important* for you to clearly recognize the True Nature of the most *fundamental* factors that you *do* use as the deepest basis of all of the casual decisions you make throughout the course of the day. Ultimately, they are founded on your *axioms*, both philosophical and memetic. If your philosophical axioms include a belief in God, and your memetic axioms include the particular interpretation of Leviticus that prohibits pastrami and provolone or bread made with milk in the same bite, well, the reuben is out. If your personal axioms *also* include the laws of temporal continuity and causality (and hence, physics, biology, and all the rest), you might well conclude that hot shit on marble isn't likely to be either tasty or nutritious, leaving you with grilled cheese. This decision would be even more soundly based (given these same axioms) if you both have memories of enjoying toasted cheese sandwiches past *and* are silly enough to believe that something as ephemeral as a memory has any bearing whatsoever on the Now.

We leave it as an exercise for the reader to work out how to resolve a set of axioms that includes God, Leviticus, temporal continuity and causality into a system of reasoning and decision making that doesn't have *too* many internal contradictions.

You may not agree, of course, but according to *my* axioms, the Truth Shall Make You Free. In particular, simply having the epiphinaic insight that axioms are ultimately both a matter of totally free choice (as in they are *neither* true *nor* self-evident in any sense of the word, and cannot even be judged for consistency or esthetics without *more* axioms to tell you how to do so) *and* that most of the axioms you *do* have are very probably geneto-memetic social imprinting and not something you "chose" at all (providing that we agree on enough axioms for us to be able to continue a discussion at that point) might just empower you to, perhaps for the first time in your axiomatically suppressed and conditioned existence, to *choose your axioms* as a matter of absolute, conscious, meta-reasoned choice.

I will, of course, offer up a set that I find particularly lovely and useful, and even moderately consistent (although Gödel teaches us not to take that horribly seriously). They come with a free shave and haircut, metaphorically speaking, as we sloppily adopt as an *esthetic standard* (not really an axiom) a wee bit of the William of Ockham's single contribution to Western Thought. *Once accepted* these axioms can form the irrational basis for a reasonably rational view of the Universe, and can even provide at least some poetic meta-answers to some of



the unanswerable pseudoquestions, which is the best one can ever hope for.

In the meantime, I'll have the reuben on rye, chips on the side, with a frosty cold beer. Mmmmm. Don't worry, my axioms permit it. As long as I get enough exercise, so does my wife...

### 3 Philosophy is Bullshit: David Hume

Much of the prose so colorfully presented above is not terribly idea-original. The perceptive reader will observe that I've read and been influenced by many philosophers and thinkers of years past. Yes, I've digested my Plato, barfed up my Aristotle, danced with Descartes, listened to falling trees in the forest with Berkeley and God together, been smacked by Johnson, laughed hysterically at the Germans, nodded thoughtfully at the Vedas and some aspects of Bhuddism, Taoism, and Zen, and *wept quietly* as Philosophy attempted to pretend that the greatest philopher, the *seal* of the philosophers as Mohammed is supposedly the seal of the prophets, never wrote the essays that destroyed the *fundamental basis* of philosophy as it was known up to that time.

I refer, of course, to David Hume.

Now, if you've *studied* philosophy, you'll know who Hume is and what he did. If you are a professional philosopher who (like Harlie) relies on having a few fundamentally unanswerable pseudoquestions around to work on for a meager living (in which case, my dear fellow snake-oil salesman, you have my deepest sympathies, based on my own long, pecuniarily impoverished experience working a crowd) then you'll know what he did *and* you'll be secretly hoping that nobody else does, especially your employers.

The rest of you, listen up now. Hmmm, historical context and punch line, or punch line and then historical context. Let's try the latter:

David Hume is the philosopher best known for proving, beyond any possible doubt, that *Philosophy is Bullshit*.

To be more explicit and precise (although I do love a nice, pithy, colorful phrase:-) he proved *mathematically* that most of the questions asked by philosophers from the very beginning simply couldn't be answered, if by an "answer" you meant that you wanted something that could be proven using the methodologies of logic, mathematics, and pure reason. If you like, he deduced that our knowledge of reality is based on two things:

- Our empirical experience of existence, as of *right now*, the act of *perceiving* itself (in the present tense only).
- Axioms, from which we could derive and conclude *whatever we like* about reality depending on what axioms we choose<sup>1</sup>.

As we have taken such pains to assert, axioms are *not* self-evident truths, they are *fundamentally unprovable assumptions*. That is, personal opinions.

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<sup>1</sup>Yes, I really mean the italicized part. If you've ever watched, for example, Monte Python's Life of Brian you should deeply understand my point.

That is, hot air, moonshine, speech out of your nether regions, *bullshit*. We know what *we are experiencing right now* and every thing else is *inferred*. I have no problem at all with the inferences – my axioms allow, nay, *require* them. Hume was less easy – it bothered him to “know” so little even as he (like us all) went about his quotidian existence as if he knew much more.

Now, much as we all like to argue about whose axioms are “right” or “good” or “bad”, the sad truth is that *reason* cannot provide us with any answer to these *pseudoquestions*. Axioms cannot be “proven” in a deductive sense without *more* axioms of the worst self-referential sort, such as

**The Fundamental Axioms of Religion:**

1. These Axioms are True. This is the Prime Axiom of the axiom sets of all religions, and of course always a handy one to have if you wish to be able to derive the truth of your beliefs (ooo, oxymoron city) from your principle axioms:-).
2. God exists, is omniscient, omnipotent, omnibeneficient.
3. God has kindly revealed by various prophetic means this set of Axioms, which are axiomatically True (see Axiom 1), Complete (omniscient), Mandatory (omnipotent), and Good (omnibeneficient).
4. All other (possibly competing) sets of Axioms are False, except maybe ones that are later revealed by God, presuming that we don’t have as an Axiom the following Axiom:
5. These Axioms are Complete. (Seal of the Prophets, anyone? Mohammed should have had a talk with Thomas Jefferson, see below.)
6. Anyone who fails to accept these Axioms as Their Axioms in their deepest heart of hearts is a Bad Person, and this will be known by the omniscient God, who will then omnipotently cast you into an eternity of Eternal Torment out of the goodness of *His* (emphasis intentional on masculine humanthropomorphism) omnibeneficient heart at some unspecified point after your miserable death.
7. Now, let’s get down to important things, like tithing the priesthood, how to pray and where, and just how infallible the priesthood really is when conveying divinely inspired interpretations of these Axioms to the less Holy...

