Id – Digging into the God Idea

Dear: As I wrote in an earlier chapter, whenever you're considering adopting or rejecting any idea (e.g., about the existence or nonexistence of Santa Claus or some god), I hope you'll remember what you said to me when you were ten: "Show me the data!" I agree that sometimes you'll need to make decisions about ideas for which there is no direct sensory information. But in such cases, make your inferences from what you can detect indirectly (e.g., from instruments that extend the capabilities of your senses or from other relevant data).

For example, with your unaided eyes you can't see anything in "the atomic world", but every time you kick a tree and it hurts your foot, you can infer that there must be something there, in the atomic world, that you can't see – but that resists being kicked! Similarly, with your eyes you can see only a limited range of frequencies of electromagnetic waves, but from the capabilities of your radio and TV, you can safely infer that such waves do, in fact, exist (at non-visible frequencies). Therefore, "the God idea" needn't be dismissed just because God can't be detected directly with your five senses.

Nor should we dismiss the idea of the existence of God because he (or she or it) has never been detected with any instrument that extends our sensory capabilities, because we also adopt many ideas of things and processes that can't be detected even with instruments. For example, we have ideas about kindness, love, morality, justice, peace, and so on, and we're "hard pressed" to detect these with our senses or with any measuring instrument. In such cases, we make judgments about their existences based on indirect data.

For example and without going into obvious details, we infer that there's kindness or love between two people when we observe and analyze how they behave toward one another. Similarly, in ways that I'll describe in later chapters, we know how to recognize morality and justice (and their opposites). It then appears that the idea of God is similar to ideas about kindness, love, morality, justice, peace, and so on. Therefore, the obvious question is: what if any indirect, relevant data suggest that God exists – where by 'God' most people mean "the creator of the universe and all life."

Of course, "true believers" have no difficulty in identifying a huge amount of what they consider to be relevant data that God exists: a flower, a baby, a

sunset, the stars, and for that matter, everything in the universe. Depending on the believer's specific religion, it may or may not be claimed that the existence of AIDS, dog-doo, floods and famine, and so on, also support the idea of the existence of God – or support the idea of the existence of the Devil. In any case, the question is: given the data that support the idea of existence of these various things and processes, do these data also suggest the existence of "supernatural things" (such as God and the Devil)?

In an earlier chapter in this group of "**I**-chapters" (namely, in **Ib1**), I started to describe how to assess ideas (or filter ideas) as if one were panning for gold in a stream during spring flood – to try to find nuggets of understanding in a flood of speculations. In the flood of speculations to which we're all exposed, a few with some special characteristics are selected as hypotheses. Then, if these hypotheses have desired characteristics (to be described), they are put to experimental tests – to determine if they really are nuggets of understanding. If they are, they can be then be renamed 'principles' or 'axioms' or similar. In this chapter, I want to show you, step by step, how this "filtering process" works when applied to "the God idea".

In addition, I'll try to continue to stimulate you to develop a "healthy degree of skepticism", because as I hope you'll see, skepticism is needed in every step of the process: be skeptical about all observations, all data, all analyses, and especially, be skeptical about all ideas. In particular, Dear, I encourage you to be skeptical about all ideas in this book! I've been trying to convey to you some understanding that I've gained, but you should expect that I've made errors, including possible errors in my observations, in my analysis of the data, in my hypotheses (e.g., that all humans pursue their trio of survival goals), and in any of many deductions that I've made and will yet make from my hypotheses (e.g., concerning happiness, justice, prospects for peace and prosperity, and so on).

Yet, as with most activities, it's not advisable to take skepticism to an "unhealthy extreme". For example, in one of his books (but now I can't find the exact reference) Aristotle described how one of the earlier philosophers became so skeptical that he wandered the streets of Athens uttering only grunts and making signs, skeptical that anything useful could be stated. That's taking skepticism to an unhealthy extreme – especially since this extreme skeptic made the mistake of not being skeptical, also, of skepticism!

Stated differently, Dear, and as I've written before, there's substantial wisdom in the statement attributed to the Seven Sages of ancient Greece: "Nothing too much." Terrence (c. 190–159 BCE) modified that statement to: "Moderation in all things."

Anyway, with those introductory comments completed, I'll now start on the task of trying to show you how to assess and constrain ideas, to show you how some speculations can reach the stage of being hypotheses, and then, how some hypotheses can become principles. Because this "filtering of ideas" is a multi-step process, what I plan to do is break this chapter into numbered sections (and even some subsections). Within each section, I'll try to explain and give examples of the relevant step in the process, similar to the steps in baking a cake.

As a preview of the sections that follow, I'll try to summarize by rewriting what I tried to convey in an earlier chapter (**Ib1**):

> In modern use, "to hypothesize" means, in part, "to guess" or "to speculate" – but it also means much more. You can appreciate that there's more to hypothesizing than just speculating when you hear someone say (usually as an insult): "That's mere speculation!" To be called a hypothesis, a speculation must also: 1) succinctly summarize some data, 2) be consistent with fundamental principles already well established (e.g., the rules of logic), and 3) yield predictions that can be tested experimentally. Next, if a hypothesis is useful and if it passes its first few experimental tests, then it can be adopted as a "useful working-hypothesis". Eventually, when people become so "sick and tired" of trying to show that the hypothesis is wrong, it can reach the status of a "fundamental scientific principle" – always with the understanding that, if its predictions are found to be invalid, then it'll be thrown back into the river of ideas as "just another speculation".

Consistent with that outline and to prepare you for the subdivisions that follow, below are listed this chapter's section and subsection headings:

1. ***Any hypothesis must succinctly summarize some data***
   - *1a. Direct Evidence*
   - *1b. Indirect Evidence*
     1) Hearsay Indirect Evidence
        - (i) Stories
        - (ii) Miracles
        - (iii) Misunderstandings
     2) Circumstantial Indirect Evidence

2. ***Any hypothesis should conform to established scientific principles***

3. ***Any hypothesis providing no testable predictions should be rejected***

4. ***Any hypothesis whose predictions are false must be rejected***

5. ***Before any hypothesis is accepted as a "scientific principle", its predictions must pass so many experimental tests that competent, diligent, persevering people become "sick and tired" of testing it!***

And now, with the "introduction" out of the way, I'll use the above outline to dig into "the god idea", starting with the section:

1. Any hypothesis must succinctly summarize some data.

Dear, if you've "screwed your skepticism to the sticking point", I trust you agree that a "healthy degree of skepticism" would demand that, if an idea is to be more than "mere speculation", it must summarize some data. Further, as I'll explain shortly, any hypothesis should be a "succinct summary" of relevant data (viz., "**1**. clearly and briefly stated, terse, **2**. characterized by brevity and conciseness of speech"). Alternatively, it's common to hear that "all hypotheses should be shaved with Ockham's razor", for reasons that I'll try to explain.

As an example of the need for all hypotheses to summarize some data, Dear, suppose that someone proposes to you: "All invisible flying elephants are pink." Skeptic that you are, I trust you'd immediately suspect that this proposal was "mere speculation", because I expect you'd doubt that it summarizes even the tiniest shred of data. More generally, as Bertrand Russell wrote in his essay "On the Value of Skepticism" (in his characteristically cynical style!):

> I wish to propose a doctrine that may, I fear, appear wildly paradoxical and subversive. The doctrine in question is this: that it is undesirable to believe a proposition when there is no ground whatever for supposing it true. I must, of course, admit that if such an opinion became common, it would completely transform our social life and our political system; since both are at present faultless [It's a pity that Russell didn't know about adding a happy face, here!], this must weigh against it. I am also aware (what is more serious) that it would tend to diminish the incomes of clairvoyants, bookmakers, bishops, and others who live on the irrational hopes of those who have done nothing to deserve good fortune here or hereafter. In spite of these grave arguments, I maintain that a case can be made out of my paradox, and I shall try to set it forth.

