

CHAPTER 2  
The God  
Hypothesis

*The religion of one age is the literary  
entertainment of the next.*

RALPH WALDO EMERSON

The God of the Old Testament is arguably the most unpleasant character in all fiction: jealous and proud of it; a petty, unjust, unforgiving control-freak; a vindictive, bloodthirsty ethnic cleanser; a misogynistic, homophobic, racist, infanticidal, genocidal, filicidal, pestilential, megalomaniacal, sadomasochistic, capriciously malevolent bully. Those of us schooled from infancy in his ways can become desensitized to their horror. A *naif* blessed with the perspective of innocence has a clearer perception. Winston Churchill's son Randolph somehow contrived to remain ignorant of scripture until Evelyn Waugh and a brother officer, in a vain attempt to keep Churchill quiet when they were posted together during the war, bet him he couldn't read the entire Bible in a fortnight: 'Unhappily it has not had the result we hoped. He has never read any of it before and is hideously excited; keeps reading quotations aloud "I say I bet you didn't know this came in the Bible ..." or merely slapping his side & chortling "God, isn't God a shit!"'<sup>16</sup> Thomas Jefferson - better read - was of a similar opinion: 'The Christian God is a being of terrific character - cruel, vindictive, capricious and unjust.'

It is unfair to attack such an easy target. The God Hypothesis should not stand or fall with its most unlovely instantiation, Yahweh, nor his insipidly opposite Christian face, 'Gentle Jesus meek and mild'. (To be fair, this milksop *persona* owes more to his Victorian followers than to Jesus himself. Could anything be more mawkishly nauseating than Mrs C. F. Alexander's 'Christian children all must be / Mild, obedient, good as he'?) I am not attacking the particular qualities of Yahweh, or Jesus, or Allah, or any other specific god such as Baal, Zeus or Wotan. Instead I shall define the God Hypothesis more defensibly: *there exists a super-human, supernatural intelligence who deliberately designed and created the universe and everything in it, including us*. This book will advocate an alternative view: *any creative intelligence, of sufficient complexity to design anything, comes into existence only as the end product of an extended process of gradual evolution*. Creative intelligences, being evolved, necessarily arrive late in the universe, and therefore cannot be responsible for designing it. God, in the sense defined, is a delusion; and, as later chapters will show, a pernicious delusion.

Not surprisingly, since it is founded on local traditions of private revelation rather than evidence, the God Hypothesis comes in many versions. Historians of religion recognize a progression from primitive tribal animisms, through polytheisms such as those of the Greeks, Romans and Norsemen, to monotheisms such as Judaism and its derivatives, Christianity and Islam.

## POLYTHEISM

It is not clear why the change from polytheism to monotheism should be assumed to be a self-evidently progressive improvement. But it widely is - an assumption that provoked Ibn Warraq (author of *Why I Am Not a Muslim*) wittily to conjecture that monotheism is in its turn doomed to subtract one more god and become atheism. The *Catholic Encyclopedia* dismisses polytheism and atheism in the same insouciant breath: 'Formal dogmatic atheism is self-refuting, and has never *de facto* won the reasoned assent of any considerable number of men. Nor can polytheism, however easily it may take hold of the popular imagination, ever satisfy the mind of a philosopher.'<sup>17</sup>

Monotheistic chauvinism was until recently written into the charity law of both England and Scotland, discriminating against polytheistic religions in granting tax-exempt status, while allowing an easy ride to charities whose object was to promote monotheistic religion, sparing them the rigorous vetting quite properly required of secular charities. It was my ambition to persuade a member of Britain's respected Hindu community to come forward and bring a civil action to test this snobbish discrimination against polytheism.

Far better, of course, would be to abandon the promotion of religion altogether as grounds for charitable status. The benefits of this to society would be great, especially in the United States, where the sums of tax-free money sucked in by churches, and polishing the heels of already well-heeled televangelists, reach levels that could fairly be described as obscene. The aptly named Oral Roberts once told his television audience that God would kill him unless they gave him \$8 million. Almost unbelievably, it worked.

Tax-free! Roberts himself is still going strong, as is 'Oral Roberts University' of Tulsa, Oklahoma. Its buildings, valued at \$250 million, were directly commissioned by God himself in these words: 'Raise up your students to hear My voice, to go where My light is dim, where My voice is heard small, and My healing power is not known, even to the uttermost bounds of the Earth. Their work will exceed yours, and in this I am well pleased.'

On reflection, my imagined Hindu litigator would have been as likely to play the 'If you can't beat them join them' card. His polytheism isn't really polytheism but monotheism in disguise. There is only one God - Lord Brahma the creator, Lord Vishnu the preserver, Lord Shiva the destroyer, the goddesses Saraswati, Laxmi and Parvati (wives of Brahma, Vishnu and Shiva), Lord Ganesh the elephant god, and hundreds of others, all are just different manifestations or incarnations of the one God.

Christians should warm to such sophistry. Rivers of medieval ink, not to mention blood, have been squandered over the 'mystery' of the Trinity, and in suppressing deviations such as the Arian heresy. Arius of Alexandria, in the fourth century AD, denied that Jesus was *consubstantial* (i.e. of the same substance or essence) with God. What on earth could that possibly mean, you are probably asking? Substance? What 'substance'? What exactly do you mean by 'essence'? 'Very little' seems the only reasonable reply. Yet the controversy split Christendom down the middle for a century, and the Emperor Constantine ordered that all copies of Arius's book should be burned. Splitting Christendom by splitting hairs - such has ever been the way of theology.

Do we have one God in three parts, or three Gods in one? The *Catholic Encyclopedia* clears up the matter for us, in a masterpiece of theological close reasoning:

In the unity of the Godhead there are three Persons, the Father, the Son, and the Holy Spirit, these Three Persons being truly distinct one from another. Thus, in the words of the Athanasian Creed: 'the Father is God, the Son is God, and the Holy Spirit is God, and yet there are not three Gods but one God.'

As if that were not clear enough, the *Encyclopedia* quotes the third-century theologian St Gregory the Miracle Worker:

There is therefore nothing created, nothing subject to another in the Trinity: nor is there anything that has been added as though it once had not existed, but had entered afterwards: therefore the Father has never been without the Son, nor the Son without the Spirit: and this same Trinity is immutable and unalterable forever.

Whatever miracles may have earned St Gregory his nickname, they were not miracles of honest lucidity. His words convey the characteristically obscurantist flavour of theology, which - unlike science or most other branches of human scholarship - has not moved on in eighteen centuries. Thomas Jefferson, as so often, got it right when he said, 'Ridicule is the only weapon which can be used against unintelligible propositions. Ideas must be distinct before reason can act upon them; and no man ever had a distinct idea of the trinity. It is the mere Abracadabra of the mountebanks calling themselves the priests of Jesus.'

The other thing I cannot help remarking upon is the overweening confidence with which the religious assert minute details for which they neither have, nor could have, any evidence. Perhaps it is the very fact that there is no evidence to support theological opinions, either way, that fosters the characteristic draconian hostility towards those of slightly different opinion, especially, as it happens, in this very field of Trinitarianism.

Jefferson heaped ridicule on the doctrine that, as he put it, 'There are three Gods', in his critique of Calvinism. But it is especially the Roman Catholic branch of Christianity that pushes its recurrent flirtation with polytheism towards runaway inflation. The Trinity is (are?) joined by Mary, 'Queen of Heaven', a goddess in all but name, who surely runs God himself a close second as a target of prayers. The pantheon is further swollen by an army of saints, whose intercessory power makes them, if not demigods, well worth approaching on their own specialist subjects. The Catholic Community Forum helpfully lists 5,120 saints,<sup>18</sup> together with their areas of expertise, which include abdominal pains, abuse victims,

anorexia, arms dealers, blacksmiths, broken bones, bomb technicians and bowel disorders, to venture no further than the Bs. And we mustn't forget the four Choirs of Angelic Hosts, arrayed in nine orders: Seraphim, Cherubim, Thrones, Dominions, Virtues, Powers, Principalities, Archangels (heads of all hosts), and just plain old Angels, including our closest friends, the ever-watchful Guardian Angels. What impresses me about Catholic mythology is partly its tasteless kitsch but mostly the airy nonchalance with which these people make up the details as they go along. It is just shamelessly invented.

Pope John Paul II created more saints than all his predecessors of the past several centuries put together, and he had a special affinity with the Virgin Mary. His polytheistic hankerings were dramatically demonstrated in 1981 when he suffered an assassination attempt in Rome, and attributed his survival to intervention by Our Lady of Fatima: 'A maternal hand guided the bullet.' One cannot help wondering why she didn't guide it to miss him altogether. Others might think the team of surgeons who operated on him for six hours deserved at least a share of the credit; but perhaps their hands, too, were maternally guided. The relevant point is that it wasn't just Our Lady who, in the Pope's opinion, guided the bullet, but specifically Our Lady of *Fatima*. Presumably Our Lady of Lourdes, Our Lady of Guadalupe, Our Lady of Medjugorje, Our Lady of Akita, Our Lady of Zeitoun, Our Lady of Garabandal and Our Lady of Knock were busy on other errands at the time.

How did the Greeks, the Romans and the Vikings cope with such polytheological conundrums? Was Venus just another name for Aphrodite, or were they two distinct goddesses of love? Was Thor with his hammer a manifestation of Wotan, or a separate god? Who cares? Life is too short to bother with the distinction between one figment of the imagination and many. Having gestured towards polytheism to cover myself against a charge of neglect, I shall say no more about it. For brevity I shall refer to all deities, whether poly- or monotheistic, as simply 'God'. I am also conscious that the Abrahamic God is (to put it mildly) aggressively male, and this too I shall accept as a convention in my use of pronouns. More sophisticated theologians proclaim the sexlessness of God, while

some feminist theologians seek to redress historic injustices by designating her female. But what, after all, is the difference between a non-existent female and a non-existent male? I suppose that, in the ditzily unreal intersection of theology and feminism, existence might indeed be a less salient attribute than gender.