Add whatever you like, and it is provably true, see Prime Axiom. Handy ones to add promise Eternal Bliss to those who adopt the Axioms without question (the only way they or any other set of axioms *can* be adopted, of course) to completement the axiom of Eternal Torment to those who question the slightest one, especially the Prime Axiom<sup>2</sup>.

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<sup>2</sup>There is not the slightest hint of tongue in cheek in this presentation of the Fundamental Axioms of Religion here. I have had the direct personal experience of “discussing” *my*

Hmmm, sound familiar? There is a good reason for this being a popular and successful formula; it will be explored in the next section. In the meantime, there is no point in *arguing* about whether or not this Axiom set it better, worse, or just as good as any other. As Hume pointed out, these are all *axioms*. So the only way to prove them is by means of Axiom Three. As Gödel pointed out, self-referential sets of axioms lead to horrendous problems with logical consistency, so don't be horribly surprised if adopting any axiom set with Axiom Three in it eventually gets you into logical trouble, but I'm sure that it won't be anything that burning out in a puff of smoke won't cure...

Where did such a momentous conclusion come from? Why has it been so resoundingly ignored? Why *even today* is it not being taught, and why are all sorts of axioms in mathematics, philosophy, physical law and science, and

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understanding of the history and origins of the Universe based on the Axiom of Causality, introduced and discussed at length below, which leads (along with various others) to the laws of physics and the other sciences, compared to *their* understanding of the history and origins of the Universe based on The Axioms of Religion as embodied in (say) Genesis.

*I* conclude that the Universe is oh, 13.7 billion years old give or take a few percent. *They* conclude that it is a few thousands of years old.

*I* point out patiently the entire facade of reasoning (Maxwell's equations, parallax, stellar dynamics, the Hubble constant, rates of radioactive decay, geological and paleontological evidence), from axioms through observations on to conclusions, that leads me to believe that whenever I look up at the night sky, light that is almost a million times older than that falls on my face .

*They* patiently point out that the Bible in general clearly and repeatedly states, from the Commandments on, in any number of divinely inspired prophetic statements, that its entire content is divinely inspired and infallibly, literally correct. Therefore, if all of my science is producing answers that disagree with any portion of the Bible, then *it must be wrong*.

If radioactive decay rates show it to be older, they must have changed or maybe I just don't understand the initial conditions. If there is a layered, apparently evolutionary fossil record buried in rock all over the world, it just proves that there once was a Really Big Flood and all the antediluvian beasts that didn't make the Ark settled out sorted by a curious mix of weight and density and size that simulates an evolutionary trend and were chemically turned *rapidly* into to stone by chemical processes that we don't understand or that might have occurred more rapidly then. If the night sky shows light that *appears* to have come from far far away and long long ago, then either the Universe was created with the light already on the way or maybe the laws of physics *changed* and light was a lot *slower* in the beginning. *Even if all our current observations of physical laws and the temporal sequencing of biological events is totally, incredibly, twenty-significant-digit kind of consistent* what *reasons* do we have for believing that physical laws haven't changed over time according to a *higher* law?

No fooling. *I wish* I were fooling. If nothing else, I've learned that as soon as one discovers in a debate of any sort that your opponent/partner has *different* Prime Axioms, unless you share the Axiom of Open-Mindedness, the wisest thing to do is immediately terminate the discussion, back away slowly (possibly with one hand on your wallet and another on a small but powerful handgun), and go do something *useful*, like doing a crossword puzzle, or taking a nice long nap.

The damndest thing is, of course, that I can no more prove my axioms than they can prove theirs, and hence *both our conclusions are in some deep sense equally irrational*. Maybe the laws of physics *have* changed over time in a way that precisely cannot be detected now. Formulated this way, how can I prove otherwise, by definition? Logical positivism properly rejects *both* this hypothesis *and* its converse as *equally* unprovable (although "logical positivists" invariably fail to do so, because the inevitable conclusion of this reasoning chain is that *no* question can be answered and hence should not be asked). Belief is belief, whether in the laws of physics or the book of Genesis. But read on...

religion still being presented as “self evident truth” almost *three hundred years* after we first knew better?

Sigh. Time for a bit of a history lesson.

We will begin at the very beginning, with some sort of ape-like being looking up at the night sky and being momentarily curious about what all the pretty lights are. Obviously, we’re going to use my historical and scientific axioms in this discussion or perhaps I would have started in the Garden of Eden. Skip ahead a million years or so, and the descendants of this being have moved on to a limited bit of survival oriented inductive reasoning. Fire burns, *every time*. Rocks fall, *every time*. Food fills up a hungry belly. Knowing *what* happens turns out to have survival value. The most information-theoretically efficient way to determine *what* will happen in any given case is to inductively extract *rules* from experience and reason from the rules. If every fire were unique to us, we’d get burned every time because there really is no *reason* for *this* fire to burn just because *that* one did, no reason for us to fall of this cliff and get hurt just because we’ve observed falling, pain, and cliffs enough to make the association.

Once we invented *reasons*, once we were able to articulate *why* anything happens and used it to predict (as it were) the *future* of then’s now, we were philosophically sunk. We rapidly invented causes for everything to help codify the rules we needed to learn because if we and our children *didn’t* we or they would *die*, often horribly.

Memory is a key to associative and inductive reasoning, especially memory that produces a sense of temporal continuity. With memory comes a sense of loss. We learned to miss the dead; we learned the pain that comes with memory from the memory of pain. This, in turn, led us to seek a why for death, for loss, for pain, as much as a why for fire, for food, for the stars in the sky. The most successful learners of the *why* rules, the most successful *inventors* of new rules that worked, became the founders of new cultures, and their offspring survived to breed again. But I’m getting ahead of myself.