If you want to read "the case" that Russell made for his "doctrine", Dear, I encourage you to read his essay. In fact, I encourage you to read any of Russell's essays (many of which you can find on the internet).

So, turning now to "the god idea", the question is: what data does it summarize? In turn, the question of the evidence for any god can be conveniently addressed in two phases: 1) What *direct* evidence supports the god idea, and 2) What *indirect* evidence supports the god idea? Below, I'll address these two questions separately, in two subsections.

1a. Direct Evidence

I trust you agree, Dear, that the vast majority of religious people have absolutely zero direct evidence to support the god idea. Obviously a huge number of people have concluded that there's overwhelming *indirect* evidence to support the god idea (as I'll show you in the next chapter, dealing with the "proofs" for the existence of God by Aristotle, Anselm, Thomas, and others, including Pope John Paul II), but as you'll see, not one of these "proofs" includes any direct evidence. By "direct evidence for existence", of course I mean as I wrote in an earlier chapter: existence can be determined only "operationally" or "phenomenologically".

Thus, Dear, I trust you agree that the vast majority of religious people have never touched, hugged, or kicked any god, nor have they seen, heard, tasted, or smelled any god, nor have they detected any god with any instruments (to detect light, electrical charge, radioactivity, or whatever). As I showed you in an earlier chapter, Pope John Paul wrote in the introduction to his "proof" for the existence of God (acknowledging the lack of direct evidence):

> In speaking of the existence of God we should underline that we are not speaking of proofs in the sense implied by the experimental sciences. Scientific proofs in the modern sense of the word are valid only for things perceptible to the senses, since it is only on such things that scientific instruments of investigation can be used. To desire a scientific proof of God would be equivalent to lowering God to the level of beings of our world, and we would therefore be mistaken methodologically in regard to what God is.

That is, Dear, not only does Pope John Paul II supply no direct evidence of the existence of his god, he suggests that no such evidence will ever be found and that seeking confirmatory data would be undesirable, for it would be "equivalent to lowering God to the level of beings of our world" and we would "be mistaken… in regard to what God is."

Actually, it's rather a pity that (according to this pope) God isn't one of the "beings of our world" (or, I assume, of our solar system, galaxy, or

universe!), because personally, if I had even the tiniest piece of solid direct evidence of the existence of any god, I'd be delighted to accept his (or her or its) existence. That is, Dear, I don't have the slightest objection to there being either a single god or a million gods – provided there's some evidence for his, her, or their existence!

In fact, it would be a great relief to dump responsibility for the mess humanity has made of this wonderful world and to transfer concern about the future of humanity onto the lap (or shoulders or whatever) of some giant father-figure in the sky. Such is the appeal of Robert Browning's "God's in his heaven – all's right with the world." But as with the fabled ostrich that buries its head in the sand, such an attitude protects a person, not from danger, but only from the sight of danger.

It reminds me of a poem that many times I've attributed to Robert Frost, but it was actually written by Alfred Housman (1859–1936). The poem is entitled *Terence, This is Stupid Stuff,* and the part that comes to mind (I had to memorize it for some English class, ~50 years ago!) is:

Oh, I have been to Ludlow Fair
And left my necktie God knows where,
And carried half-way home, or near,
Pints and quarts of Ludlow beer:
Then the world seemed none so bad,
And I myself a sterling lad;
And down in lovely muck I've lain,
Happy till I woke again.
Then I saw the morning sky;
Heigho, the tale was all a lie;
The world, it was the old world yet,
I was I, my things were wet,
And nothing now remained to do
But begin the game anew.

And just as after drinking "pints and quarts of Ludlow beer", when (or if!) all "true believers" of the god idea sober up and realize not only that there isn't the tiniest shred of direct evidence supporting the existence of any god but also that there's a huge body of data supporting the concept that "the tale was all a lie", I suspect that they'll have a hangover to remember – and eventually conclude: "I was I, my things were wet, and nothing now remained to do but begin the game anew."

1b. Indirect Evidence

According to Pope John Paul II (as quoted above), we'd be mistaken if we seek direct evidence for God's existence. Maybe I'd seem too cynical if I suggested that his conclusion seems suspiciously convenient, given the lack of any direct evidence! In any event, lacking direct evidence, the vast majority of humans (including this pope) make their decisions about their gods based on indirect evidence, either "hearsay" or "circumstantial". To address some of this indirect evidence, I'll start by listing, illustrating, and commenting on a number of categories of hearsay evidence.

1) Hearsay Indirect Evidence

(i) Stories

Of course there's a vast quantity of hearsay evidence about various gods in all the myths and "holy books" of all religions of the world. But, if we agree with Aristotle that "it is impossible for the same man at the same time to believe the same thing to be [A ≡ A] and not to be [A ≠ A.]", then we can immediately dismiss a large fraction of this hearsay evidence as fraudulent – because of the conflicting reports in the myths and holy books of the Hindus, Zoroastrians, Jews, Christians, Muslims, Mormons, etc., not to try to list all the other "only true religions" that exist and have existed in the world! Thus, surely no one in his or her right mind would suggest that it was improper to execute Socrates for not believing in the true gods of ancient Greece [☹]. And although it may be hard to imagine, Dear, some people actually rely on their "holy books" to "prove" that their "holy books" (and therefore their gods) are "true". This is similar to using Superman comic books to prove "whatever" about Superman. For example, of course it's "true" that Superman is weakened by kryptonite, for anyone – but anyone – who reads Superman comic books knows that…!

(ii) Miracles

Another category of hearsay evidence deals with a great number of "miracles" attributed to various gods. In particular, for the Jewish, Christian, Muslim, and Mormon god of the Bible, there are miracles such as God snapping his fingers (or whatever) to create the universe, part the Red Sea [which is actually a translation error: it should read "Reed Sea"], stop the Earth from spinning, and so on, plus (in the *New Testament)* a virgin giving birth to a child [which is actually another translation error: correctly translated, it describes "a young girl" giving birth to a child – which isn't so much of a miracle!], a man walking on water, and sundry medical miracles, including bringing dead people back to life, and then (in *The Book of*

Mormon), the list continues with a compass magically appearing, darkness for three days when Jesus died, and even the description of God as "a God of miracles".

In 1748, in his book *An Inquiry Concerning Human Understanding*, your rather-closely related relative, the amazingly perceptive Scottish philosopher David Hume, proposed the following simple but powerful test for the reliably of all hearsay evidence dealing with miracles:

> No testimony is sufficient to establish a miracle, unless the testimony be of such a kind that its falsehood would be more miraculous than the [miracle] which it endeavors to establish.