I am aware that critics of religion can be attacked for failing to credit the fertile diversity of traditions and world-views that have been called religious. Anthropologically informed works, from Sir James Frazer's *Golden Bough* to Pascal Boyer's *Religion Explained* or Scott Atran's *In Gods We Trust*, fascinatingly document the bizarre phenomenology of superstition and ritual. Read such books and marvel at the richness of human gullibility.

But that is not the way of this book. I decry supernaturalism in all its forms, and the most effective way to proceed will be to concentrate on the form most likely to be familiar to my readers - the form that impinges most threateningly on all our societies. Most of my readers will have been reared in one or another of today's three 'great' monotheistic religions (four if you count Mormonism), all of which trace themselves back to the mythological patriarch Abraham, and it will be convenient to keep this family of traditions in mind throughout the rest of the book.

This is as good a moment as any to forestall an inevitable retort to the book, one that would otherwise - as sure as night follows day - turn up in a review: 'The God that Dawkins doesn't believe in is a God that I don't believe in either. I don't believe in an old man in the sky with a long white beard.' That old man is an irrelevant distraction and his beard is as tedious as it is long. Indeed, the distraction is worse than irrelevant. Its very silliness is calculated to distract attention from the fact that what the speaker really believes is not a whole lot less silly. I know you don't believe in an old bearded man sitting on a cloud, so let's not waste any more time on that. I am not attacking any particular version of God or gods. I am attacking God, all gods, anything and everything supernatural, wherever and whenever they have been or will be invented.

## MONOTHEISM

*The great unmentionable evil at the center of our culture is monotheism. From a barbaric Bronze Age text known as the Old Testament, three anti-human religions have evolved - Judaism, Christianity, and Islam. These are sky-god religions. They are, literally, patriarchal - God is the Omnipotent Father - hence the loathing of women for 2,000 years in those countries afflicted by the sky-god and his earthly male delegates.*

GORE VIDAL

The oldest of the three Abrahamic religions, and the clear ancestor of the other two, is Judaism: originally a tribal cult of a single fiercely unpleasant God, morbidly obsessed with sexual restrictions, with the smell of charred flesh, with his own superiority over rival gods and with the exclusiveness of his chosen desert tribe. During the Roman occupation of Palestine, Christianity was founded by Paul of Tarsus as a less ruthlessly monotheistic sect of Judaism and a less exclusive one, which looked outwards from the Jews to the rest of the world. Several centuries later, Muhammad and his followers reverted to the uncompromising monotheism of the Jewish original, but not its exclusiveness, and founded Islam upon a new holy book, the Koran or Qur'an, adding a powerful ideology of military conquest to spread the faith. Christianity, too, was spread by the sword, wielded first by Roman hands after the Emperor Constantine raised it from eccentric cult to official religion, then by the Crusaders, and later by the *conquistadores* and other European invaders and colonists, with missionary accompaniment. For most of my purposes, all three Abrahamic religions can be treated as indistinguishable. Unless otherwise stated, I shall have Christianity mostly in mind, but only because it is the version with which I happen to be most familiar. For my purposes the differences matter less than the similarities. And I shall not be concerned at all with other religions such as Buddhism or Confucianism. Indeed, there is something to be said for treating these not as

religions at all but as ethical systems or philosophies of life.

The simple definition of the God Hypothesis with which I began has to be substantially fleshed out if it is to accommodate the Abrahamic God. He not only created the universe; he is a *personal* God dwelling within it, or perhaps outside it (whatever that might mean), possessing the unpleasantly human qualities to which I have alluded.

Personal qualities, whether pleasant or unpleasant, form no part of the deist god of Voltaire and Thomas Paine. Compared with the Old Testament's psychotic delinquent, the deist God of the eighteenth-century Enlightenment is an altogether grander being: worthy of his cosmic creation, loftily unconcerned with human affairs, sublimely aloof from our private thoughts and hopes, caring nothing for our messy sins or mumbled contritions. The deist God is a physicist to end all physics, the alpha and omega of mathematicians, the apotheosis of designers; a hyper-engineer who set up the laws and constants of the universe, fine-tuned them with exquisite precision and foreknowledge, detonated what we would now call the hot big bang, retired and was never heard from again.

In times of stronger faith, deists have been reviled as indistinguishable from atheists. Susan Jacoby, in *Freethinkers: A History of American Secularism*, lists a choice selection of the epithets hurled at poor Tom Paine: 'Judas, reptile, hog, mad dog, scouse, louse, archbeast, brute, liar, and of course infidel'. Paine died in penury, abandoned (with the honourable exception of Jefferson) by political former friends embarrassed by his anti-Christian views. Nowadays, the ground has shifted so far that deists are more likely to be contrasted with atheists and lumped with theists. They do, after all, believe in a supreme intelligence who created the universe.

## SECULARISM, THE FOUNDING FATHERS AND THE RELIGION OF AMERICA

It is conventional to assume that the Founding Fathers of the American Republic were deists. No doubt many of them were,

although it has been argued that the greatest of them might have been atheists. Certainly their writings on religion in their own time leave me in no doubt that most of them would have been atheists in ours. But whatever their individual religious views in their own time, the one thing they collectively were is *secularists*, and this is the topic to which I turn in this section, beginning with a - perhaps surprising - quotation from Senator Barry Goldwater in 1981, clearly showing how staunchly that presidential candidate and hero of American conservatism upheld the secular tradition of the Republic's foundation:

There is no position on which people are so immovable as their religious beliefs. There is no more powerful ally one can claim in a debate than Jesus Christ, or God, or Allah, or whatever one calls this supreme being. But like any powerful weapon, the use of God's name on one's behalf should be used sparingly. The religious factions that are growing throughout our land are not using their religious clout with wisdom. They are trying to force government leaders into following their position 100 percent. If you disagree with these religious groups on a particular moral issue, they complain, they threaten you with a loss of money or votes or both. I'm frankly sick and tired of the political preachers across this country telling me as a citizen that if I want to be a moral person, I must believe in A, B, C, and D. Just who do they think they are? And from where do they presume to claim the right to dictate their moral beliefs to me? And I am even more angry as a legislator who must endure the threats of every religious group who thinks it has some God-granted right to control my vote on every roll call in the Senate. I am warning them today: I will fight them every step of the way if they try to dictate their moral convictions to all Americans in the name of conservatism.<sup>19</sup>

The religious views of the Founding Fathers are of great interest to propagandists of today's American right, anxious to push their

version of history. Contrary to their view, the fact that the United States was *not* founded as a Christian nation was early stated in the terms of a treaty with Tripoli, drafted in 1796 under George Washington and signed by John Adams in 1797:

As the Government of the United States of America is not, in any sense, founded on the Christian religion; as it has in itself no character of enmity against the laws, religion, or tranquillity, of Musselmen; and as the said States never have entered into any war or act of hostility against any Mehomitan nation, it is declared by the parties that no pretext arising from religious opinions shall ever produce an interruption of the harmony existing between the two countries.

The opening words of this quotation would cause uproar in today's Washington ascendancy. Yet Ed Buckner has convincingly demonstrated that they caused no dissent at the time,<sup>20</sup> among either politicians or public.

The paradox has often been noted that the United States, founded in secularism, is now the most religious country in Christendom, while England, with an established church headed by its constitutional monarch, is among the least. I am continually asked why this is, and I do not know. I suppose it is possible that England has wearied of religion after an appalling history of inter-faith violence, with Protestants and Catholics alternately gaining the upper hand and systematically murdering the other lot. Another suggestion stems from the observation that America is a nation of immigrants. A colleague points out to me that immigrants, uprooted from the stability and comfort of an extended family in Europe, could well have embraced a church as a kind of kin-substitute on alien soil. It is an interesting idea, worth researching further. There is no doubt that many Americans see their own local church as an important unit of identity, which does indeed have some of the attributes of an extended family.

Yet another hypothesis is that the religiosity of America stems paradoxically from the secularism of its constitution. Precisely because America is legally secular, religion has become free

enterprise. Rival churches compete for congregations - not least for the fat tithes that they bring - and the competition is waged with all the aggressive hard-sell techniques of the marketplace. What works for soap flakes works for God, and the result is something approaching religious mania among today's less educated classes. In England, by contrast, religion under the aegis of the established church has become little more than a pleasant social pastime, scarcely recognizable as religious at all. This English tradition is nicely expressed by Giles Fraser, an Anglican vicar who doubles as a philosophy tutor at Oxford, writing in the *Guardian*. Fraser's article is subtitled 'The establishment of the Church of England took God out of religion, but there are risks in a more vigorous approach to faith':

There was a time when the country vicar was a staple of the English *dramatis personae*. This tea-drinking, gentle eccentric, with his polished shoes and kindly manners, represented a type of religion that didn't make non-religious people uncomfortable. He wouldn't break into an existential sweat or press you against a wall to ask if you were saved, still less launch crusades from the pulpit or plant roadside bombs in the name of some higher power.<sup>21</sup>

(Shades of Betjeman's 'Our Padre', which I quoted at the beginning of Chapter 1.) Fraser goes on to say that 'the nice country vicar in effect inoculated vast swaths of the English against Christianity'. He ends his article by lamenting a more recent trend in the Church of England to take religion seriously again, and his last sentence is a warning: 'the worry is that we may release the genie of English religious fanaticism from the establishment box in which it has been dormant for centuries'.