Skip ahead to the beginning of written history, and we see a well-developed and rich codification of nature and answers to nearly any why question, including those that have no answers. Note well that *even where we couldn’t understand any reason for things* we had long since adopted as an *axiom* that they had a reason – humans who did not “believe” in reason simply did not survive. We invented God (in all singular and plural manifestations) as a catch-all reason underlying all reasons, an explanation for all that we could not explain. Never satisfied, though, we sought explanations for God, for why things are *this* way instead of some other.

Thus things stood, with remarkably little change or *real* variation throughout many widely separated global cultures, until the last millenium. Then several things happened that fundamentally altered how we think of things, how we learn things, how we know things. In no particular order:

- We invented a systematic way of answering how and why questions that involved observation, insight, and *mathematics*. We discovered that the Universe had *structure*.

- As both consequence and cause, our study of mathematics (as a formal axiomatic system) exploded. It went from being a philosophical hobby to being the foundation of all knowledge in nothing flat. The empirical marriage of mathematics, observation, and insight continues to be fruitful to this very day.
- Philosophers (who had long pondered the why and how questions concerning the physical world that were now being *answered* at a frightful pace either turned to studying these questions (and became *natural philosophers*, which is the proper term for a scientist) or they turned their attention towards the *pseudoquestions* that had dogged mankind from the moment they were invented.

Again we jump over the many idiots and fools who pretended at philosophy and wrote so much utter nonsense that only a true masochist would ever dream of studying it and focus in on the three who matter (in the West): Descartes, Berkeley, and Hume. The order only moderately matters – we need to keep Descartes earlier than Hume; Berkeley can go wherever you like.

René Descartes was the supreme rationalist. Rationalism was the utter acceptance of the axioms, written and *unwritten*, that were the basis of the ragingly successful scientific revolution. Descartes was a superb mathematician and geometer, and wished to *derive* the true nature of being using pure reason. At the time, this was a perfectly reasonable thing to attempt because (as noted above) mathematics was proving to be *the* language in which God wrote the Universe itself, metaphorically speaking – every “why” answer discovered under the sun (including the orbits of the planets and Sun itself) was turning out to be rationally understandable, filled with geometry and calculus sublime, ruled by inexorable law. Humans dreamed of finally Figuring Everything Out with their newfound rationalist tools and toys.

So Descartes tried to figure out what he “knew”, as he knew that he needed axioms from which to proceed in his reasoning process. The axioms he sought and adopted were very much of the “self-evident truth” variety, because he wanted his conclusions to be as well-founded logically as those of Euclid – he wanted a veritable geometry of Being, including a theorem of Deity (as he was a profoundly religious man<sup>3</sup>).

So he proceeded to figure out what he could *doubt*. If something was dubious or doubtful, it couldn’t be an axiom, right? When we was done, what was left would become the axioms of his rational system.

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<sup>3</sup>Hard on cats though. Even very bright people can be *so* silly. In the East, the question to the master is “Do dogs have Buddha nature?” (souls, loosely speaking) and the answer is to whack your student upside the head with a dog, or make an inscrutable remark about the wind whistling through the holes in heads. In the West, it was Descartes announcing that “Cats have no souls” (buddha nature, loosely speaking) and throwing his cat out of his upper story window to demonstrate it. Mmmrrrrreooow-splat!

I prefer the more interesting questions of whether or not buddha had Dog nature and whether Descartes’ cat landed on its feet, shook its head a couple of times, and moseyed off to philosophize on a warm sunny wall belonging to a cat-lover far away from Descartes.

Descartes rapidly realized that when you got right down to it, there was damn-all that one couldn't doubt when one tried hard enough. Can I doubt that the sun will rise tomorrow? Certainly! Maybe it will, and maybe it won't, we can know nothing of what hasn't happened yet. Can I doubt that I ate lamb for dinner last night? To be sure, everyone knows that human memory is fallible. Perhaps I ingested large quantities of hallucinogenic drugs last night and just *fantasized* that I ate lamb for dinner. Perhaps an Evil Fiend hypnotized me into believing that I ate a dinner of lamb. Perhaps I was rendered unconscious in my sleep for a day, and I actually ate lamb *two* nights ago but haven't figured it out yet. Perhaps what I ate was mutton, dressed up like lamb.

And so it goes. Can I doubt what I am seeing? Surely. Again, hallucinogens, particularly vivid dreams. Look at Keanu Reeves in *The Matrix*, moseying along thinking in perfectly good faith that he was a computer programmer living and working in a clean, urban world, only to wake up and discover that he was only a power unit in the Matrix. That which I see can be imagined, that which I hear can be projected, that which I feel or touch can be simulated. The external reality that I *believe* these sensory impressions correspond to *could* be real, or they could all be some sort of metaphorical Matrix. They could even be both!

The past is thus uniformly dubitable – perhaps I was created moments ago with *memories* of the past intact, could I tell? No. The future is dubitable as I haven't even the continuity of memory to help me with that which has not yet happened. Most of the present is dubitable, because I know it only via my senses and they are not trustworthy.

The one thing that I *know*, that I *cannot doubt*, is that I exist. I cannot doubt my own existence unless I exist. To think, to doubt, even to dream is to exist. *Cogito, ergo Sum*. And so it was, I imagine, with Descartes.

Descartes now had his one irrefutable truth, his Axiom, and proceeded to try to derive Everything from it. For a good mathematician, he botched the job horribly.

His reasoning went as follows: I exist. My existence must have a cause. My existence cannot be its *own* cause because it just isn't up to snuff – my awareness seems to wax and wane with sleeping and waking, I have been unconscious altogether, my existence seems altogether ephemeral and insubstantial when viewed as a self-sufficient cause, so I must have a cause “greater” than myself. Hmm, cannot be anything in the world I see (historical evidence to the contrary, sorry Mom... you're just dubitable) as it isn't any better than I am, assuming that it is there at all. Even if my cause really IS something my mother and my father did one night long ago, *they* needed a cause, and that cause needed a cause, each cause greater than the one before. The whole world would need a cause. The whole *Universe* would need a cause. Must be something greater than me and the whole existing Universe too (if it exists, of course, which I find dubitable)!