Please, Dear, think about Hume's assessment for a minute. Which would be the greater miracle: That God parted the Reed Sea (*Exodus 14,* 21) or that Moses (or whoever wrote *Exodus*) lied about it? That the Sun stood still at noon for "almost a whole day" (*Joshua 10,* 13) or that Joshua (or whoever wrote the story) lied about it? That Shadrach, Meshach, and Abed-nego (*Daniel 3,* 19-27) didn't burn in the furnace or that Daniel (or whoever wrote the story) lied about it? That Jonah lived inside a whale for three days (*Jonah 1*, 17) or that he (or whoever wrote the story) lied about it? That Jesus walked on water or that those who wrote the *New Testament* lied about it? That when Jesus died, the Sun (Moon, stars, all lights!) went out for three days (*3 Nephi 8,* 23) or that the author of the Book of Mormon was a liar? And so on. By applying Hume's criterion, then unless you consider that it would be even more miraculous for these people to have lied, then none of the above-listed hearsay evidence about miracles is reliable.

(iii) Misunderstandings

The third and final group of examples of "hearsay evidence" that I want to identify includes what might be politely called "misunderstandings". For example, there's a "famous" remark by the evangelical preacher Billy Graham. I don't have the exact quotation, but in response to hearing the philosopher Nietzsche's [pronounced "Neecha's] assessment that "God is dead", Graham responded something close to: "That can't be so; I talked to Him this morning."

Graham's response is cute, of course, but it stimulates the skeptic to ask: "Yah – but did He answer?" It reminds me of dialogue between Glendower and Hotspur in Shakespeare's *Henry IV:*

> *Glendower:* I can call spirits from the vasty deep!
> *Hotspur:* Why; so can I, or so can any man,
> But will they come when you call them?

In addition, no doubt there are many examples similar to my mother's (your great grandmother's) claim: many times she'd tell us (her children) about her "vision" in which she saw some "angel" (I've forgotten "his" name, but I think she said it was Gabriel) standing at the foot of her bed. Even as a child less than six-years old I was skeptical, particularly because she told us that she saw this vision when she was recovering from an operation on her ear – and under sedation for the pain with I-don't-know-what type of painkiller. Because it was now almost 100 years ago, however, quite likely the painkiller was some drug known to cause hallucinations (e.g., an opium-derived drug such as morphine, named after the Greek god Morpheus, the god of dreams). It therefore seemed even to me, even as an imaginative child, that my mother's vision was a drug-induced hallucination.

Similar hearsay evidence is available from many illegal drug users, especially users of those drugs known to cause mental imbalances similar to schizophrenia. [With *schizein* being the Greek word for "cut or cleave" (in turn from the Indo-European base *skei* for "cut or separate") and *phren* the Greek word for 'mind', then schizophrenia literally means "split mind".] According to my dictionary, schizophrenia is "a major mental disorder, typically characterized by a separation between the thought processes and the emotions, a distortion of reality accompanied by delusions and hallucinations…" If, Dear, you will read some of the "testimonies" that you can find on the internet about why people "converted" to Christianity, perhaps you, too, will be startled to read how many of them (some of whom are now clerics) admit going through a "rebellious youth", which included the use of illegal drugs.

And incidentally, Dear, if you should ever encounter someone who tells you of similar "visions", of course you should try to be kind – but also, please be careful for your own safety – while urging the person to seek psychiatric help. Further, Dear, and more importantly: please never, Never, NEVER, **NEVER** use any illegal drugs yourself: not because they're illegal (probably everyone breaks the law – and some laws deserve to be broken!), but because your mind is your most precious asset; please don't expose it to such dangerous risks.

2. Circumstantial Indirect Evidence

The other category of "indirect evidence" for the existence of any god is what in our courts would be called not "hearsay" (i.e., reported by someone else) but "circumstantial evidence". Such evidence ranges from a primitive person's deciding that a god must be responsible for causing thunder and lightning, to the current primitive pope's deciding that a god must be responsible for causing the Big Bang (or order in the universe, or beauty, or whatever). In all such cases, some data are obviously available (thunder and lightning do occur, and there is general agreement that the universe does exist!); therefore, the crux of the matter is not the reliability of the data but their interpretation. Here, Dear, is where the requirement enters that any hypothesis must "succinctly summarize some data" – and where Ockham's Razor is normally applied.

Thus, Dear, given the substantial quantity of reliable data that suggests that this universe exists, then when searching for an hypothesis that summarizes these data (and generalizes from them) to explain how the universe was created, skip over the postulate that it was created by God, because such a speculation only compounds the uncertainty: if we adopt such a hypothesis, we just double our uncertainty, because then we know neither how the universe was created nor how God was created! It's for this reason that some people not only repeat Nietzsche's assessment that "God is dead", but add: "He was killed by Ockham's razor." As the brilliant mathematician Laplace is reported to have said to Napoleon when he complained that in Laplace's book on Celestial Mechanics there wasn't a single reference to God: "Sire, I have no need of that hypothesis."

2. Any hypothesis should conform to established scientific principles.

Dear, it's not essential that any hypothesis conforms to established scientific principles (because any scientist worth her salt accepts that any "established" scientific principles may be wrong), but in general, it's a good idea if your new hypothesis doesn't conflict with established principles. Otherwise, not only will you need to overcome the many problems commonly experienced in trying to establish a new hypothesis but also you'll need to demonstrate how all the work done to establish some other scientific principle was wrong. That will at least double your task of establishing your new hypothesis – and possibly much more than double the task, depending on how well established is the principle with which your hypothesis conflicts.

I'll illustrate with one of my own experiences. After my Ph.D. thesis had been accepted and my degree was awarded, I (rather brazenly) sent a copy of a report derived from my thesis to the person I considered to be the world's expert in the field (namely, the Belgium physicist Ilya Prigogine, who a few years later was awarded the Nobel Prize for his accomplishments). Apparently my thesis was of tangential interest to him, but he passed it to a colleague was who visiting (on a sabbatical leave) from the U.S. and who (I later learned) was, in fact, the world's expert in the subject of my thesis. After reading my thesis, this fellow wrote me a short note, indicating that he'd like to meet with me (when he returned to the U.S.) to discuss my thesis, that he didn't want to try to communicate by letters because it was too slow, and that he felt we should meet soon after he returned and before I submitted my work for publication, because obviously I had made a major error – for my result violated the second "law" of thermodynamics.

Maybe I should insert, here, some famous words from the physicist Arthur Eddington:

> If someone points out to you that your pet theory of the universe is in disagreement with Maxwell's equations – then so much the worse for Maxwell's equations. If it is found to be contradicted by observation – well, these experimentalists do bungle things sometimes. But if your theory is found to be against the second law of thermodynamics, I can give you no hope; there is nothing for it but to collapse in deepest humiliation.

You bet I went into a tailspin! Talk about crash and burn! Prigogine's friend was right – and I hadn't even noticed that my result violated "the second law" (nor had my thesis advisor, but the subject of my thesis was rather tangential also to his interests). In the end, however, it had a happy outcome: with help from that wonderful fellow, I found where I had made an unjustified assumption, I redid the calculations, reached a new result (subsequently found to be correct by someone using an entirely different approach), and eventually I published the paper (with the kind, Jewish fellow as well as with my thesis advisor as co-authors).

But such details aside, I hope the moral of my story is clear: *Any Hypothesis Should Conform to Established Scientific Principles*. In fact, there's more. As Ian Barbour wrote in his book *Religion in the Age of Science*:[1]

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[1] See http://www.religion-online.org/showchapter.asp?title=2237&C=2065.

> A theory should be consistent with other accepted theories and, if possible, conceptually interconnected with them. Scientists also value the internal coherence and simplicity of a theory (simplicity of formal structure, smallest number of independent or *ad hoc* assumptions, aesthetic elegance, transformational symmetry, and so forth).