The genie of religious fanaticism is rampant in present-day America, and the Founding Fathers would have been horrified. Whether or not it is right to embrace the paradox and blame the secular constitution that they devised, the founders most certainly were secularists who believed in keeping religion out of politics, and that is enough to place them firmly on the side of those who

object, for example, to ostentatious displays of the Ten Commandments in government-owned public places. But it is tantalizing to speculate that at least some of the Founders might have gone beyond deism. Might they have been agnostics or even out-and-out atheists? The following statement of Jefferson is indistinguishable from what we would now call agnosticism:

To talk of immaterial existences is to talk of *nothings*. To say that the human soul, angels, god, are immaterial, is to say they are nothings, or that there is no god, no angels, no soul. I cannot reason otherwise . . . without plunging into the fathomless abyss of dreams and phantasms. I am satisfied, and sufficiently occupied with the things which are, without tormenting or troubling myself about those which may indeed be, but of which I have no evidence.

Christopher Hitchens, in his biography *Thomas Jefferson: Author of America*, thinks it likely that Jefferson was an atheist, even in his own time when it was much harder:

As to whether he was an atheist, we must reserve judgment if only because of the prudence he was compelled to observe during his political life. But as he had written to his nephew, Peter Carr, as early as 1787, one must not be frightened from this inquiry by any fear of its consequences. 'If it ends in a belief that there is no God, you will find incitements to virtue in the comfort and pleasantness you feel in this exercise, and the love of others which it will procure you.'

I find the following advice of Jefferson, again in his letter to Peter Carr, moving:

Shake off all the fears of servile prejudices, under which weak minds are servilely crouched. Fix reason firmly in her seat, and call on her tribunal for every fact, every opinion. Question with boldness even the existence of a

God; because, if there be one, he must more approve of the homage of reason than that of blindfolded fear.

Remarks of Jefferson's such as 'Christianity is the most perverted system that ever shone on man' are compatible with deism but also with atheism. So is James Madison's robust anti-clericalism: 'During almost fifteen centuries has the legal establishment of Christianity been on trial. What has been its fruits? More or less, in all places, pride and indolence in the clergy; ignorance and servility in the laity; in both, superstition, bigotry and persecution.' The same could be said of Benjamin Franklin's 'Lighthouses are more useful than churches' and of John Adams's 'This would be the best of all possible worlds, if there were no religion in it.' Adams delivered himself of some splendid tirades against Christianity in particular: 'As I understand the Christian religion, it was, and is, a revelation. But how has it happened that millions of fables, tales, legends, have been blended with both Jewish and Christian revelation that have made them the most bloody religion that ever existed?' And, in another letter, this time to Jefferson, 'I almost shudder at the thought of alluding to the most fatal example of the abuses of grief which the history of mankind has preserved - the Cross. Consider what calamities that engine of grief has produced!'

Whether Jefferson and his colleagues were theists, deists, agnostics or atheists, they were also passionate secularists who believed that the religious opinions of a President, or lack of them, were entirely his own business. All the Founding Fathers, whatever their private religious beliefs, would have been aghast to read the journalist Robert Sherman's report of George Bush Senior's answer when Sherman asked him whether he recognized the equal citizenship and patriotism of Americans who are atheists: 'No, I don't know that atheists should be considered as citizens, nor should they be considered patriots. This is one nation under God.'<sup>22</sup> Assuming Sherman's account to be accurate (unfortunately he didn't use a tape-recorder, and no other newspaper ran the story at the time), try the experiment of replacing 'atheists' with 'Jews' or 'Muslims' or 'Blacks'. That gives the measure of the prejudice and discrimination that American atheists have to endure today. Natalie

Angier's 'Confessions of a lonely atheist' is a sad and moving description, in the *New York Times*, of her feelings of isolation as an atheist in today's America.<sup>23</sup> But the isolation of American atheists is an illusion, assiduously cultivated by prejudice. Atheists in America are more numerous than most people realize. As I said in the Preface, American atheists far outnumber religious Jews, yet the Jewish lobby is notoriously one of the most formidably influential in Washington. What might American atheists achieve if they organized themselves properly?\*

David Mills, in his admirable book *Atheist Universe*, tells a story which you would dismiss as an unrealistic caricature of police bigotry if it were fiction. A Christian faith-healer ran a 'Miracle Crusade' which came to Mills's home town once a year. Among other things, the faith-healer encouraged diabetics to throw away their insulin, and cancer patients to give up their chemotherapy and pray for a miracle instead. Reasonably enough, Mills decided to organize a peaceful demonstration to warn people. But he made the mistake of going to the police to tell them of his intention and ask for police protection against possible attacks from supporters of the faith-healer. The first police officer to whom he spoke asked, 'Is you gonna protest fir him or 'gin him?' (meaning for or against the faith-healer). When Mills replied, 'Against him,' the policeman said that he himself planned to attend the rally and intended to spit personally in Mills's face as he marched past Mills's demonstration.

Mills decided to try his luck with a second police officer. This one said that if any of the faith-healer's supporters violently confronted Mills, the officer would arrest Mills because he was 'trying to interfere with God's work'. Mills went home and tried telephoning the police station, in the hope of finding more sympathy at a senior level. He was finally connected to a sergeant who said, 'To hell with you, Buddy. No policeman wants to protect a goddamned atheist. I hope somebody bloodies you up good.' Apparently adverbs were in short supply in this police station, along with the milk of human kindness and a sense of duty. Mills relates that he spoke to about seven or eight policemen that day. None of them was helpful, and most of them directly threatened Mills with violence.

\* Tom Flynn, Editor of *Free Inquiry*, makes the point forcefully ('Secularism's breakthrough moment', *Free Inquiry* 26: 3, 2006, 16-17): 'If atheists are lonely and downtrodden, we have only ourselves to blame. Numerically, we are strong. Let's start punching our weight.'

Anecdotes of such prejudice against atheists abound, but Margaret Downey, of the Freethought Society of Greater Philadelphia, maintains systematic records of such cases.<sup>24</sup> Her database of incidents, categorized under community, schools, workplace, media, family and government, includes examples of harassment, loss of jobs, shunning by family and even murder.<sup>25</sup> Downey's documented evidence of the hatred and misunderstanding of atheists makes it easy to believe that it is, indeed, virtually impossible for an honest atheist to win a public election in America. There are 435 members of the House of Representatives and 100 members of the Senate. Assuming that the majority of these 535 individuals are an educated sample of the population, it is statistically all but inevitable that a substantial number of them must be atheists. They must have lied, or concealed their true feelings, in order to get elected. Who can blame them, given the electorate they had to convince? It is universally accepted that an admission of atheism would be instant political suicide for any presidential candidate.

These facts about today's political climate in the United States, and what they imply, would have horrified Jefferson, Washington, Madison, Adams and all their friends. Whether they were atheists, agnostics, deists or Christians, they would have recoiled in horror from the theocrats of early 21st-century Washington. They would have been drawn instead to the secularist founding fathers of post-colonial India, especially the religious Gandhi ('I am a Hindu, I am a Moslem, I am a Jew, I am a Christian, I am a Buddhist!'), and the atheist Nehru:

The spectacle of what is called religion, or at any rate organised religion, in India and elsewhere, has filled me with horror and I have frequently condemned it and wished to make a clean sweep of it. Almost always it seemed to stand for blind belief and reaction, dogma and bigotry, superstition, exploitation and the preservation of vested interests.

Nehru's definition of the secular India of Gandhi's dream (would that it had been realized, instead of the partitioning of their country

amid an interfaith bloodbath) might almost have been ghosted by Jefferson himself:

We talk about a secular India . . . Some people think that it means something opposed to religion. That obviously is not correct. What it means is that it is a State which honours all faiths equally and gives them equal opportunities; India has a long history of religious tolerance . . . In a country like India, which has many faiths and religions, no real nationalism can be built up except on the basis of secularity.<sup>26</sup>

The deist God is certainly an improvement over the monster of the Bible. Unfortunately it is scarcely more likely that he exists, or ever did. In any of its forms the God Hypothesis is unnecessary.\* The God Hypothesis is also very close to being ruled out by the laws of probability. I shall come to that in Chapter 4, after dealing with the alleged proofs of the existence of God in Chapter 3. Meanwhile I turn to agnosticism, and the erroneous notion that the existence or non-existence of God is an untouchable question, forever beyond the reach of science.

## THE POVERTY OF AGNOSTICISM

The robust Muscular Christian haranguing us from the pulpit of my old school chapel admitted a sneaking regard for atheists. They at least had the courage of their misguided convictions. What this preacher couldn't stand was agnostics: namby-pamby, mushy pap, weak-tea, weedy, pallid fence-sitters. He was partly right, but for wholly the wrong reason. In the same vein, according to Quentin de la Bedoyere, the Catholic historian Hugh Ross Williamson 'respected the committed religious believer and also the committed atheist. He reserved his contempt for the wishy-washy boneless mediocrities who flapped around in the middle.'<sup>27</sup>

There is nothing wrong with being agnostic in cases where we lack evidence one way or the other. It is the reasonable position.

\* 'Sire, I had no need of that hypothesis,' as Laplace said when Napoleon wondered how the famous mathematician had managed to write his book without mentioning God.

Carl Sagan was proud to be agnostic when asked whether there was life elsewhere in the universe. When he refused to commit himself, his interlocutor pressed him for a 'gut feeling' and he immortally replied: 'But I try not to think with my gut. Really, it's okay to reserve judgment until the evidence is in.'<sup>28</sup> The question of extra-terrestrial life is open. Good arguments can be mounted both ways, and we lack the evidence to do more than shade the probabilities one way or the other. Agnosticism, of a kind, is an appropriate stance on many scientific questions, such as what caused the end-Permian extinction, the greatest mass extinction in fossil history. It could have been a meteorite strike like the one that, with greater likelihood on present evidence, caused the later extinction of the dinosaurs. But it could have been any of various other possible causes, or a combination. Agnosticism about the causes of both these mass extinctions is reasonable. How about the question of God? Should we be agnostic about him too? Many have said definitely yes, often with an air of conviction that verges on protesting too much. Are they right?