I know, let's call this Greatest Cause a Guardian, oops, no, I meant *God*. As the Greatest Cause it clearly must be perfect and good and everything like that. Surely it wouldn't cause *me* to exist but fake me out with a non-existent Matrix. So the world I see is real, it exists too! Hooray! My memories must

be real! I've just proved the logical necessity of God and All Creation from just one itty bitty Axiom (in the self-evident truth sense), the indubitability of my own existence!

Ain't I cool...

Not. Descartes made mistakes by the fistful. Before addressing them, though, we need to turn to our friend Bishop Berkeley.

Descartes wasn't the only being interested in determining the true Nature of Being using pure (well, *reasonably* pure) reason. There was an ongoing debate over whether the Universe was, in fact, made up of matter and governed by immutable, impersonal, mathematical, physical law (which leads us to a *deterministic* Universe, in which Natural Law leaves no room whatsoever for Free Will) or whether there was any alternative that allowed man to have free will.

The Catholic Church was highly interested in this question, because if we *don't* have free will then we can hardly be blamed for sinning, can we? In the words of Jessica Rabbit: "I'm not bad; I'm just drawn that way." If I decide to worship Satan and commit any number of Diabolically horrible crimes against God, Man and Beast during dark rituals on Beltane Eve, I had no choice – I was raised that way, my parents abused me, I had the opportunity and it seemed like fun at the time, they drugged my wine, it was some butterfly flapping its wings in Brazil a million years ago that resulted in the *wrong sperm* reaching the egg first.

Descartes didn't leave a lot of room for free will. Rationalism and mathematical science wholeheartedly embraced a perfectly deterministic view of physics that persists to this very day. As I type these words and they are electronically recorded on my laptop computer, I have a very deep appreciation for just how deterministic the underlying physics for the entire process really is. Even quantum theory, supposedly a way out for "free willers" as it involves probabilities (as if Will is any more free if it involves dice) isn't really deterministic at all when expressed as a single equation of motion for "everything" – its stochastic features always arise from interaction of a quantum system with a *classical* system in an indeterminate state.

Berkeley thought he had the answer. Following pretty much the same reasoning process as Descartes, he decided that Descartes might actually have been mistaken about having a body or a brain at all. The Universe might well be naught but an illusion. It was the *act of perception itself* that could not be doubted. The Universe consisted of (or existed in, was sustained by, was mathematically supported within) *Mind*, not matter. Matter is a figment of imagination made real by our perceptions of it. Thus we really *are* free – even freer than permitted by any degree of physical law.

There were various problems with this "proof" as well, of course. Once again there is an eerie resonance between East and West. In Zen, one asks what is the sound of one hand clapping (and then presumably is smote by epiphany, if not a dog, and thereby Enlightened). In the West, the prototypical challenge question for Guru Berkeley is whether or not a tree falling in the forest when there is no one to hear (and no Mind present) makes any sound. According to Berkeley, sure – because *God* is mind, and is omnipresent!

We'll skip a few zillion lines of mindless argument over both viewpoints and cut to the chase. Along comes Hume. Hume wasn't the geometer that Descartes was, and didn't have any reason to care particularly over whether or not free will was or wasn't possible. He did spend his share of time meditating upon religion and God (who doesn't?) but his most significant contribution to Philosophy has to be his correction of Descartes efforts (and for that matter, those of Berkeley and all subsequent philosophers).

You see, Descartes cheated. He didn't list all of his axioms, *and* he presumed that axioms were self-evident truths when they were really just silly little fundamentally dubitable *assumptions*.

Hume had no problem with the first part of Descartes proof. Sure, sure, if we *think* we must *be*, if we doubt our own existence we demonstrate it. He didn't view this as an *axiom*, though, but as an *empirical observation*, akin to those made in science. And how, then, did science proceed to make physical law and knowledge out of observation?

By means of a process of *intuitively guided, mathematically structured induction*. We drop a penny a hundred times, and every time it falls according to an identical pattern. We therefore *guess* that if we drop it a hundred and first time, it will fall according to the *same* pattern. At some point, after some number of penny droppings, we conclude that there is a *reason* for the penny to fall, that this reason results in a *reproducible, mathematically describable behavior*, and that this reason *persists* and will act in the future as it has act in the past.

Sensible reasoning process? Sure, you bet! Try living without it! However, it is *fundamentally flawed* in the mathematical sense as it *cannot be proven*.

After all, *why* should the past and future be alike? Why should mathematical structure appear in reasons and causes? Most important of all, *why should things have causes?*

You will note, I hope, that all of these sentences, followed by question marks, are in fact not questions at all. They are *pseudoquestions*, because the only possible answers are your choice of a cosmic shrug or by making up *Axioms* in the truest sense – absolutely indefensible, fundamentally unreasonable, intrinsically unprovable statements upon which one intends to base a system of derived knowledge.

Descartes, in particular, had a *slew* of Axioms hidden up his sleeve when trying to argue for the logical necessity of all things. Let's examine a few.

- The Axiom of cause and effect.
- The Axiom of temporal persistence (a subtle one).
- An *ordinal relationship* between causes and effects in a causal chain.
- ...and many more.

The first is obvious and glaring. *Why* should Decartes' existence have a cause. Why should anything? Sure, we can "see" causality operating in everything we look at, but that begs the question worse than a dog begging for a



lamb-bone dinner, because one cannot *prove the axiom by observation*. What if it stopped being (apparently) true tomorrow? The only way we'll know if the Universe is causal by observation is by it *being* causal, everywhere and every way, for all the time of its existence. Causality cannot be proven by pure reason alone, only by observation, and even to *inductively* conclude that causality holds because of consistent observations of apparently causal events requires some sort of even more basic axiom, perhaps the “what you see is what you get” axiom. We might as well combine the two – Descartes did. For all that he claimed to be doubting everything including the evidence of his senses, he certainly didn't doubt that things require causes, which he could only have *induced* on the basis of a (presumed) lifetime of consistent sensory input.