But I'll get to those additional features in later chapters; here, I want to apply the "moral of my story" (about my Ph.D. thesis) to "the God idea."

First, Dear, notice my reluctance to call "the God idea" a hypothesis, because (as I already tried to show you) it's supported by zero direct evidence, it relies on only unreliable hearsay evidence, and it's not even a succinct summary of circumstantial evidence. Yet, some people do propose "the God idea" as a hypothesis; so, consider if such a "hypothesis" conforms to some well established principles, such as the scientific principles at the foundation of logic that things exist and are distinct (i.e., $A \equiv A$ and $A \not\equiv \neg A$), principles whose predictions have been experimentally validated a huge number of times by coyotes, monkeys, babies, and even many adults!

One consequence of $A \not\equiv \neg A$ (i.e., that a thing can't be what it's not) is that all advocated statements must be consistent. For example, the only solution to saying that the King of the United States is not equal to or taller than six feet and that he's not shorter than six feet is to conclude that there is no King of the U.S. (i.e., the set, consisting of all kings of the U.S., is empty). Similarly, Dear, if there are conflicting or contradictory statements about any god or gods, then to be consistent with $A \equiv A$ and $A \not\equiv \neg A$, the choices are limited: (i) one of the statement is wrong, (ii) more than one of the statements are wrong, or (iii) the set is empty (i.e., there are no gods).

By applying this principle to the different religions of the world, a number of conclusions are inescapable (if we agree with coyotes, monkeys, and babies that $A \equiv A$ and $A \not\equiv \neg A$). For example:

- Given that most primitive people "knew" that there were a huge number of gods and given that most people now "know" there's only one god, then at any given time, most people can be wrong.

- Given that approximately a billion Hindus (and ten million or so Mormons) "know" that there are millions of gods and given that more than a billion Christians, Jews, and Muslims "know" that there's only one god, then obviously at least a billion people are now wrong.

- Given that all Christians and Mormons "know" that Jesus was the son of God and that all Jews and Muslims "know" that he wasn't, then a lot of people "know" what "ain't so".

- Given that billions of people are convinced that there's life after death and given that at least a billion other people are convinced not only that there isn't but also that even the words don't make sense, then the people in at least one of these groups have ill-founded convictions.

- Given that all religious people believe in their gods and given that the rest of us don't, then the people in at least one of these groups have ill-founded beliefs.

Well, Dear, obviously the above list can be continued, but now, I want to apply the same principle to the specific "holy books" in which you have been indoctrinated ever since you were a baby. In this case, the applications of the principles of logic (or science) that things exist and are distinct (i.e., $A \equiv A$ and $A \not\equiv \neg A$) leads to the requirement that if any "holy book" makes conflicting (self-contradictory) statements about any thing or process, then whatever's being advocated should be rejected as "illogical" (i.e., impossible). I'll list a few illustrations:

- As I'll show you in detail in later chapters (in **Ix**), there are two genesis myths in the Old Testament (of the Bible). According to the first myth, God was busy with the following activities (during the indicated days): making light (first day), separating the waters (second day), making plants (third day), creating the Sun, Moon, etc. (fourth day), making fish and birds (fifth day), making animals, including both male and female humans (sixth day), taking a break (seventh day). In contrast, according to the second genesis myth in the Old Testament, the order of God's activities were as follows: make a male human (Adam), plant a garden with trees, make animals and birds, have Adam name all the animals and birds, and then make a woman (Eve). Now, Dear, according to $A \equiv A$ and $A \not\equiv \neg A$, either one or both of those stories must be wrong. There's no way around it – which should certainly shake one's confidence in the reliability of the Bible, when after only three pages, it contradicts itself!

- As I'll also show you in detail in later chapters (e.g., in **Qx**), the Bible gives self-contradictory accounts about how many gods there are. It may be thought that this contradiction was resolved about halfway through the Bible (at *Psalms 82,* 1-7), when "the one true God" (Yahweh or Jehovah or "just plain God") reportedly sentenced all the other gods to death, but this leads to another self contradiction: by definition, all gods are immortal (i.e., they can't die). Thus, Dear, so long as we agree with coyotes, monkeys, and babies that $A \equiv A$ and $A \not\equiv \neg A$, then the Bible must be wrong in at least one of its accounts, and we must choose one of the following options: there are many gods, there is one god, or there are no gods.

- Turning now to the Bible's New Testament, consider the self-contradictory statements related to the death of Jesus. According to Webster's dictionary, 'death' means "permanent ending of all life in a person, animal, or plant." According to the New Testament, Jesus didn't die – which of course would be consistent with his being "God incarnate", because gods (being immortal) are notorious for not dying! But then in *1 Corinthians 15,* 3, we find: "First and foremost, I [Paul] handed on to you the fact which had been imparted to me: that Christ died for our sins…" But, Dear, according even to the rest of the sentence by Paul, Jesus didn't die: "he was raised to life on the third day". Therefore, for those of us who still have confidence in reality, in particular that $A \equiv A$ and $A \not\equiv \neg A$, perhaps our impatience is understandable: "Hey, wait a minute: is the guy dead or not?!" Thus, Dear, if it's assumed that Jesus was once alive, the only logical options are: 1) Jesus died (no doubt for some reason) and of course stayed dead (for otherwise he didn't die), or 2) Jesus didn't die – and reports about his death (and about the reasons for his death) are highly exaggerated!

As for showing you how "highly exaggerated" are the reasons for the death of Jesus, I want to leave that for later chapters dealing with morality. For now, let me say just that the entire "supernatural superstructures" of all Christian sects (and of Mormonism) are built upon the extremely shaky foundation that something is what it's not (i.e., conflicting with the principle that $A \not\equiv \neg A$). As an example, if you'll read The Book of Mormon, you'll find that the particular version of $A \equiv \neg A$ (that states Jesus died for our sins but in fact didn't die) is repeated so many times that it may also "drive YOU up the wall"!

Now, Dear, as when you brush your hair, I hope you won't get "tangled up" with any of the three contradictions that I illustrated above. I'm sure that you can find literally thousands of clerics who will be more than willing to spend hours with you, showing you that not a single hair in their "holy book" is out of place. But instead of getting involved with "splitting theological hairs", Dear, I recommend you start with a "broad-brush" view. In particular, I recommend that you go to http://SkepticsAnnotatedBible.com and click on the "icon" labeled "Contradictions". There you'll find "clickable" references to not just the three contradictions that I illustrated above but to no fewer than 300 contradictions in the "flawless Holy Bible"!

Dear, please think about that for a minute. If a scientist writes a paper with even a single contradiction, then someone's gonna yell: "Hey, wait a minute: even monkeys agree that $A \equiv A$ and $A \not\equiv \neg A$!" That is, the author's work would be trashed. Correspondingly, Dear, I'd have you consider: during the past 2,000-or-so years, what sort of monkeys have been reading

and "believing" a book that contains at least 300 claims that A ≡ ¬A? Why would anyone in his or her right mind not trash such a book?!

Yet, Dear, application of the constraint *Any Hypothesis Should Conform to Established Scientific Principles* is not restricted to just the scientific principles that are at the foundation of logic (viz., that things exist and are distinct). Whenever a hypothesis conflicts with an established scientific principle, then, Dear, your skepticism should cause you to question the reliability of what is being proposed. For example:

- When the flood myth in the Bible states that the flood reached to the top of even the highest mountain, then those of us who have come to accept the scientific principle that mass is conserved (except in those special circumstances when mass is converted into energy) are perhaps understandably skeptical, unless someone explains where all the water "magically" came from: it couldn't have come from the oceans (as precipitation otherwise does), because then the sea level would correspondingly fall, making it impossible for the flood to climb to the top of the mountains!