I'll begin by distinguishing two kinds of agnosticism. TAP, or Temporary Agnosticism in Practice, is the legitimate fence-sitting where there really is a definite answer, one way or the other, but we so far lack the evidence to reach it (or don't understand the evidence, or haven't time to read the evidence, etc.). TAP would be a reasonable stance towards the Permian extinction. There is a truth out there and one day we hope to know it, though for the moment we don't.

But there is also a deeply inescapable kind of fence-sitting, which I shall call PAP (Permanent Agnosticism in Principle). The fact that the acronym spells a word used by that old school preacher is (almost) accidental. The PAP style of agnosticism is appropriate for questions that can never be answered, no matter how much evidence we gather, because the very idea of evidence is not applicable. The question exists on a different plane, or in a different dimension, beyond the zones where evidence can reach. An example might be that philosophical chestnut, the question whether you see red as I do. Maybe your red is my green, or something completely different from any colour that I can imagine. Philosophers cite this question as one that can never be answered,

no matter what new evidence might one day become available. And some scientists and other intellectuals are convinced - too eagerly in my view - that the question of God's existence belongs in the forever inaccessible PAP category. From this, as we shall see, they often make the illogical deduction that the hypothesis of God's existence, and the hypothesis of his non-existence, have exactly equal probability of being right. The view that I shall defend is very different: agnosticism about the existence of God belongs firmly in the temporary or TAP category. Either he exists or he doesn't. It is a scientific question; one day we may know the answer, and meanwhile we can say something pretty strong about the probability.

In the history of ideas, there are examples of questions being answered that had earlier been judged forever out of science's reach. In 1835 the celebrated French philosopher Auguste Comte wrote, of the stars: 'We shall never be able to study, by any method, their chemical composition or their mineralogical structure.' Yet even before Comte had set down these words, Fraunhofer had begun using his spectroscope to analyse the chemical composition of the sun. Now spectroscopists daily confound Comte's agnosticism with their long-distance analyses of the precise chemical composition of even distant stars.<sup>29</sup> Whatever the exact status of Comte's astronomical agnosticism, this cautionary tale suggests, at the very least, that we should hesitate before proclaiming the eternal verity of agnosticism too loudly. Nevertheless, when it comes to God, a great many philosophers and scientists are glad to do so, beginning with the inventor of the word itself, T. H. Huxley.<sup>30</sup>

Huxley explained his coining while rising to a personal attack that it had provoked. The Principal of King's College, London, the Reverend Dr Wace, had poured scorn on Huxley's 'cowardly agnosticism':

He may prefer to call himself an agnostic; but his real name is an older one - he is an infidel; that is to say, an unbeliever. The word infidel, perhaps, carries an unpleasant significance. Perhaps it is right that it should. It is, and it ought to be, an unpleasant thing for a man to have to say plainly that he does not believe in Jesus Christ.

Huxley was not the man to let that sort of provocation pass him by, and his reply in 1889 was as robustly scathing as we should expect (although never departing from scrupulous good manners: as Darwin's Bulldog, his teeth were sharpened by urbane Victorian irony). Eventually, having dealt Dr Wace his just comeuppance and buried the remains, Huxley returned to the word 'agnostic' and explained how he first came by it. Others, he noted,

were quite sure they had attained a certain 'gnosis' - had, more or less successfully, solved the problem of existence; while I was quite sure I had not, and had a pretty strong conviction that the problem was insoluble. And, with Hume and Kant on my side, I could not think myself presumptuous in holding fast by that opinion ... So I took thought, and invented what I conceived to be the appropriate title of 'agnostic'.

Later in his speech, Huxley went on to explain that agnostics have no creed, not even a negative one.

Agnosticism, in fact, is not a creed, but a method, the essence of which lies in the rigorous application of a single principle. . . . Positively the principle may be expressed: In matters of the intellect, follow your reason as far as it will take you, without regard to any other consideration. And negatively: In matters of the intellect, do not pretend that conclusions are certain which are not demonstrated or demonstrable. That I take to be the agnostic faith, which if a man keep whole and undefiled, he shall not be ashamed to look the universe in the face, whatever the future may have in store for him.

To a scientist these are noble words, and one doesn't criticize T. H. Huxley lightly. But Huxley, in his concentration upon the absolute impossibility of proving or disproving God, seems to have been ignoring the shading of *probability*. The fact that we can neither prove nor disprove the existence of something does, not put existence and non-existence on an even footing. I don't think Huxley would

disagree, and I suspect that when he appeared to do so he was bending over backwards to concede a point, in the interests of securing another one. We have all done this at one time or another.

Contrary to Huxley, I shall suggest that the existence of God is a scientific hypothesis like any other. Even if hard to test in practice, it belongs in the same TAP or temporary agnosticism box as the controversies over the Permian and Cretaceous extinctions. God's existence or non-existence is a scientific fact about the universe, discoverable in principle if not in practice. If he existed and chose to reveal it, God himself could clinch the argument, noisily and unequivocally, in his favour. And even if God's existence is never proved or disproved with certainty one way or the other, available evidence and reasoning may yield an estimate of probability far from 50 per cent.

Let us, then, take the idea of a spectrum of probabilities seriously, and place human judgements about the existence of God along it, between two extremes of opposite certainty. The spectrum is continuous, but it can be represented by the following seven milestones along the way.

- 1 Strong theist. 100 per cent probability of God. In the words of C. G. Jung, 'I do not believe, I *know*.'
- 2 Very high probability but short of 100 per cent. *De facto* theist. 'I cannot know for certain, but I strongly believe in God and live my life on the assumption that he is there.'
- 3 Higher than 50 per cent but not very high. Technically agnostic but leaning towards theism. 'I am very uncertain, but I am inclined to believe in God.'
- 4 Exactly 50 per cent. Completely impartial agnostic. 'God's existence and non-existence are exactly equiprobable.'
- 5 Lower than 50 per cent but not very low. Technically agnostic but leaning towards atheism. 'I don't know whether God exists but I'm inclined to be sceptical.'
- 6 Very low probability, but short of zero. *De facto* atheist. 'I

cannot know for certain but I think God is very improbable, and I live my life on the assumption that he is not there.'

7 Strong atheist. 'I know there is no God, with the same conviction as Jung "knows" there is one.'

I'd be surprised to meet many people in category 7, but I include it for symmetry with category 1, which is well populated. It is in the nature of faith that one is capable, like Jung, of holding a belief without adequate reason to do so (Jung also believed that particular books on his shelf spontaneously exploded with a loud bang). Atheists do not have faith; and reason alone could not propel one to total conviction that anything definitely does not exist. Hence category 7 is in practice rather emptier than its opposite number, category 1, which has many devoted inhabitants. I count myself in category 6, but leaning towards 7 - I am agnostic only to the extent that I am agnostic about fairies at the bottom of the garden.

The spectrum of probabilities works well for TAP (temporary agnosticism in practice). It is superficially tempting to place PAP (permanent agnosticism in principle) in the middle of the spectrum, with a 50 per cent probability of God's existence, but this is not correct. PAP agnostics aver that we cannot say anything, one way or the other, on the question of whether or not God exists. The question, for PAP agnostics, is in principle unanswerable, and they should strictly refuse to place themselves anywhere on the spectrum of probabilities. The fact that I cannot know whether your red is the same as my green doesn't make the probability 50 per cent. The proposition on offer is too meaningless to be dignified with a probability. Nevertheless, it is a common error, which we shall meet again, to leap from the premise that the question of God's existence is in principle unanswerable to the conclusion that his existence and his non-existence are equiprobable.

Another way to express that error is in terms of the burden of proof, and in this form it is pleasingly demonstrated by Bertrand Russell's parable of the celestial teapot.<sup>31</sup>

Many orthodox people speak as though it were the business of sceptics to disprove received dogmas rather than of dogmatists to prove them. This is, of course, a mistake. If I were to suggest that between the Earth and Mars there is a china teapot revolving about the sun in an elliptical orbit, nobody would be able to disprove my assertion provided I were careful to add that the teapot is too small to be revealed even by our most powerful telescopes. But if I were to go on to say that, since my assertion cannot be disproved, it is intolerable presumption on the part of human reason to doubt it, I should rightly be thought to be talking nonsense. If, however, the existence of such a teapot were affirmed in ancient books, taught as the sacred truth every Sunday, and instilled into the minds of children at school, hesitation to believe in its existence would become a mark of eccentricity and entitle the doubter to the attentions of the psychiatrist in an enlightened age or of the Inquisitor in an earlier time.

We would not waste time saying so because nobody, so far as I know, worships teapots;\* but, if pressed, we would not hesitate to declare our strong belief that there is positively no orbiting teapot. Yet strictly we should all be *teapot agnostics*: we cannot prove, for sure, that there is no celestial teapot. In practice, we move away from teapot agnosticism towards *a-teapotisin*.

A friend, who was brought up a Jew and still observes the sabbath and other Jewish customs out of loyalty to his heritage, describes himself as a 'tooth fairy agnostic'. He regards God as no more probable than the tooth fairy. You can't disprove either hypothesis, and both are equally improbable. He is an a-theist to exactly the same large extent that he is an a-fairyist. And agnostic about both, to the same small extent.