Yes folks, you heard it right here (although perhaps not first). Causality (including the implicit assumption that there is *some* sort of object reality being described by it) is a number one A-prime *axiom*, not provable, not debateable. Maybe it is true and correct, maybe not. Like all axioms, belief is a matter of *personal faith* and not *pure reason*. I personally have no problem with this – it is certainly *my* prime axiom, provable or not, especially when conjoined with my (apparently) ongoing *empirical* observation of my own existence. Like it or not, we seem to be organized mentally and physically at all levels to believe in causality; it is bred into our very bones as an essential survival feature. We call individuals who behave as if causality is not the prime axiom “crazy”, for the brief time that they behave that way before we call the “dead”. Survival aside, causality looks like a decent a basic axiom so far as we can tell. In particular, it is a *consistent* axiom insofar as the physical laws we inductively extract from its general application to empirical phenomena appear to be consistent and causal.

Temporal continuity is a bit tougher, but it relates to one of the paradoxes of consciousness. We ride a temporal wave of the now, perpetually balanced between a “past” we know from a variety of layerings of sensation and memory into a “future” we know only by its continued unfolding into the now *plus the fact* that we can *predict* the future by a mix of presumed causality and temporal continuity and ordering. To see why both are necessary, consider the “I and my entire perceived Universe was created n seconds ago with all my memories of a false ‘past’ intact” problem. Descartes *could* have been created *in the non-persistent state of doubting* (as I could have been created in the non-persistent state of writing about him doubting) and even our *memories* of an apparent causal chain stretching back into the past could be false.

That act of creation might or might not be causal. Perhaps we suddenly “appear” as a momentary fragment of apparent order in the chaotic, causeless churn of an infinite, random sea, the output of some sort of cosmic version of a million monkeys typing for a million years. Apparent order exists as a subset of randomness, just an increasingly improbable one. I could conceivably “be” over some sufficiently short interval (whatever I experience as the now) without having been in the past of being in the future, and my belief otherwise is an axiom, another little bit of fundamentally unprovable faith<sup>4</sup>.

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<sup>4</sup>An interesting parenthetical note is that a deep study of physics teaches one to view time

Finally, consider that bit about a cause being “greater than” himself being required as a cause of himself. Piffle. Why not the quality-of-cause-ordinal-neutral (but temporally ordered) answer of Descartes’ Mom and Dad as being his “cause”? Why not the best answer of all, that cosmic shrug, an exasperated parent saying “because” to a pseudoquestion that just cannot be rigorously answered? Even physics, largely viewable as a rigorous descendent of Cartesian Rationalism (plus the good old causality and temporal continuity axioms), rejects ordering its causes by “greater than” or “less than”, especially when the ordering being described is a “metaphysical” ordering involving some sort of quality of cause.

I’ll bet Descartes’ Mom had to answer “because” all the time when he was growing up. I’ll bet he never got it...

Berkeley fares little better, although he also makes fewer bones about using pure reason. Religion has something of an advantage in that it *knows* that its axioms are (however often absurd and inconsistent) *matters of faith*. The Universe could be matter sustained by the mind of God, or God could be mind sustained by the Matter of the Universe, or neither, or both at the same time. The very words used to formulate the hypothesis that everything consists of “Mind” fairly bristle with axioms written and unwritten.

Obviously Berkeley favors the Fundamental Axioms of Religion outlines in the last section, so we can start by his having God (etc.) as an Axiom. Berkeley doesn’t want the Universe to be *too* causal, though, as that is trouble for Free Will. Also, miracles have to be able to happen, where a miracle is almost by definition an event outside of Natural Law whose cause is God. So God sustains Natural Law by His Will, but can set Natural Law aside for miracles, and further set His Will aside so that you can have Free Will and be responsible for your own actions. Otherwise we end up worse off than Descartes’ cat, thrown out the window into Hell itself in spite of having no real choice over your actions, which are all determined by the accidents of your birth, circumstances, biochemistry.

Ultimately it doesn’t matter as the hypothesis itself is obviously an axiom in and of its own right. Consistency is a hobgoblin almost universally ignored when considering axiom sets outside of pure natural science (which has a rather rigorous axiom set regarding degree of belief and which sorts of questions are “questions” and can reasonably be asked and what sorts are really “pseudoquestions”, things that tantalize us with their resemblance to questions but cannot ever be answered except by the fiat of an axiom.

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as just another dimension, and to view the time ordering of causality to work *symmetrically* in time. Not only is the notion of “greater cause” incorrect because of the ordinal ordering of quality of cause, it is incorrect because of the time ordering implicit to the cause preceding the effect. In physics, a better way of viewing the equations of motion for a “Universe” is as a *boundary value problem* where an essentially *static* solution is generated for all spacetime points as much by the conditions in the infinite *future* as by those in the infinite past. The axioms of physics (a.k.a. physical laws) have gotten changed so often over the last four hundred years that physicists, at least, are pretty well in touch with the mutability of axioms and the profound consequences of “minor” changes. Which might explain why *I’m* writing this document instead of some eighteenth century philosopher – back then they still thought Newton was *right*.

The analysis above is not intended to disrespect Descartes *or* Berkeley – there are lovely and appealing elements to both of their basic ideas. However, both of them *failed to list* the axioms from which they proceed, and did not attempt to establish agreement on a basic set of axioms before initiating their debates. This is no great shock. Who does? Hardly a philosopher before or since. Why? Because, in most cases, those axioms beg the question being debated with such great passion and fervor, and the *real* argument is over which axioms you are going to accept.

This argument *cannot be resolved by reason*. Or perhaps I should amend that – it never *is* resolved by reason, because the very reasoning process one *might* use to resolve much of the disagreement is itself based on axioms. The only set of axioms that are applied to the physical world and are laid out with anything *approaching* rigor or those utilized by the scientific community, by the natural philosophers, who have established an open, easily understood basis for according a proposition concerning observable reality a *degree of belief*. Curiously, science is intrinsically skeptical and *never* enshrines its empirically based conclusions with any sort of mantle of *logical necessity* (the *bete noire* of “rationalist” philosophy).