- When the God of the Bible reportedly separated the Red Sea (or Reed Sea) and Jesus reportedly walked on water, those of us who have some familiarity with fluids (that they're unable to withstand shear stress) are perhaps understandably skeptical.

- When the Bible states that the Sun stopped for a day, those of us who no longer accept the biblical idea that the Sun moves about the Earth, are skeptical about the possibility that, if God were to stop the Earth from spinning, then the only consequence of note would be that the Sun appeared to stop. That is, Dear, if sufficient torque were applied to stop a rigid body from rotating, then maybe the report would be similarly terse – especially since writers not hanging on to something would go flying off at speeds of typically 1,000 mph! But if sufficient torque were applied to stop the Earth from spinning, then even "well-grounded" writers could write about more consequences than the Sun just stopping, because the Earth's definitely not a rigid body. Thus, with a surface mostly covered with water and with only a crustal shell "floating" on molten rock, then there would be not only earthquakes of unimaginable magnitude, duration, and extent, but with the Atlantic Ocean continuing to move at approximately 1,000 mph eastward (in the direction of the previously spinning Earth), the resulting tidal wave would sweep across all of Israel – not to mention all of Europe and Asia![2]

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[2] Dear: To get a rough idea of the height of the resulting wave, assume that all its original kinetic energy per unit mass of water, $(1/2)\ v^2$ (in which v is the average speed of the water associated with the Earth's spin) is converted into the potential energy per unit mass of water, gh, in which h is the height of the wave and g is the acceleration of gravity (~32 ft/s^2 or ~9.8 m/s^2). Therefore, with the speed originally about 1,000 miles per hour or about 1.5 x 10^3 ft/s, then $h = v^2/2g = (2.25 \times 10^6)/(2 \times 32) \sim 35{,}000$ ft, i.e., approximately the height of Mount Everest! And notice, Dear, that this wave wouldn't come as a "nice gentle flood" (lasting either 7 or 40 days): it would come crashing across the continents in a wall of water thousands of feet high!

- A skeptic has similar trouble with the story in the Book of Mormon about all lights going out for three days when Jesus died – or at least about the possibility anyone lived to tell the story. Thus, Dear, as you well know, the temperature usually cools after the Sun sets. Of course, how much the temperature falls depends on the wind (warmer air may blow in) and on how much moisture is in the air (the more moisture, the less energy is radiated to space, because water is a great "greenhouse gas", trapping the energy in the atmosphere). But for roughly average conditions, say in the U.S., it can be expected that on a spring night (with roughly 12 hours of darkness), the temperature falls from the afternoon high to the morning low by about 30°F at inland sites and by about 15°F at sites influenced by the oceans.

  Now, in three days without the Sun (i.e., six, 12 hour periods), applications of well established principles of radiation would suggest that the temperature would fall approximately 6 times more, i.e., by ~6 x 30°F = 180°F at inland sites and by ~90°F at coastal sites. Therefore, Dear, if Jesus died on a typical spring day in the U.S., with afternoon temperatures somewhere around 60°F, then after 3 days without the Sun, temperature at coastal sites would be about –30°F and, at inland sites, about –120°F. And, Dear, don't think the people could have saved the crops, the animals, and themselves from freezing by building fires, because The Book of Mormon states (*3 Nephi 8,* 22): "And there was not any light seen, neither fire, nor glimmer, neither the sun, nor the moon, nor the stars, for so great were the mists of darkness which were upon the face of the land" – and who am I to question the "truth" of the Book of Mormon. But if its author (who, as I'll show you in "the excursion" **Qx** was almost certainly Sidney Rigdon) had the faintest concern about basic scientific principles when he concocted The Book of Mormon, it's a pity that he didn't at least mention how people managed to stop from freezing to death – let alone save the animals and vegetation so the people wouldn't later starve to death.

More generally, Dear, with all the stories in all "holy books", there's the same fundamental problem with all "miracles". By definition, any miracle (from walking on water to stopping the Earth from rotating, and from parting the Reed Sea to turning the Sun off for three days) is a violation of some well-established scientific principle. Therefore, to accept any "hypothesis" that any miracle has occurred, it's necessary to simultaneously reject some well-established principle of science. Stated differently, a "god of miracles" would be a god who violates all laws – and I, for one, don't like rulers who don't obey the laws!

Of course, as I already stated, it may be that a specific scientific principle is wrong; none is known with certainty. For example, mass-energy may yet fail to be conserved. Also, a paradox may yet occur. But anyone who advocates or accepts a hypothesis that violates a well established scientific principle (i.e., advocates or accepts a miracle) is just asking for trouble:

then, not only must the advocate defend his own hypothesis, he must demonstrate that all results used to develop the violated scientific principle are wrong. That can be a major undertaking, especially when skeptics abound – who have never seen data that support claims of any miracle.

3. Any hypothesis providing no testable predictions should be rejected.

Already, I've suggested some of the filtering that should be applied before a speculation can be accepted as an hypothesis, namely, 1) the hypothesis must succinctly summarize some data and 2) the hypothesis should be consistent with hypotheses that seem to be working well (i.e., with basic scientific principles, such as those at the base of logic). Now, a third, simple, powerful, and unfailing test is that they should be capable of yielding predictions that can be tested – in fact, if ever hypotheses are to advance beyond "mere speculations", they must provide such predictions.

I trust you agree, Dear, that a hypothesis wouldn't be useful if it had no predictive capability. In his 1935 book *Philosophy and Logical Syntax,* Rudolf Carnap gave what for me has been a memorable example of such "assertions", which he described as providing no "perceptive propositions" (i.e., no propositions, or predictions, that can be perceived):

> If a scientist should venture to make an assertion from which no perceptive propositions could be deduced, what should we say to that? Suppose, for example, that he asserts that there is not only a gravitational field having an effect on bodies according to the known laws of gravitation, but also a *levitational field.*
>
> On being asked what sort of effect this levitational field has, according to his theory, he answers that there is no observable effect. In other words, he confesses his inability to give rules according to which we could deduce perceptive propositions from his assertion. In that case our reply is: your assertion is no assertion at all; it does not speak about anything; it is nothing but a series of empty words; it is simply without sense.
>
> It is true that he may have images and even feelings connected with his words. This fact may be of psychological importance; logically, it is irrelevant. What gives theoretical meaning to a proposition is *not* the attendant images and thoughts, but the possibility of deducing from it perceptive propositions…

Further, Dear, just as useless as an assertion that has no predictive capabilities (or permits no "perceptive propositions", such as the assertion of a "levitational field") is a "hypothesis" whose predictions can't be tested; i.e., whose predictions can't be falsified.

Now, Dear, you might wonder: who in her right mind would propose a hypothesis that yielded no predictions that could be tested? Well, in response: how about the vast majority of humans now living and who have ever lived?! For example, consider the hypothesis (or better, "speculation") that some god or other created this universe. What prediction is available from such a speculation? That someday, somewhere in space, someone will encounter such a god? A prediction that can be tested "someday" or "somewhere" is not a practical test: how can it ever be falsified? Whenever and wherever such a god is sought, the defenders of such a speculation would say: "Oh, well, we knew you shouldn't have looked there; you need to look somewhere else, at some other time." Even a coyote wouldn't be foolish enough to seek something that's so elusive!