Russell's teapot, of course, stands for an infinite number of things whose existence is conceivable and cannot be disproved. That great American lawyer Clarence Darrow said, 'I don't believe

\* Perhaps I spoke too soon. The *Independent on Sunday* of 5 June 2005 carried the following item: 'Malaysian officials say religious sect which built sacred teapot the size of a house has flouted planning regulations.' See also BBC News at <http://news.bbc.co.Uk/2/hi/asia-pacific/4692039.stm>.

in God as I don't believe in Mother Goose.' The journalist Andrew Mueller is of the opinion that pledging yourself to any particular religion 'is no more or less weird than choosing to believe that the world is rhombus-shaped, and borne through the cosmos in the pincers of two enormous green lobsters called Esmerelda and Keith'.<sup>32</sup> A philosophical favourite is the invisible, intangible, inaudible unicorn, disproof of which is attempted yearly by the children at Camp Quest.\* A popular deity on the Internet at present - and as undisprovable as Yahweh or any other - is the Flying Spaghetti Monster, who, many claim, has touched them with his noodly appendage.<sup>33</sup> I am delighted to see that the *Gospel of the Flying Spaghetti Monster* has now been published as a book,<sup>34</sup> to great acclaim. I haven't read it myself, but who needs to read a gospel when you just *know* it's true? By the way, it had to happen - a Great Schism has already occurred, resulting in the *Reformed Church of the Flying Spaghetti Monster*.<sup>35</sup>

The point of all these way-out examples is that they are undisprovable, yet nobody thinks the hypothesis of their existence is on an even footing with the hypothesis of their non-existence. Russell's point is that the burden of proof rests with the believers, not the non-believers. Mine is the related point that the odds in favour of the teapot (spaghetti monster / Esmerelda and Keith / unicorn etc.) are not equal to the odds against.

The fact that orbiting teapots and tooth fairies are undisprovable is not felt, by any reasonable person, to be the kind of fact that settles any interesting argument. None of us feels an obligation to disprove any of the millions of far-fetched things that a fertile or facetious imagination might dream up. I have found it an amusing strategy, when asked whether I am an atheist, to point out that the questioner is also an atheist when considering Zeus, Apollo, Amon Ra, Mithras, Baal, Thor, Wotan, the Golden Calf and the Flying Spaghetti Monster. I just go one god further.

All of us feel entitled to express extreme scepticism to the point

\* Camp Quest takes the American institution of the summer camp in an entirely admirable direction. Unlike other summer camps that follow a religious or scouting ethos, Camp Quest, founded by Edwin and Helen Kagin in Kentucky, is run by secular humanists, and the children are encouraged to think sceptically for themselves while having a very good time with all the usual outdoor activities ([www.camp-quest.org](http://www.camp-quest.org)). Other Camp Quests with a similar ethos have now sprung up in Tennessee, Minnesota, Michigan, Ohio and Canada.

of outright disbelief - except that in the case of unicorns, tooth fairies and the gods of Greece, Rome, Egypt and the Vikings, there is (nowadays) no need to bother. In the case of the Abrahamic God, however, there is a need to bother, because a substantial proportion of the people with whom we share the planet do believe strongly in his existence. Russell's teapot demonstrates that the ubiquity of belief in God, as compared with belief in celestial teapots, does not shift the burden of proof in logic, although it may seem to shift it as a matter of practical politics. That you cannot prove God's non-existence is accepted and trivial, if only in the sense that we can never absolutely prove the non-existence of anything. What matters is not whether God is disprovable (he isn't) but whether his existence is *probable*. That is another matter. Some undisprovable things are sensibly judged far less probable than other undisprovable things. There is no reason to regard God as immune from consideration along the spectrum of probabilities. And there is certainly no reason to suppose that, just because God can be neither proved nor disproved, his probability of existence is 50 per cent. On the contrary, as we shall see.

## NOMA

Just as Thomas Huxley bent over backwards to pay lip service to completely impartial agnosticism, right in the middle of my seven-stage spectrum, theists do the same thing from the other direction, and for an equivalent reason. The theologian Alister McGrath makes it the central point of his book *Dawkins' God: Genes, Memes and the Origin of Life*. Indeed, after his admirably fair summary of my scientific works, it seems to be the only point in rebuttal that he has to offer: the undeniable but ignominiously weak point that you cannot disprove the existence of God. On page after page as I read McGrath, I found myself scribbling 'teapot' in the margin. Again invoking T. H. Huxley, McGrath says, 'Fed up with both theists and atheists making hopelessly dogmatic statements on the basis of inadequate empirical evidence, Huxley declared that the God question could not be settled on the basis of the scientific method.'

McGrath goes on to quote Stephen Jay Gould in similar vein: 'To say it for all my colleagues and for the umpteenth millionth time (from college bull sessions to learned treatises): science simply cannot (by its legitimate methods) adjudicate the issue of God's possible superintendence of nature. We neither affirm nor deny it; we simply can't comment on it as scientists.' Despite the confident, almost bullying, tone of Gould's assertion, what, actually, is the justification for it? Why shouldn't we comment on God, as scientists? And why isn't Russell's teapot, or the Flying Spaghetti Monster, equally immune from scientific scepticism? As I shall argue in a moment, a universe with a creative superintendent would be a very different kind of universe from one without. Why is that not a scientific matter?

Gould carried the art of bending over backwards to positively supine lengths in one of his less admired books, *Rocks of Ages*. There he coined the acronym NOMA for the phrase 'non-overlapping magisterial

The net, or magisterium, of science covers the empirical realm: what is the universe made of (fact) and why does it work this way (theory). The magisterium of religion extends over questions of ultimate meaning and moral value. These two magisteria do not overlap, nor do they encompass all inquiry (consider, for example, the magisterium of art and the meaning of beauty). To cite the old clichés, science gets the age of rocks, and religion the rock of ages; science studies how the heavens go, religion how to go to heaven.

This sounds terrific - right up until you give it a moment's thought. What are these ultimate questions in whose presence religion is an honoured guest and science must respectfully slink away?

Martin Rees, the distinguished Cambridge astronomer whom I have already mentioned, begins his book *Our Cosmic Habitat* by posing two candidate ultimate questions and giving a NOMA-friendly answer. 'The pre-eminent mystery is why anything exists at all. What breathes life into the equations, and actualized them in a real cosmos? Such questions lie beyond science, however: they are

the province of philosophers and theologians.' I would prefer to say that if indeed they lie beyond science, they most certainly lie beyond the province of theologians as well (I doubt that philosophers would thank Martin Rees for lumping theologians in with them). I am tempted to go further and wonder in what possible sense theologians can be said to *have* a province. I am still amused when I recall the remark of a former Warden (head) of my Oxford college. A young theologian had applied for a junior research fellowship, and his doctoral thesis on Christian theology provoked the Warden to say, 'I have grave doubts as to whether it's a *subject* at all.'

What expertise can theologians bring to deep cosmological questions that scientists cannot? In another book I recounted the words of an Oxford astronomer who, when I asked him one of those same deep questions, said: 'Ah, now we move beyond the realm of science. This is where I have to hand over to our good friend the chaplain.' I was not quick-witted enough to utter the response that I later wrote: 'But why the chaplain? Why not the gardener or the chef?' Why are scientists so cravenly respectful towards the ambitions of theologians, over questions that theologians are certainly no more qualified to answer than scientists themselves?

It is a tedious cliché (and, unlike many clichés, it isn't even true) that science concerns itself with *how* questions, but only theology is equipped to answer *why* questions. What on Earth *is* a why question? Not every English sentence beginning with the word 'why' is a legitimate question. Why are unicorns hollow? Some questions simply do not deserve an answer. What is the colour of abstraction? What is the smell of hope? The fact that a question can be phrased in a grammatically correct English sentence doesn't make it meaningful, or entitle it to our serious attention. Nor, even if the question is a real one, does the fact that science cannot answer it imply that religion can.

Perhaps there are some genuinely profound and meaningful questions that are forever beyond the reach of science. Maybe quantum theory is already knocking on the door of the unfathomable. But if science cannot answer some ultimate question, what makes anybody think that religion can? I suspect that neither

the Cambridge nor the Oxford astronomer really believed that theologians have any expertise that enables them to answer questions that are too deep for science. I suspect that both astronomers were, yet again, bending over backwards to be polite: theologians have nothing worthwhile to say about anything else; let's throw them a sop and let them worry away at a couple of questions that nobody can answer and maybe never will. Unlike my astronomer friends, I don't think we should even throw them a sop. I have yet to see any good reason to suppose that theology (as opposed to biblical history, literature, etc.) is a subject at all.

Similarly, we can all agree that science's entitlement to advise us on moral values is problematic, to say the least. But does Gould really want to cede to *religion* the right to tell us what is good and what is bad? The fact that it has nothing *else* to contribute to human wisdom is no reason to hand religion a free licence to tell us what to do. Which religion, anyway? The one in which we happen to have been brought up? To which chapter, then, of which book of the Bible should we turn - for they are far from unanimous and some of them are odious by any reasonable standards. How many literalists have read enough of the Bible to know that the death penalty is prescribed for adultery, for gathering sticks on the sabbath and for cheeking your parents? If we reject Deuteronomy and Leviticus (as all enlightened moderns do), by what criteria do we then decide which of religion's moral values to *accept*? Or should we pick and choose among all the world's religions until we find one whose moral teaching suits us? If so, again we must ask, by what criterion do we choose? And if we have independent criteria for choosing among religious moralities, why not cut out the middle man and go straight for the moral choice without the religion? I shall return to such questions in Chapter 7.