Alas, humans *yearn* for *certainty*, for *answers* to unanswerable pseudoquestions. The axioms of science, without extension, *cannot* provide them as they are *empirical* and there is literally no way to answer them empirically. A voice echoing from the heavens in tones of thunder commanding us to fall on our faces and worship and be afraid might make many fall on their faces, might make many afraid, but would *not* prove that the voice was that of God. As has been observed by the science fiction community (I believe by Arthur C. Clarke) “any sufficiently advanced technology is indistinguishable from magic”. History abounds with cases of individuals from “advanced” cultures being mistaken for gods. History abounds with cases of individuals claiming divine inspiration for their writings, interpreting ordinary phenomena as “miracles” or magic.

Even our own brains seem prewired to generate at best a filtered and selective view of the “reality” that we presume surrounds us, and of course there are *significant* limitations on the resolution and range of our intrinsic sensory apparatus. On drugs, in a variety of states of biochemical imbalance, in a variety of states of physical or genetic injury and resulting dysfunction, we can perceive that which is not there. To our naked eyes, planets are just tiny dots of light (if not indistinguishable blurs). A drop of water that can house a veritable myriad of microscopic creatures that will kill us dead if we drink it appears clear and clean. We can see at most a few tens of miles about us from a high spot – a tiny fraction of this world’s surface, which is a tiny, *tiny* fraction of the Universe’s volume. Our hearing cannot hear the deepest rumbles or the highest squeaks. Our senses of taste and smell and touch are limited in both range of sensitivity and above all, physical range (to the immediately contiguous surroundings). And on top of all of this, there are our imaginations, our ability to *dream*, to *obsess*, to *fantasize*, to be *hypnotized*.

*Is it any wonder* given that we are so imperfect and limited in our ability to perceive that which is real on the outside, so capable of intricate and detailed

auto-generated perceptual deception, that we (both collectively and individually) often generate *completely false impressions* of the external reality that surrounds us? Is it at all unusual that we generate any number of false axioms to accommodate mistaken impressions, false experiences, the *distorted* nature of the world as seen through our own personal sensory and cortical filters?

The axioms used by a society *themselves* form an important component of these filters. It is well known that language *shapes* thought even as it enables its expression (work by Lee, by Chompsky, by others). Events will inevitably be seen through the filter of those axioms. For example, in time of drought people naturally enough pray for rain. If rain fails to come, it is God's will and the people suffer. If it comes, it is a "miracle", and God's response to the prayer. The same events, seen through the axiomatic filters of science might conclude that the drought, and its ending, had to do with El Niño, solar activity cycles, currents in the Pacific, and so forth and was totally natural, inevitable, and utterly unaffected by prayers or the lack thereof both those affected by the drought.

This, by the way, is not intended to endorse either view. They could both be right. They could both be wrong. We *cannot tell who is right*. All we can do is decide which explanation we choose to believe, based on *our own* axioms.

The commonality of these axioms in social groups provides the basis of a shared debate, but also hides a tremendous amount of fundamental inconsistency, both within the base axioms used "on average" by the group and between specific instances or human understandings of these axioms by group members. One can think of dozens of contradictions in the religious group's axioms in the example above – why should an axiomatically "good" God wish to inflict a drought on anybody? Why should prayers alter physical law? How could such an alteration work?

At this point, you should now have a much clearer picture of what you know and don't know, and what raw, naked philosophical reasoning is going to *help* you know. If, however, one of your axioms is the Axiom of Open Mindedness (see the next section) you have at least a decent chance of overcoming your axiomatic conditioning by your normative social group enough to openly lay your axiom set, whatever it might be, out on a metaphorical table and sort through them all, deciding to keep this, add another thing, and perhaps discard a thing or two as well.

This sort of thoughtful winnowing is a *good* thing, and not just for the axioms of humans alone. Thomas Jefferson (one of my many intellectual heroes) has a lovely quote up on the wall of his very own monument in Washington, DC:

I am certainly not an advocate for frequent changes in laws and constitutions. But laws and institutions must go hand in hand with the progress of the human mind. As that becomes more developed, more enlightened, as new discoveries are made, new truths discovered and manners and opinions change, with the change of circumstances, institutions must advance also to keep pace with the times. We might as well require a man to wear still the coat which fitted him when

a boy as civilized society to remain ever under the regimen of their barbarous ancestors.

Just as institutions need to periodically examine their axiomatic clothing and see if they still “fit” them, so do humans. Axioms that fit humans well enough two thousand, or two hundred, years ago may no longer fit today. This is *especially true* when we realize that in fact all the “self-evident truths” of Jefferson, however lovely and inspiring, are all *axioms* and neither provably true or false, nor self-evident. They are really just assumptions, provisional truths, things we all *agree* to accept as truths because we *cannot* prove them.

Why should we examine our axioms if they cannot be proven? How can they every be *wrong* if they can never be *right*? Because there are other tests we can and do apply even to the axioms of axiomatic systems.

First of all, an axiom *can* be wrong, even obviously and horribly wrong, at least if the holder of the axiom isn’t a silly jackass. This is one place where philosophers and priests past and present have proven repeatedly to be silly jackasses, of course, so let’s be more explicit about what I mean by “wrong”, so there can be no mistake about it.

A single axiom, in isolation, cannot be right or wrong. The problem comes when Mr. Axiom is joined by Wife Axiom, their Cousin Axioms and all their little axiomlets. Then we have all sorts of possibilities for disaster. I can assert as an axiom that things fall up. Why not? It’s an arbitrary hypothesis, right? I then release something and it falls *down*. At this point I can:

1. Reject my axiom as *wrong* because it doesn’t seem to jibe with observed reality.
2. Reject my reality as *wrong* because it is obviously inconsistent with my axiom.
3. Add more axioms. Things fall up *really*, but this is a *white rabbit* and this is a *Sunday afternoon* and white rabbits can fall down on Sunday afternoons.

We call folks who choose 1) sane, sensible humans, likely well-adjusted and reasonably happy. They are kind to children and pets. We call folks who choose 2) to be dangeous whackos, probably whackos with a very short expected lifetime. We call folks who choose 3) to be Jackasses (with a capital J). We should be even more cruel, because these individuals are often even more dangerous than 2)’s (and often people do both 2) and 3) at the same time. 2)’s are mostly a danger to themselves, not others...