Or is the proposed test of some "god hypothesis" that, "You'll find out when you're dead"? To test this prediction, we needn't seek out this god: on the "Day of Judgment", he'll find us! There is, however, a slight complication with this test: to apply it, you need to be dead. I'm sorry, Dear, but such a test doesn't satisfy what sane people would call a "practical" test! If anyone but clerics proposed (as an hypothesis!) a speculation whose predictions could be tested only by dead people, then those assembled would burst into laughter! Thus, Dear, when theists offer you no method to test the validity of their "God hypothesis" (other than the nonsense: "You'll find out when you're dead!"), then you may want to quote Carnap: "Your assertion is no assertion at all; it does not speak about anything; it is nothing but a series of empty words; it is simply without sense."

For "down-to-earth" practical people, the need for testing hypotheses (while people are still alive!) seems trivially obvious: no one could have learned how to start fire by rubbing two sticks together, or construct a wheel with an axle, or build a sailing ship, etc., without knowing (or quickly learning!) that hypotheses must be tested. But for the dreamers of the world (and all mystics are dreamers), the need for testing their hypotheses / speculations never seems to dawn on them. They dream that their pharaoh is god, that Zeus resides on Mount Olympus, that Yahweh resides on Mount Sinai, that humans have an immortal soul, that Jesus is the Son of God, that the angel Gabriel delivered messages from Allah to Muhammad, that an angel showed Joseph Smith where to find the Mormon's "Golden Bible", etc., and such people apparently never seriously ask themselves the obvious question: how can I test this idea?

I added the adverb 'seriously' (in "seriously ask themselves"), Dear, because testing hypotheses is normally a nontrivial undertaking. For example, many people "test" the "God hypothesis" with a statement such as: "If there is a God, then [whatever]." Alternatively, they might start from: "If there isn't a God, then [whatever]." The flaw in this type of "test" is that it's impossible to control the conditions of the experiment: if there is a God, how does one "turn him off" to apply the test? Or, on the other hand, if there isn't a God, how does one "turn him on" to test the converse?

For example, Dear, suppose you state: "If there is a God, then the Sun will come up tomorrow (or I will get an 'A' on my test, or whatever)." Okay, the Sun did come up (and you did get an 'A' on your test); now, Dear, show me what happens when there's no God! Thus, Dear, whenever you test a hypothesis, then as an absolute minimum, make sure that the conditions of your test are actually applied!

Now, Dear, you may think that the examples of the previous paragraph were "just too trivial", adding "no one could be that stupid!" I wish you were right. To illustrate otherwise, consider an example from the New Testament. After the death of Jesus (assuming that he ever lived!), the apostles (a Greek word meaning 'messengers') were trying to decide who should replace the position vacated by Judas. I'll quote the rest of the story (*Acts 1*, 23–26), to which I've added the italics and the notes in brackets.

> Two names were put forward: Joseph… and Matthias. Then [those present] prayed and said, "Thou, Lord, who knowest the hearts of all men, declare which of these two thou hast chosen to receive this office of ministry and apostleship which Judas abandoned to go where he belonged." *They drew lots* [!], and the lot fell on Matthias, who was then assigned a place among the twelve apostles.

So, Dear, according to the Bible, Jesus communicates to people through drawing lots – and I guess through throwing dice, playing cards, playing the lottery, gambling on horses… I can imagine the modern gambler saying: "Please, Lord, who knowest the hearts of all men, declare which of these two thou hast chosen to… be the next heavyweight champion of the world, cause ya know, I'm down to my last $100 for this bet."

As a similar example, Dear, consider the recent decision by the leaders of the Mormon Church to finally permit Blacks to hold the priesthood, after treating Blacks as "subhuman" for the entire history of the Church. Blacks

were so treated, because they have a (wonderful!) pigment in their skin that, for tens of thousands of years, has protected them from too much ultraviolet light, and because "the prophet" (better, "the profit"!) Joe Smith (and his "ghost writer" Sidney Rigdon) told the people that Black people were cursed by God, with "the mark of Cain".

What moved the Mormon "leaders" to reconsider the Church's racist policy was pressure from the Civil Rights Movement of the 1960s; in particular, a lawsuit that could have led to the Church losing its tax-exempt status. As a result, the Mormon leaders reportedly prayed and prayed for guidance from "the Lord Jesus Christ" – because abandoning the (hideous) concept that black people were cursed by God was a nontrivial change in their doctrines. Finally, these church leaders reported that they decided to put the question directly to "the Lord". They asked Him: "Do you have any objection [to our allowing Blacks to hold the priesthood]?" They all reported that they heard no objections; therefore, they changed the policy.[3]

Imagine if other humans reached major decisions in a manner similar to that used by the ancient Christians and "modern" leaders of the Mormon Church: "Lord, please indicate what I should do. If this coin comes up heads, then I'll… and if tails, then I'll…" "Lord, show me if you have any objections if I…" "Lord, do you have any objections if we…?" Shucks, even I'll play that game: "Lord, do you have any objections if I proceed through the rest of my life with the assumption that you're nothing but the figment of primitive people's imagination?" Well I'll be darned: I didn't hear a single objection! If that's a sufficient test of a hypothesis for the Christian apostles and for the leaders of the Mormon Church, then…

But, Dear, I assume you see what's wrong with such "experimental tests": the outcome of any and all of them would be exactly the same if there were no God! Thus, the same "lot" would have been drawn by the apostles, the same "objections" would have been "heard" by the Mormon leaders, the same person would be the next heavyweight champion of the world, and so on. So again, Dear, when you plan experimental tests of any hypothesis, make sure that you can apply appropriate conditions for your test!

And I should add that it's not just "modern" religions that have engaged in such silliness, modifying tenets of their religions to meet changing

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[3] Yes, Dear, that really happened. No, I'm not making it up. Look up the details for yourself!

conditions and political realities. An example from further back in history is the following story described by the philosopher David Hume in his 1757 essay entitled "The Natural History of Religion" [to which I've added some notes in brackets, such as these]:

> There occurs, I own [i.e., "I admit"] a difficulty in the [ancient] Egyptian system of theology [which included the worship of cats as "gods"]; as indeed, few systems of that kind are entirely free from difficulties. It is evident, from their method of propagation, that a couple of cats, in fifty years, would stock a whole kingdom; and if that religious veneration were still paid them, it would, in twenty more [years], not only be easier in Egypt to find a god [i.e., a cat] than a man… but the gods must at last entirely starve the men, and leave themselves neither priests nor votaries [i.e., devotees] remaining. It is probable, therefore, that this wise nation, the most celebrated in antiquity for prudence and sound policy, foreseeing such dangerous consequences, reserved all their worship for the full-grown divinities [i.e., full-grown cats], and used the freedom to drown the holy spawn of little sucking gods [i.e., kittens!], without any scruple or remorse. And thus the practice of warping the tenets of [any!] religion [e.g., Mormonism], in order to serve temporal interests [e.g., pressures from the Civil Rights Movement or from too many cats] is not, by any means, to be regarded as an invention of… later ages.