I simply do not believe that Gould could possibly have meant much of what he wrote in *Rocks of Ages*. As I say, we have all been guilty of bending over backwards to be nice to an unworthy but powerful opponent, and I can only think that this is what Gould was doing. It is conceivable that he really did intend his unequivocally strong statement that science has nothing whatever to say about the question of God's existence: 'We neither affirm nor deny it; we simply can't comment on it as scientists.' This sounds

like agnosticism of the permanent and irrevocable kind, full-blown PAP. It implies that science cannot even make *probability* judgements on the question. This remarkably widespread fallacy - many repeat it like a mantra but few of them, I suspect, have thought it through - embodies what I refer to as 'the poverty of agnosticism'. Gould, by the way, was not an impartial agnostic but strongly inclined towards *de facto* atheism. On what basis did he make that judgement, if there is nothing to be said about whether God exists?

The God Hypothesis suggests that the reality we inhabit also contains a supernatural agent who designed the universe and - at least in many versions of the hypothesis - maintains it and even intervenes in it with miracles, which are temporary violations of his own otherwise grandly immutable laws. Richard Swinburne, one of Britain's leading theologians, is surprisingly clear on the matter in his book *Is There a God?*:

What the theist claims about God is that he does have a power to create, conserve, or annihilate anything, big or small. And he can also make objects move or do anything else ... He can make the planets move in the way that Kepler discovered that they move, or make gunpowder explode when we set a match to it; or he can make planets move in quite different ways, and chemical substances explode or not explode under quite different conditions from those which now govern their behaviour. God is not limited by the laws of nature; he makes them and he can change or suspend them - if he chooses.

Just too easy, isn't it! Whatever else this is, it is very far from NOMA. And whatever else they may say, those scientists who subscribe to the 'separate magisteria' school of thought should concede that a universe with a supernaturally intelligent creator is a very different kind of universe from one without. The difference between the two hypothetical universes could hardly be more fundamental in principle, even if it is not easy to test in practice. And it undermines the complacently seductive dictum that science must be completely silent about religion's central existence claim. The presence or absence of a creative super-intelligence is

unequivocally a scientific question, even if it is not in practice - or not yet - a decided one. So also is the truth or falsehood of every one of the miracle stories that religions rely upon to impress multitudes of the faithful.

Did Jesus have a human father, or was his mother a virgin at the time of his birth? Whether or not there is enough surviving evidence to decide it, this is still a strictly scientific question with a definite answer in principle: yes or no. Did Jesus raise Lazarus from the dead? Did he himself come alive again, three days after being crucified? There is an answer to every such question, whether or not we can discover it in practice, and it is a strictly scientific answer. The methods we should use to settle the matter, in the unlikely event that relevant evidence ever became available, would be purely and entirely scientific methods. To dramatize the point, imagine, by some remarkable set of circumstances, that forensic archaeologists unearthed DNA evidence to show that Jesus really did lack a biological father. Can you imagine religious apologists shrugging their shoulders and saying anything remotely like the following? 'Who cares? Scientific evidence is completely irrelevant to theological questions. Wrong magisterium! We're concerned only with ultimate questions and with moral values. Neither DNA nor any other scientific evidence could ever have any bearing on the matter, one way or the other.'

The very idea is a joke. You can bet your boots that the scientific evidence, if any were to turn up, would be seized upon and trumpeted to the skies. NOMA is popular only because there is no evidence to favour the God Hypothesis. The moment there was the smallest suggestion of any evidence in favour of religious belief, religious apologists would lose no time in throwing NOMA out of the window. Sophisticated theologians aside (and even they are happy to tell miracle stories to the unsophisticated in order to swell congregations), I suspect that alleged miracles provide the strongest reason many believers have for their faith; and miracles, by definition, violate the principles of science.

The Roman Catholic Church on the one hand seems sometimes to aspire to NOMA, but on the other hand lays down the performance of miracles as an essential qualification for elevation to sainthood. The late King of the Belgians is a candidate for

sainthood, because of his stand on abortion. Earnest investigations are now going on to discover whether any miraculous cures can be attributed to prayers offered up to him since his death. I am not joking. That is the case, and it is typical of saint stories. I imagine the whole business is an embarrassment to more sophisticated circles within the Church. Why any circles worthy of the name of sophisticated remain within the Church is a mystery at least as deep as those that theologians enjoy.

When faced with miracle stories, Gould would presumably retort along the following lines. The whole point of NOMA is that it is a two-way bargain. The moment religion steps on science's turf and starts to meddle in the real world with miracles, it ceases to be religion in the sense Gould is defending, and his *amicabilis concordia* is broken. Note, however, that the miracle-free religion defended by Gould would not be recognized by most practising theists in the pew or on the prayer mat. It would, indeed, be a grave disappointment to them. To adapt Alice's comment on her sister's book before she fell into Wonderland, what is the use of a God who does no miracles and answers no prayers? Remember Ambrose Bierce's witty definition of the verb 'to pray': 'to ask that the laws of the universe be annulled in behalf of a single petitioner, confessedly unworthy'. There are athletes who believe God helps them win - against opponents who would seem, on the face of it, no less worthy of his favouritism. There are motorists who believe God saves them a parking space - thereby presumably depriving somebody else. This style of theism is embarrassingly popular, and is unlikely to be impressed by anything as (superficially) reasonable as NOMA.

Nevertheless, let us follow Gould and pare our religion down to some sort of non-interventionist minimum: no miracles, no personal communication between God and us in either direction, no monkeying with the laws of physics, no trespassing on the scientific grass. At most, a little deistic input to the initial conditions of the universe so that, in the fullness of time, stars, elements, chemistry and planets develop, and life evolves. Surely that is an adequate separation? Surely NOMA can survive this more modest and unassuming religion?

Well, you might think so. But I suggest that even a

non-interventionist, NOMA God, though less violent and clumsy than an Abrahamic God, is still, when you look at him fair and square, a scientific hypothesis. I return to the point: a universe in which we are alone except for other slowly evolved intelligences is a very different universe from one with an original guiding agent whose intelligent design is responsible for its very existence. I accept that it may not be so easy in practice to distinguish one kind of universe from the other. Nevertheless, there is something utterly special about the hypothesis of ultimate design, and equally special about the only known alternative: gradual evolution in the broad sense. They are close to being irreconcilably different. Like nothing else, evolution really does provide an explanation for the existence of entities whose improbability would otherwise, for practical purposes, rule them out. And the conclusion to the argument, as I shall show in Chapter 4, is close to being terminally fatal to the God Hypothesis.

## THE GREAT PRAYER EXPERIMENT

An amusing, if rather pathetic, case study in miracles is the Great Prayer Experiment: does praying for patients help them recover? Prayers are commonly offered for sick people, both privately and in formal places of worship. Darwin's cousin Francis Galton was the first to analyse scientifically whether praying for people is efficacious. He noted that every Sunday, in churches throughout Britain, entire congregations prayed publicly for the health of the royal family. Shouldn't they, therefore, be unusually fit, compared with the rest of us, who are prayed for only by our nearest and dearest?\* Galton looked into it, and found no statistical difference. His intention may, in any case, have been satirical, as also when he prayed over randomized plots of land to see if the plants would grow any faster (they didn't).

More recently, the physicist Russell Stannard (one of Britain's three well-known religious scientists, as we shall see) has thrown

\* When my Oxford college elected the Warden whom I quoted earlier, it happened that the Fellows publicly drank his health on three successive evenings. At the third of these dinners, he graciously remarked in his speech of reply: 'I'm feeling better already.'

his weight behind an initiative, funded by - of course - the Templeton Foundation, to test experimentally the proposition that praying for sick patients improves their health.<sup>36</sup>

Such experiments, if done properly, have to be double blind, and this standard was strictly observed. The patients were assigned, strictly at random, to an experimental group (received prayers) or a control group (received no prayers). Neither the patients, nor their doctors or caregivers, nor the experimenters were allowed to know which patients were being prayed for and which patients were controls. Those who did the experimental praying had to know the names of the individuals for whom they were praying - otherwise, in what sense would they be praying for them rather than for somebody else? But care was taken to tell them only the first name and initial letter of the surname. Apparently that would be enough to enable God to pinpoint the right hospital bed.

The very idea of doing such experiments is open to a generous measure of ridicule, and the project duly received it. As far as I know, Bob Newhart didn't do a sketch about it, but I can distinctly hear his voice:

What's that you say, Lord? You can't cure me because I'm a member of the control group? . . . Oh I see, my aunt's prayers aren't enough. But Lord, Mr Evans in the next-door bed . . . What was that, Lord? . . . Mr Evans received a thousand prayers per day? But Lord, Mr Evans doesn't know a thousand people . . . Oh, they just referred to him as John E. But Lord, how did you know they didn't mean John Ellsworthy? . . . Oh right, you used your omniscience to work out which John E they meant. But Lord . . .

Valiantly shouldering aside all mockery, the team of researchers soldiered on, spending \$2.4 million of Templeton money under the leadership of Dr Herbert Benson, a cardiologist at the Mind/Body Medical Institute near Boston. Dr Benson was earlier quoted in a Templeton press release as 'believing that evidence for the efficacy of intercessory prayer in medicinal settings is mounting'. Reassuringly, then, the research was in good hands, unlikely to be

spoiled by sceptical vibrations. Dr Benson and his team monitored 1,802 patients at six hospitals, all of whom received coronary bypass surgery. The patients were divided into three groups. Group 1 received prayers and didn't know it. Group 2 (the control group) received no prayers and didn't know it. Group 3 received prayers and did know it. The comparison between Groups 1 and 2 tests for the efficacy of intercessory prayer. Group 3 tests for possible psychosomatic effects of knowing that one is being prayed for.