In addition to being consistent or inconsistent, complete or incomplete, axiom sets can be *ugly*. Folks who take route 3) often end up with hideously ugly axiom sets. You know these people. Everything you find in an argument of theirs that is wrong, well, they’ve got an explanation for it if they have to make up a new one for each separate item.

It is therefore well worthwhile to periodically revue your personal axioms on an individual basis, and try to winno out inconsistent ones. You may not end up

with the world's *greatest* set of axioms, but you might well end up with a pretty decent, mostly consistent set. Then we could all try sharing the set around to see if we can ever come up with a *really* consistent, uniform set of axioms for the global community. At that point *only*, we could think about sitting town to talk.

It is worth spending one last bit of energy presenting an example of the kinds of difficulties inconsistent axioms can lead one into in building a world-view. Most humans alive today pay at least lip service to a belief in the Axioms of causality and temporal continuity. After all, the very word *why itself* is predicated on the existence of *causes* that are the *answers*. Even those that believe in magic believe in magic *ritual* (a form of influence or cause) and not the dangerous, wild magic of pure, acausal randomness.

How is it, then, that many of those *same* individuals hold tightly to the Fundamental Axioms of Religion? Tune into the next section to see where – and why – such mixtures of inconsistent beliefs are common as dirt, and what immense amounts of human suffering they cause.

## 4 You Are Your Axioms: Robert Brown

**The Axiom of Open Mindedness:** All axiomatic systems with any degree of complexity are likely self-referential, incomplete and inconsistent (including this one, as this axiom just referred to itself). I will therefore provisionally reject all Axioms or sets of Axioms (but this one) that claim completeness, overtly refer to themselves, or are explicitly and obviously inconsistent.

The provisional part is because (like any good jigsaw puzzle or crossword puzzle) one sometimes has to try different pieces in different places because an inconsistency *could* occur because a lot of the *existing* pieces are wrong, but the piece being tried is right.

## 5 Shaving the Barber with the Razor of Ockham

## 6 Why Logical Positivism (being Philosophy) is Bullshit

I'm actually sort of fond of logical positivism (LP). In a way, a large portion of this entire work is devoted to a process that *sounds* like an enormous crowd chanting "L-P! L-P! All for none, and one for me!" Or worse, LP on steroids, LP with rabies, LP foaming at the mouth and writhing on the floor near your ankle.

Not exactly. You see, LP (taken at its face value and with its original and customary proposition) is an axiom that *cannot* be made consistent with *any* axiomatic system. For those who came in late or don't remember, LP appears

to be the ultimate extension of Hume's empiricism; it incorporates the empirical process itself into the logical process of determining if any assertion is correct, any question is meaningful. It asserts that:

A statement is meaningful if and only if it can be proved true or false, at least in principle, by means of the experience<sup>5</sup>

Because of the fairly obvious connections with the scientific process, LP is a favorite proposition in science classes (especially those on quantum theory, as LP is at the very root of certain interpretations of quantum mechanics and in fact was first stated at very much the same time that quantum theory was being invented and axiomatized). In science it is often expressed as the proposition that questions that cannot be empirically answered by means of a measurement or experiment *have no meaning*. Curiously, questions that are perfect reasonable ones in our classical experience such as "where is that baseball and how fast is it going" are by this criterion *meaningless* in quantum theory, where one isn't permitted to ask "where is that electron and how fast is it going".

The notion of *pseudoquestions* in the work above, things that might look like questions that can be answered, but really are just sounds, verbal constructs and their associated psychological perceptions that *resemble* questions grammatically, is clearly ripped off righteously from LP. There, however, the resemblance ends, particularly with respect to the question of meaning. Pseudoquestions are not *meaningless* – we all understand them perfectly well. We just cannot answer them by means of pure reason alone, and hence their answers will *always* be founded at some level on an unprovable belief, on an axiom.

Any attempt to establish empirical "proof" as a standard of ultimate knowledge both requires dozens of axioms to establish the basis for empirical proof itself and is inevitably self-referential and hence *by its own standard*, meaningless, as as I will now proceed to show.

### **Formal Proof that Logical Positivism is Wrong**

- LP is a proposition (or can with little effort be formulated as either a proposition or question with identical semantic content).
- LP itself cannot be proven by means of experience. It is an *axiom*, one of many possible, equally unprovable assertions of ways to determine truth, falsehood, or meaning<sup>6</sup>.
- LP requires still more axioms to establish the criteria of experiential proof as a prior condition, and *they* cannot be proven experientially or otherwise *either* without begging the question..

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<sup>5</sup>The Internet Encyclopedian of Philosophy, <http://www.utm.edu/research/iep/l/logpos.htm>

<sup>6</sup>I might just as easily formulate as an alternative axiom that the only way to determine whether or not a statement is meaningful is to see if I understand it, if it has any meaning to me, *whether or not* I can prove it by means of experience. Or that a statement only has meaning if it can be proven by a passage in the Bible. Or that *nothing* has meaning. Or that *everything*, all propositions, have meaning, if only as themselves. This is an axiom in the "unprovable assumption" sense because it is *not* the only possible criterion of meaning and indeed is a little bit of an odd one by the standards of the dictionary and the cognitive process itself.

- Therefore, LP is meaningless. I don't know what you mean when you say that meaning can only be ascertained by the possibility of an experiential proof as that statement has no possibility of an experiential proof.
- I understand what you mean anyway. So not only is LP meaningless, LP is *incorrect* as well.

This last conclusion is really quite obvious. LP is very lovely as long as you don't use it to define *meaning* in anything like the way it is used in English in everyday speech, but rather in a specialized sense, heavily dependent on axioms akin to those of not just science by quantum theory (*difficult* science). Everyone who is (still) reading this understands perfectly well what a proposition like "God exists" means, at least as well as they understand what the proposition "A star exists that is outside the event horizon of my own perception"<sup>7</sup>.