4. Any hypothesis whose predictions are false must be rejected.

Beyond the above (and, I trust) obvious requirement for any hypotheses (that they have predictive capabilities that can be tested), we should also require that the predictions aren't wrong! Now, Dear, you may think that this requirement is too trivial to consider, but actually, some care is needed. First, if the predictions of a hypothesis are found to be false, there can be many causes. For example, the data from the experimental test may be wrong because of faulty instruments, or the analysis of the data may contain errors. Also, the experimental test, itself, may be flawed; for example, there could be a mistake in the predictions. Thus, if someone made a prediction from $E = mc^3$ instead of $E = mc^2$, the prediction would be wrong but not Einstein's theory of special relativity.

Yet, by far most common cause of false predictions is flawed hypotheses. Therefore, Dear, whenever you encounter a hypothesis whose predictions are demonstrated to be false, then unless there are very special reasons for continuing to "nurse" the hypothesis (for example, it may be one of your own "pet hypotheses" or it might be the only hypothesis that comes "anywhere close" to summarizing a substantial quantity of reliable data), then the best thing to do is dump the hypothesis – back into the flood of other speculations that lead to no understanding.

From personal experience, I know that dumping "pet hypotheses" can be painful. But there's substantial wisdom in the common phrase:

No pain, no gain.

As an example of a hypothesis whose predictions have been found to be false, consider the hypothesis that, as the alleged Son of God, Jesus knew all and never lied. Now, Jesus reportedly said (*Matthew 24,* 34):

> I tell you this: the present generation will live to see it all [i.e., the end of the world]. Heaven and earth will pass away…

Echoing Jesus, "Saint" Paul [who, as I'll be showing you in later chapters, is actually the real founder of Christianity (and Mormonism)], reportedly wrote (*1 Corinthians 7,* 29–31):

> What I mean, my friends, is this. The time we live in will not last long… For the whole frame of this world is passing away…

Well, Dear, unless I missed something, such predictions were false. Therefore, I'm extremely skeptical about the suggestion that Jesus was the Son of God, leading me to suspect that all suggestions by Jesus were not conveyed from some ruler of the universe. Further, if to this false prediction I add all the other evidence that I've already reviewed and will review later, then I conclude that this whole "God hypothesis" is just an idea created by primitive minds and perpetrated by those who profit from it.

Of course, the above is not the only false prediction (or "prophecy") in the Bible. Thus, Dear, if you'll again visit http://SkepticsAnnotatedBible.com, you'll find explicit and detailed references to 71 such false prophesies contained in the Bible. These range from "God's" prophecy that, on the day Adam eats the apple, he'll die (whereas it's reported in the Bible that, after he ate the apple, Adam lived for another 930 years!) to Isaiah's prophecy that Damascus will be completely destroyed and no longer inhabited (whereas, it wasn't destroyed and, in fact, it's still inhabited), and from "God's" prophecy that Abraham's descendants will return after four generations (whereas it's later reported in the Bible that the return wasn't until seven generations) to Ezekiel's prophecy that the Ammonites will not be remembered any longer – which is a prediction that obviously can never be fulfilled, so long as it's repeated and contains the word "Ammonites"!

But again, Dear, I hope you don't get "hung up" on any one of these prophecies. Instead, Dear, please stop for a minute to think about the contrast between these (typically obscure) "prophecies" in the Bible and the predictions in scientific reports. Thus, first, if a scientific paper submitted for publication contains an obscure prediction, it's normally returned to the author for "clarification". And then, if a scientific report contains a single prediction that's shown to be false, then the responses from other scientists will range from some of them just slowly wagging their heads to others jerking their heads back and saying, "Huh?", and from some readers bursting into laughter to others letting their heads droop while muttering, "Too bad." That is, in one way or another, a single false prediction in a scientific report leads to its rejection. And yet, in contrast, for more than 2,000 years "true believers" have treated the Bible as "God's infallible word" even though it contains at least 70 obscure and/or false predictions!

Similarly, Dear, the Mormon "profit" Joseph Smith made at least seven "prophesies", all of which have been found to be false (as you can find on the internet, e.g., at "Calvary Homepage Library" or just search for "Mormon +prophesies"). An example is the following "prophecy" from the "profit" Joseph Smith:

> I would say the end [of the world] would not come in 1844, 5 or 6, or in forty years. There are those of the rising generation who shall not taste death till Christ comes…

Of course, Smith's seven prophecies found to be false don't include all the "prophesies" in the Book of Mormon, wherein a prophecy is included in one chapter, and then "lo and behold", the "prophecy" is fulfilled in a later chapter! But surely the skeptic in anyone whose brain is still functioning says, "Gimme a break!"

Similar techniques were apparently used in constructing the Old Testament (by the authors who put it together), as well as prophecies that are so general that they'll be correct no matter the outcome of testing, e.g., that Jesus will return (when?!), there'll be a new Jerusalem (when, where?!), and so on. Thus, when even the apostles asked the resurrected Jesus: "Lord, is this the time when you are to establish once again the sovereignty of Israel?" his answer was a classic cop-out: "It is not for you to know about dates or times, which the Father has set within his own control."

Put differently, if a *Handbook for Con Artists* were ever written, surely a prominent chapter will be entitled something similar to: "How to Make Prophecies without Saying Anything". Unfortunately for him, though, poor old "profit" Joe Smith apparently must have just skimmed this chapter – as apparently did also his protégé, Brigham Young, who prophesized that when we got there, we would find that the Moon was already populated with men.

In contrast, from Einstein's hypothesis that the laws of physics should be the same for observers moving at different speeds, then when a body of "rest mass" m_o moves at speed v, then its mass, m, should increase according to

$$m = m_0 \Big/ \sqrt{1 - \frac{v^2}{c^2}} \ ,$$

which has been found to be accurate to within about 10 decimal places (and then limited only by the accuracy to which the speed of light, c, is known). From this same hypothesis, it further follows that it should be possible to convert mass to energy, such as in a nuclear bomb (with the energy release quantitatively predicted from evaluating the differences in mass, according to $E = mc^2$). The confirmations of these predictions permit us to conclude, NOT that Einstein's hypothesis is true, but that we can justifiably have more confidence that it's approaching truth.

5. Before any hypothesis is accepted as a "scientific principle", its predictions must pass so many experimental tests that competent, diligent, persevering people become "sick and tired" of testing it!

I'm sorry to list still another obvious requirement for any hypothesis, but sometimes the obvious is so obvious that it's taken for granted – and then overlooked (similar to how many people take their mothers and their spouses for granted). In contrast, Dear, please don't take your mother for granted, never yield on your demand that any hypothesis have predictive capabilities, and reject any hypothesis whose predictions fail to pass their tests. And in contrast to this plea to you, Dear, if when you seek to test predictions of any hypothesis, someone says something to you as hideous as reportedly said by Jesus (*Matthew 16,* 2): "It's a wicked generation that asks for a sign…" then, Dear, please respond with something similar to: "It's a stupid generation that accepts untested hypotheses."

Let me give you another "example in contrasts". The Bible contains a number of predictions, called "prophecies". Essentially all the prophecies in the Bible (and in The Book of Mormon) are so loosely worded and so indefinite that, as predictive tools, they're essentially useless. For example, in the second-to-last page of the New Testament (*Revelations 22,* 6) there is:

> These words are trustworthy and true. The Lord God who inspires the prophets has sent his angel to show his servants what must shortly happen. And remember, I am coming soon!

Now, some people actually "believe" that "prediction", but the trouble is: what do they predict? That God (or Jesus) is coming "soon"? How soon? The rest of us would have rather thought that "what must shortly happen" and "soon" would have meant less than 2,000 years – especially when on the next page (*Revelations 22,* 11) it states (to which I've added the italics):

> Do not seal up the words of prophecy in this book, for the *hour* of fulfillment is near.