Prayers were delivered by the congregations of three churches, one in Minnesota, one in Massachusetts and one in Missouri, all distant from the three hospitals. The praying individuals, as explained, were given only the first name and initial letter of the surname of each patient for whom they were to pray. It is good experimental practice to standardize as far as possible, and they were all, accordingly, told to include in their prayers the phrase 'for a successful surgery with a quick, healthy recovery and no complications'.

The results, reported in the *American Heart Journal* of April 2006, were clear-cut. There was no difference between those patients who were prayed for and those who were not. What a surprise. There was a difference between those who *knew* they had been prayed for and those who did not know one way or the other; but it went in the wrong direction. Those who knew they had been the beneficiaries of prayer suffered significantly more complications than those who did not. Was God doing a bit of smiting, to show his disapproval of the whole barmy enterprise? It seems more probable that those patients who knew they were being prayed for suffered additional stress in consequence: 'performance anxiety', as the experimenters put it. Dr Charles Bethea, one of the researchers, said, 'It may have made them uncertain, wondering am I so sick they had to call in their prayer team?' In today's litigious society, is it too much to hope that those patients suffering heart complications, as a consequence of knowing they were receiving experimental prayers, might put together a class action lawsuit against the Templeton Foundation?

It will be no surprise that this study was opposed by theologians, perhaps anxious about its capacity to bring ridicule upon religion. The Oxford theologian Richard Swinburne, writing after the study

failed, objected to it on the grounds that God answers prayers only if they are offered up for good reasons.<sup>37</sup> Praying for somebody rather than somebody else, simply because of the fall of the dice in the design of a double-blind experiment, does not constitute a good reason. God would see through it. That, indeed, was the point of my Bob Newhart satire, and Swinburne is right to make it too. But in other parts of his paper Swinburne himself is beyond satire. Not for the first time, he seeks to justify suffering in a world run by God:

My suffering provides me with the opportunity to show courage and patience. It provides you with the opportunity to show sympathy and to help alleviate my suffering. And it provides society with the opportunity to choose whether or not to invest a lot of money in trying to find a cure for this or that particular kind of suffering . . . Although a good God regrets our suffering, his greatest concern is surely that each of us shall show patience, sympathy and generosity and, thereby, form a holy character. Some people badly need to be ill for their own sake, and some people badly need to be ill to provide important choices for others. Only in that way can some people be encouraged to make serious choices about the sort of person they are to be. For other people, illness is not so valuable.

This grotesque piece of reasoning, so damningly typical of the theological mind, reminds me of an occasion when I was on a television panel with Swinburne, and also with our Oxford colleague Professor Peter Atkins. Swinburne at one point attempted to justify the Holocaust on the grounds that it gave the Jews a wonderful opportunity to be courageous and noble. Peter Atkins splendidly growled, 'May you rot in hell.'\*

\* This interchange was edited out of the final broadcast version. That Swinburne's remark is typical of his theology is indicated by his rather similar comment about Hiroshima in *The Existence of God* (2004), page 264: 'Suppose that one less person had been burnt by the Hiroshima atomic bomb. Then there would have been less opportunity for courage and sympathy . . .'

Another typical piece of theological reasoning occurs further along in Swinburne's article. He rightly suggests that if God wanted to demonstrate his own existence he would find better ways to do it than slightly biasing the recovery statistics of experimental versus control groups of heart patients. If God existed and wanted to convince us of it, he could 'fill the world with super-miracles'. But then Swinburne lets fall his gem: 'There is quite a lot of evidence anyway of God's existence, and too much might not be good for us.' Too much might not be good for us! Read it again. *Too much evidence might not be good for us*. Richard Swinburne is the recently retired holder of one of Britain's most prestigious professorships of theology, and is a Fellow of the British Academy. If it's a theologian you want, they don't come much more distinguished. Perhaps you don't want a theologian.

Swinburne wasn't the only theologian to disown the study after it had failed. The Reverend Raymond J. Lawrence was granted a generous tranche of op-ed space in the *New York Times* to explain why responsible religious leaders 'will breathe a sigh of relief that no evidence could be found of intercessory prayer having any effect.'<sup>38</sup> Would he have sung a different tune if the Benson study had succeeded in demonstrating the power of prayer? Maybe not, but you can be certain that plenty of other pastors and theologians would. The Reverend Lawrence's piece is chiefly memorable for the following revelation: 'Recently, a colleague told me about a devout, well-educated woman who accused a doctor of malpractice in his treatment of her husband. During her husband's dying days, she charged, the doctor had failed to pray for him.'

Other theologians joined NOMA-inspired sceptics in contending that studying prayer in this way is a waste of money because supernatural influences are by definition beyond the reach of science. But as the Templeton Foundation correctly recognized when it financed the study, the alleged power of intercessory prayer is at least in principle within the reach of science. A double-blind experiment can be done and was done. It could have yielded a positive result. And if it had, can you imagine that a single religious apologist would have dismissed it on the grounds that scientific research has no bearing on religious matters? Of course not.

Needless to say, the negative results of the experiment will not

shake the faithful. Bob Barth, the spiritual director of the Missouri prayer ministry which supplied some of the experimental prayers, said: 'A person of faith would say that this study is interesting, but we've been praying a long time and we've seen prayer work, we know it works, and the research on prayer and spirituality is just getting started.' Yeah, right: we know from our *faith* that prayer works, so if evidence fails to show it we'll just soldier on until finally we get the result we want.

## THE NEVILLE CHAMBERLAIN SCHOOL OF EVOLUTIONISTS

A possible ulterior motive for those scientists who insist on NOMA - the invulnerability to science of the God Hypothesis - is a peculiarly American political agenda, provoked by the threat of populist creationism. In parts of the United States, science is under attack from a well-organized, politically well-connected and, above all, well-financed opposition, and the teaching of evolution is in the front-line trench. Scientists could be forgiven for feeling threatened, because most research money comes ultimately from government, and elected representatives have to answer to the ignorant and prejudiced, as well as to the well-informed, among their constituents.

In response to such threats, an evolution defence lobby has sprung up, most notably represented by the National Center for Science Education (NCSE), led by Eugenie Scott, indefatigable activist on behalf of science who has recently produced her own book, *Evolution vs. Creationism*. One of NCSE's main political objectives is to court and mobilize 'sensible' religious opinion: mainstream churchmen and women who have no problem with evolution and may regard it as irrelevant to (or even in some strange way supportive of) their faith. It is to this mainstream of clergy, theologians and non-fundamentalist believers, embarrassed as they are by creationism because it brings religion into disrepute, that the evolution defence lobby tries to appeal. And one way to do this is to bend over backwards in their direction by espousing

NOMA - agree that science is completely non-threatening, because it is disconnected from religion's claims.

Another prominent luminary of what we might call the Neville Chamberlain school of evolutionists is the philosopher Michael Ruse. Ruse has been an effective fighter against creationism,<sup>39</sup> both on paper and in court. He claims to be an atheist, but his article in *Playboy* takes the view that

we who love science must realize that the enemy of our enemies is our friend. Too often evolutionists spend time insulting would-be allies. This is especially true of secular evolutionists. Atheists spend more time running down sympathetic Christians than they do countering creationists. When John Paul II wrote a letter endorsing Darwinism, Richard Dawkins's response was simply that the pope was a hypocrite, that he could not be genuine about science and that Dawkins himself simply preferred an honest fundamentalist.

From a purely tactical viewpoint, I can see the superficial appeal of Ruse's comparison with the fight against Hitler: 'Winston Churchill and Franklin Roosevelt did not like Stalin and communism. But in fighting Hitler they realized that they had to work with the Soviet Union. Evolutionists of all kinds must likewise work together to fight creationism.' But I finally come down on the side of my colleague the Chicago geneticist Jerry Coyne, who wrote that Ruse

fails to grasp the real nature of the conflict. It's not just about evolution versus creationism. To scientists like Dawkins and Wilson [E. O. Wilson, the celebrated Harvard biologist], the *real* war is between rationalism and superstition. Science is but one form of rationalism, while religion is the most common form of superstition. Creationism is just a symptom of what they see as the greater enemy: religion. While religion can exist without creationism, creationism cannot exist without religion.<sup>40</sup>

I do have one thing in common with the creationists. Like me,

but unlike the 'Chamberlain school', they will have no truck with NOMA and its separate magisteria. Far from respecting the separateness of science's turf, creationists like nothing better than to trample their dirty hobnails all over it. And they fight dirty, too. Lawyers for creationists, in court cases around the American boondocks, seek out evolutionists who are openly atheists. I know - to my chagrin - that my name has been used in this way. It is an effective tactic because juries selected at random are likely to include individuals brought up to believe that atheists are demons incarnate, on a par with pedophiles or 'terrorists' (today's equivalent of Salem's witches and McCarthy's Commies). Any creationist lawyer who got me on the stand could instantly win over the jury simply by asking me: 'Has your knowledge of evolution influenced you in the direction of becoming an atheist?' I would have to answer yes and, at one stroke, I would have lost the jury. By contrast, the judicially correct answer from the secularist side would be: 'My religious beliefs, or lack of them, are a private matter, neither the business of this court nor connected in any way with my science.' I couldn't honestly say this, for reasons I shall explain in Chapter 4.