So pseudoquestion propositions like these aren't necessarily *meaningless* (although there may be pseudoquestions that are) – in both of these cases a cognitive process of imagination can create an understanding of the non-null information content of the propositions, in both cases I can *imagine*, with greater or lesser clarity and fullness, what it would be to empirically validate either one (subject to the usual vast army of unprovable axioms required to empirically validate *anything*), and in neither case can an experiment to validate them actually be done. Or at least not one that I am quite prepared to undertake yet, in the case of the existence of God...

By this point you, dear reader, should easily be able to understand all of the reasoning above and even figure it out for yourself. The sad truth of the matter is that *nothing* can be *proven* by means of experience, as Hume observed about *two hundred years* before LP was invented. This, of course, means that making a proof by experience the heart of your philosophy is a really, really bad idea, unless you're doing it as some sort of cruel practical joke on generations of students and Academic Deans, or a bored philosopher down the hall from some quantum theorists and want to have some fun stealing their *practical* concepts, stripping off all the unwritten axioms, and putting for the result as something new and different...(which is what I rather think is what happened).

As usual, Hume's result is perpetually and eternally *forgotten* by every school of philosophy that has erupted since his time. If it weren't forgotten, there would be no new schools of philosophy, of course – we could just accept the notion that we don't really "know" anything but that which we are perceiving *now* and *can't* really know anything but what we are perceiving *now* plus whatever we *choose* to infer on the basis of our personal axioms, and spend our philosophical energies constructively in looking for a set of axioms we can all agree upon, in living with them, in playing all sorts of games inferred and deduced from them, *without* the impossible burden of having to "prove" them right.

It's hard to blame poor Craig, poor Carnap, et. al. for LP, or to blame all the *rest* of the philosophers from the eighteenth century on who have tried

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<sup>7</sup>...and equally likely have a *very hard time* understanding why one cannot ask where is that electron and how fast is it going at the same time. As I believe Feynman once said, "Nobody understands quantum mechanics..."



to sweep Hume quietly under the rug. Philosophers have to eat too, after all. Still, it is the hope and intent of this work that once people come to really *understand* Hume and the Bullshit Nature of Rational Philosophy, they can start working on an *axiomatic* philosophy where we can replace the impossible notions of *logical necessity*, *proof*, and *completeness* with notions that really *are* derived from and akin to the axioms of science: *degree of belief*, *consistency* and *esthetic sensibility*.

Empirical proof, even the wishy-washy kind permitted by the “at least in principle” in the definition of LP above is ultimately founded in the *metaphysical* propositions known as the Axiom of Causality and all the rest. By connecting empiricism with knowledge, we conclude that we know Nothing.

Well hell, we already knew *that...*

On to more fun stuff about what we Don't Really Know.

## 7 Conclusions

If I assert (as an axiom) that only I exist, and that the entire Universe exists only as a figment of my overheated dream-state imagination, a Matrix-like existence simulated for an audience of One, it is well known in philosophy that the resulting axiomatic system is logically unassailable. How can you prove me wrong? First of all, you are a figment of me, so only *I* can prove me wrong, but you can't because the Axiom is framed in such a way that it isn't falsifiable.

This sort of mindless philosophy (solepsism) is the kind of thing that makes ordinary people think of philosophers as jackasses. It was the sort of thing that Johnson was once cheered for “disproving” (not really, of course, but who cares) in open debate. What is *really* wrong with it?

It is inconsistent. If I am the only thing that exists, and the Universe is My Oyster served on a figmental half-shell, then why cannot I be surrounded by beautiful houris who do nothing but peel me half-naked grapes (or peel me grapes, half-naked) at a whim? Why do I have to plod along typing this instead of just wishing the lines onto the page? You see, Solesism *alone* isn't a sufficient axiom. I need more. I need axioms to explain why I sometimes hurt, why my eyes are gradually failing as I age, why I *age*. I need axioms to explain why my perceptions of what is nearby are so limited, but my perceptions of what is going on thousands of miles away through the glass teat of a television tube are crystal clear, complex, different, and correspond perfectly to what I see when I visit Paris, the Parthenon, India.

If all of this is a figment of “my” imagination, then I've successfully managed to split myself into at least two incredibly separate beings – the artist that is constantly making up the story that I find myself embedded in, and the audience (the “me” that is typing this on what appears to be a laptop computer obviously created by my artistic half). Since I *never perceive* the artist directly, how do I know that it is “me”?

Indeed, consider the artist further. I run computer simulations of physical models as some of the research that I do in physics. In these simulations, I

“create” a virtual world of microscopic entities. Each is labelled with coordinates that specify the “state” of my little mini-world. There are rules whereby they operate. Computer games played by my children are very similar, at a higher order. They hold a virtual terrain superimposed on their internal coordinates, and have many “sprite”-based components and characters. Those characters, objects, devices all have independent programmed personalities, probabilistic behaviors, an underlying “physics” of their interaction with each other and their surroundings, and a “plot” that unfolds as the game proceeds. I am not my computer models, the computer games are not my kids.

As they increase in complexity, to the point where a *whole world* is perfectly simulated with *perfect consistency*, the artist itself complexifies, its non-audience “self” splitting up among all the virtual selves it creates. If all of these (you who are reading this, and your dogs and cats too) are really part of the artist, and the artist is equated with the audience, then Solepsism is isomorphic to *Pantheism*. We are all God, split into all that is. Somehow a Western Solepsist (driven to explain why he cannot bring a loved one back to life no matter how hard he tries) ends up an Eastern Hindu, accepting that Brahma split himself up to create the Universe (one fragment of which is him, all of which is still Brahma and eternal).

Ahh, but now you are wise and see the game I am playing with you. Axioms are neither true nor false, they just are. Logically there are many ways to convert one into another, adding an axiom here, altering an idea there, ultimately dividing by the zero that is their informational content and proving whatever you like. Axiom sets *can* be inconsistent. Axiom sets can be *consistent*, but they or the conclusions derived from them may not correspond to what we directly experience (and hence require special axioms to resolve the conflicts, which are then overcomplex and ugly).

So choose your axioms wisely my friend, examine them often for leaks.

Bail them out like a foundering float, burn the boat if it creaks.

Challenge the cherished old words, my friend, challenge the new ones too.

Avoid all beliefs that lead you to grief, and keep all the best ones for you.

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