I mean, if the time-scale for the fulfillment of the prediction is of the order of a thousand years, what's the point of measuring time in units of *hours*?!

But, Dear, it's not just the contrast between an indefinite religious prophecy and a definite, scientific prediction that I want to emphasize. In addition, first look at the horrible way the Bible continues (on its last page, at *Revelations 22,* 18–19):

> For my part, I give this warning to everyone who is listening to the words of prophecy in this book: should anyone add to them, God will add to him the plagues described in this book; should anyone take away from the words in this book of prophecy, God will take away from him his share in the tree of life and the Holy City, described in this book.

That's sick! It's horrible to tell people, especially kids (and the thinking abilities of many adults are not much more advanced than children's), that if they don't "believe" in some mythical story, then they'll be afflicted by plagues and they'll never go to a fictitious paradise called heaven. If one of my graduate students had written anything even remotely similar to this in his or her thesis, I would have proceeded with the paperwork to have the student thrown out of the university. It's horrible intellectual dishonesty. It's so corrupt (especially when – if the author is sane – he knows that what he's written is a lie), it's such downright meanness (even if the author is so insane as to "believe" what he has said to be true), it's such out-and-out

cruelty that, in my opinion, the author belongs in prison – without ever regaining access to writing materials. And for people and organized religions to propagate such filth for two thousand years is… well, Dear, were it not for the fact that it's demonstrably true, I wouldn't have believed that people could be so horrible.

In his 1911 book "*Is the Bible Worth Reading?" and Other Essays*, Lemuel K. Washburn summarized it well, here copied from Aiken's collection (to which I've added some notes and the boldface type):

> The threat of punishment for disbelief is the crowning touch of Christian [and Muslim and Mormon] misology [viz., "the hatred of reason, logical argument, or enlightenment"]. Believe in Jesus [or Allah, Muhammad, or Joseph Smith] – regardless of evidence or justification – or be subjected to agonizing torture. With this theme reverberating throughout the New Testament [and the Quran and the Book of Mormon] we have intellectual intimidation, transcendental blackmail, in its purest form. Threats replace argumentation, and irrationality gains the edge over reason through an appeal to brute force. Man's ability to think and question becomes his most dangerous liability, and the intellectually frightened, docile, unquestioning believer is presented as the exemplification of moral perfection. **Hell is where cowards have sent heroes.**

For contrast, Dear, look at how Newton on 8 May 1686 ended the Preface to his *Principia,* in which, with absolute brilliance, he described the fundamentals principles of mechanics:

> I heartily beg that what I have here done may be read with forbearance; and that my labors in a subject so difficult may be examined, not so much with the view to censure, as to remedy their defects.

Dear, please re-read what Newton wrote! What a contrast with what's written in the Bible! In his *Principia*, Newton made brilliant predictions about motion and about gravity that for more than 200 years were found to be absolutely flawless. They were accomplishments that had never previously been matched (except possibly for those of Archimedes). And he asks for "forbearance"?! He asks help "to remedy… defects"!

Equally astoundingly, Einstein found some defects in Newton's principles. Yet, first look at how (230 after Newton wrote his Preface), Einstein ended the Preface to his book entitled *Relativity*:

> May the book bring someone a few happy hours of suggestive thought!

And then, Dear, look at how Einstein ends his book (in the last paragraph of the last Appendix):

> After long probing I believe that I have now found the most natural form for this generalization, but I have not yet been able to find out whether this [generalization] can stand up against the facts of experience.

Then, Dear, do you see one of the main differences between religious prophecies and scientific predictions? Religious "prophecies" are held tightly ("uptight"), with the "believers" threatened by clerics for doubting the "prophecies" and fearful that others will challenge their "beliefs". As has been demonstrated in a so many horrible cases, both clerics and believers even kill those who doubt them. In contrast, any mature scientist submits scientific predictions humbly and holds them loosely, always with invitations to others to remedy defects and always welcoming reality's challenges, i.e., always willing to "let the data decide".

Let me try to say that again. God may subject you to eternal damnation if you "take away from the words" in the Bible (although, Dear, I very much hope that you'll treat this threat as so much fluff), but if you can prove that Einstein is wrong, I'm certain that he would have smiled and would have been glad to see that his book brought you "a few happy hours of suggestive thought". Further, if you can demonstrate that Einstein is wrong, I essentially guarantee you that you'll be awarded the Nobel prize! On the other hand, if you attempt to demonstrate that the Quran is wrong (the "Bible" of Islam), then Muslim "scholars" will issue a *fatwa* (ruling) against you, sentencing you to death – just as were earlier people put to death by Christians for criticizing the Bible.

In summary, Dear, maybe you're beginning to see why I say that "belief in god is bad science". As a proposed hypothesis, it fails all tests that I've mentioned in this chapter:

- It summarizes no direct data, the hearsay evidence is unreliable, and as a summary of the circumstantial evidence for any god's existence, the god "hypothesis" isn't succinct; it's easily eliminated with Ockham's razor.
- As described in the myths of various "holy books", the "god idea" conflicts with a huge number of established scientific principles, including those that form the basis of logic.
- The "god hypothesis" provides no predictions that can be reasonably tested.

- Those few predictions (or "prophecies") that advocates of "the god idea" have submitted and that are sufficiently precise to permit reasonable tests have been found to be false.

In addition, Dear, as I'll explain in more detail in later chapters, the demonstrated propensity of advocates of "the god idea" to resist modifications to their ideas, to avoid having their ideas tested, and even to defend their "beliefs" by killing critics is inconsistent with good science.

In his 1794 book *The Age of Reason*, Thomas Paine stated his similar conclusion even more forcefully. Although he restricted his assessment to Christianity, if he had studied Islam and other religions (and, of course, Mormonism had not yet been concocted), I very much doubt that he would have included his restrictive clause. Thus, Dear, according to one of the founders of our system of government:

> The study of theology… is the study of nothing; it is founded on nothing; it rests on no principles; it proceeds by no authorities; it has no data; it can demonstrate nothing; and it admits of no conclusion.

Perhaps Paine was a little too restrictive when he stated that "the study of theology… admits of no conclusion". It does "admit" of some conclusions about the people who accept and who promote "the God idea", e.g., that they're bonkers!

In subsequent chapters, I'll show you more. Here, I'll just summarize with what Montaigne said, almost 500 years ago:

> L'homme est bien insensé. Il ne saurait forger un ciron, et forge des Dieux à douzaines! [4]

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[4] Yah, I know, I know – but let's see how close you got to: "Man is certainly crazy. He couldn't make a mite, yet he makes gods by the dozen!" Oh, also, let me add something that I recently found. As you can find on the internet by searching for "Nag Hammadi", in 1945 there was an amazing "find" in the Egyptian desert near the town of Nag Hammadi. A peasant was digging for fertilizer for his fields and came across a large earthenware jar filled with more than a dozen, old, papyrus manuscripts, which were later determined to have been written in about 390 CE, probably by clerics who still had copies of books that the Christian Church had banned (for reasons that I'll describe in the "excursion" **Yx**). Among these manuscripts was one that's called *The Gospel of Philip,* describing the author's recollection of Jesus. And within the text of *The Gospel of Philip* is something similar to what Montaigne wrote ~1,500 years later, namely: "That is the way it is in the world – men make gods and worship their creation. It would be [more] fitting for the gods to worship men!" Amen to that!