The *Guardian* journalist Madeleine Bunting wrote an article entitled 'Why the intelligent design lobby thanks God for Richard Dawkins'.<sup>41</sup> There's no indication that she consulted anybody except Michael Ruse, and her article might as well have been ghost-written by him.\* Dan Dennett replied, aptly quoting Uncle Remus:

I find it amusing that two Brits - Madeleine Bunting and Michael Ruse - have fallen for a version of one of the most famous scams in American folklore (Why the intelligent design lobby thanks God for Richard Dawkins, March 27). When Brer Rabbit gets caught by the fox, he pleads with him: 'Oh, please, please, Brer Fox, whatever you do, don't throw me in that awful briar patch!' - where he ends up safe and sound after the fox does just that. When the American propagandist William Dembski writes tauntingly to Richard Dawkins, telling him to keep

\* The same could be said of an article, 'When cosmologies collide', in the *New York Times*, 22 Jan. 2006, by the respected (and usually much better briefed) journalist Judith Shulevitz. General Montgomery's First Rule of War was 'Don't march on Moscow.' Perhaps there should be a First Rule of Science Journalism: 'Interview at least one person other than Michael Ruse.'

up the good work on behalf of intelligent design, Bunting and Ruse fall for it! 'Oh golly, Brer Fox, your forthright assertion - that evolutionary biology disproves the idea of a creator God - jeopardises the teaching of biology in science class, since teaching that would violate the separation of church and state!' Right. You also ought to soft-pedal physiology, since it declares virgin birth impossible ...<sup>42</sup>

This whole issue, including an independent invocation of Brer Rabbit in the briar patch, is well discussed by the biologist P. Z. Myers, whose Pharyngula blog can reliably be consulted for trenchant good sense.<sup>43</sup>

I am not suggesting that my colleagues of the appeasement lobby are necessarily dishonest. They may sincerely believe in NOMA, although I can't help wondering how thoroughly they've thought it through and how they reconcile the internal conflicts in their minds. There is no need to pursue the matter for the moment, but anyone seeking to understand the published statements of scientists on religious matters would do well not to forget the political context: the surreal culture wars now rending America. NOMA-style appeasement will surface again in a later chapter. Here, I return to agnosticism and the possibility of chipping away at our ignorance and measurably reducing our uncertainty about the existence or non-existence of God.

## LITTLE GREEN MEN

Suppose Bertrand Russell's parable had concerned not a teapot in outer space but *life* in outer space - the subject of Sagan's memorable refusal to think with his gut. Once again we cannot disprove it, and the only strictly rational stance is agnosticism. But the hypothesis is no longer frivolous. We don't immediately scent extreme improbability. We can have an interesting argument based on incomplete evidence, and we can write down the kind of evidence that would decrease our uncertainty. We'd be outraged if

our government invested in expensive telescopes for the sole purpose of searching for orbiting teapots. But we can appreciate the case for spending money on SETI, the Search for Extraterrestrial Intelligence, using radio telescopes to scan the skies in the hope of picking up signals from intelligent aliens.

I praised Carl Sagan for disavowing gut feelings about alien life. But one can (and Sagan did) make a sober assessment of what we would need to know in order to estimate the probability. This might start from nothing more than a listing of our points of ignorance, as in the famous Drake Equation which, in Paul Davies's phrase, collects probabilities. It states that to estimate the number of independently evolved civilizations in the universe you must multiply seven terms together. The seven include the number of stars, the number of Earth-like planets per star, and the probability of this, that and the other which I need not list because the only point I am making is that they are all unknown, or estimated with enormous margins of error. When so many terms that are either completely or almost completely unknown are multiplied up, the product - the estimated number of alien civilizations - has such colossal error bars that agnosticism seems a very reasonable, if not the only credible stance.

Some of the terms in the Drake Equation are already less unknown than when he first wrote it down in 1961. At that time, our solar system of planets orbiting a central star was the only one known, together with the local analogies provided by Jupiter's and Saturn's satellite systems. Our best estimate of the number of orbiting systems in the universe was based on theoretical models, coupled with the more informal 'principle of mediocrity': the feeling (born of uncomfortable history lessons from Copernicus, Hubble and others) that there should be nothing particularly unusual about the place where we happen to live. Unfortunately, the principle of mediocrity is in its turn emasculated by the 'anthropic' principle (see Chapter 4): if our solar system really were the only one in the universe, this is precisely where we, as beings who think about such matters, would have to be living. The very fact of our existence could retrospectively determine that we live in an extremely unmediocre place.

But today's estimates of the ubiquity of solar systems are no

longer based on the principle of mediocrity; they are informed by direct evidence. The spectroscope, nemesis of Comte's positivism, strikes again. Our telescopes are scarcely powerful enough to see planets around other stars directly. But the position of a star is perturbed by the gravitational pull of its planets as they whirl around it, and spectroscopes can pick up the Doppler shifts in the star's spectrum, at least in cases where the perturbing planet is large. Mostly using this method, at the time of writing we now know of 170 extra-solar planets orbiting 147 stars,<sup>44</sup> but the figure will certainly have increased by the time you read this book. So far, they are bulky 'Jupiters', because only Jupiters are large enough to perturb their stars into the zone of detectability of present-day spectroscopes.

We have at least quantitatively improved our estimate of one previously shrouded term of the Drake Equation. This permits a significant, if still moderate, easing of our agnosticism about the final value yielded by the equation. We must still be agnostic about life on other worlds - but a little bit less agnostic, because we are just that bit less ignorant. Science can chip away at agnosticism, in a way that Huxley bent over backwards to deny for the special case of God. I am arguing that, notwithstanding the polite abstinence of Huxley, Gould and many others, the God question is not in principle and forever outside the remit of science. As with the nature of the stars, *contra* Comte, and as with the likelihood of life in orbit around them, science can make at least probabilistic inroads into the territory of agnosticism.

My definition of the God Hypothesis included the words 'super-human' and 'supernatural'. To clarify the difference, imagine that a SETI radio telescope actually did pick up a signal from outer space which showed, unequivocally, that we are not alone. It is a non-trivial question, by the way, what kind of signal would convince us of its intelligent origin. A good approach is to turn the question around. What should we intelligently do in order to advertise our presence to extraterrestrial listeners? Rhythmic pulses wouldn't do it. Jocelyn Bell Burnell, the radio astronomer who first discovered the pulsar in 1967, was moved by the precision of its 1.33-second periodicity to name it, tongue in cheek, the LGM (Little Green Men) signal. She later found a second pulsar, elsewhere in the sky

and of different periodicity, which pretty much disposed of the LGM hypothesis. Metronomic rhythms can be generated by many non-intelligent phenomena, from swaying branches to dripping water, from time lags in self-regulating feedback loops to spinning and orbiting celestial bodies. More than a thousand pulsars have now been found in our galaxy, and it is generally accepted that each one is a spinning neutron star emitting radio energy that sweeps around like a lighthouse beam. It is amazing to think of a star rotating on a timescale of seconds (imagine if each of our days lasted 1.33 seconds instead of 24 hours), but just about everything we know of neutron stars is amazing. The point is that the pulsar phenomenon is now understood as a product of simple physics, not intelligence.

Nothing simply rhythmic, then, would announce our intelligent presence to the waiting universe. Prime numbers are often mentioned as the recipe of choice, since it is difficult to think of a purely physical process that could generate them. Whether by detecting prime numbers or by some other means, imagine that SETI does come up with unequivocal evidence of extraterrestrial intelligence, followed, perhaps, by a massive transmission of knowledge and wisdom, along the science-fiction lines of Fred Hoyle's *A for Andromeda* or Carl Sagan's *Contact*. How should we respond? A pardonable reaction would be something akin to worship, for any civilization capable of broadcasting a signal over such an immense distance is likely to be greatly superior to ours. Even if that civilization is not more advanced than ours at the time of transmission, the enormous distance between us entitles us to calculate that they must be millennia ahead of us by the time the message reaches us (unless they have driven themselves extinct, which is not unlikely).

Whether we ever get to know about them or not, there are very probably alien civilizations that are superhuman, to the point of being god-like in ways that exceed anything a theologian could possibly imagine. Their technical achievements would seem as supernatural to us as ours would seem to a Dark Age peasant transported to the twenty-first century. Imagine his response to a laptop computer, a mobile telephone, a hydrogen bomb or a jumbo jet. As Arthur C. Clarke put it, in his Third Law: 'Any sufficiently

advanced technology is indistinguishable from magic' The miracles wrought by our technology would have seemed to the ancients no less remarkable than the tales of Moses parting the waters, or Jesus walking upon them. The aliens of our SETI signal would be to us like gods, just as missionaries were treated as gods (and exploited the undeserved honour to the hilt) when they turned up in Stone Age cultures bearing guns, telescopes, matches, and almanacs predicting eclipses to the second.

In what sense, then, would the most advanced SETI aliens not *be* gods? In what sense would they be superhuman but not supernatural? In a very important sense, which goes to the heart of this book. The crucial difference between gods and god-like extraterrestrials lies not in their properties but in their provenance. Entities that are complex enough to be intelligent are products of an evolutionary process. No matter how god-like they may seem when we encounter them, they didn't start that way. Science-fiction authors, such as Daniel F. Galouye in *Counterfeit World*, have even suggested (and I cannot think how to disprove it) that we live in a computer simulation, set up by some vastly superior civilization. But the simulators themselves would have to come from somewhere. The laws of probability forbid all notions of their spontaneously appearing without simpler antecedents. They probably owe their existence to a (perhaps unfamiliar) version of Darwinian evolution: some sort of cumulatively ratcheting 'crane' as opposed to 'skyhook', to use Daniel Dennett's terminology.<sup>45</sup> Skyhooks - including all gods - are magic spells. They do no *bona fide* explanatory work and demand more explanation than they provide. Cranes are explanatory devices that actually do explain. Natural selection is the champion crane of all time. It has lifted life from primeval simplicity to the dizzy heights of complexity, beauty and apparent design that dazzle us today. This will be a dominant theme of Chapter 4, 'Why there almost certainly is no God'. But first, before proceeding with my main reason for actively disbelieving in God's existence, I have a responsibility to dispose of the positive arguments for belief that have been offered through history.