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THE RATIONALITY OF SCIENCE AND THE RATIONALITY OF FAITH*

1. Introduction.

If science is rational, why is it so rare in human history? If faith is *ir*rational, why have the great majority of people always preferred traditional beliefs to new ones obtained by independent, critical investigation? The prevailing answer is that non-scientific beliefs derive primarily from non-rational causes, and unfortunately, the history of the world is largely dominated by unreason. I think that this answer is false. I see the conflict between science and faith as resulting not from the struggle of rational thought against irrational forces of conformity, but from a systematic tension between two aspects of rationality itself, which I call simply subjective and objective. In this paper I make two main controversial claims. I claim that most people rationally (in the more basic, subjective sense) *ought* to believe in their local traditions, because that is what all of the people around them believe, and few individuals are in a total epistemic situation from within which they can reasonably contradict their neighbors. I also claim that most scientists and other modern intellectuals ought rationally (in the same sense) *not* to believe in their own theories, though it is often good for others in the long run when they do. This is not to deny that scientific research is objectively a rational process, i.e. one that leads to true beliefs for people in general. But I claim that this requires a kind of epistemic altruism on the part of experimental thinkers, in that their new ideas are ordinarily less likely (from the thinkers' own, internal points of view) to be correct than are the opinions they have received from others.

Here is the structure of the paper. In the next section, I specify the difference between my conceptions of subjective and objective rationality, and make a few other preliminary distinctions that are needed for a clear exposition of my main points. In the third section, I defend as subjectively rational a broad principle of deference to the beliefs of others, including most traditional religious beliefs. I also consider two main objections, one derived from Hume and one from Descartes. In the fourth section, I discuss the combination of objective rationality and subjective irrationality that accounts both for the great success of science, and for its being so rare. In the final section, I consider briefly whether this new view of mine leads into paradox when applied to itself.

2. Distinctions.

There are three intuitive distinctions that I want to discuss in advance of my main arguments: subjective vs. objective rational belief, first- vs. second-order rational belief, and rational belief vs. knowledge. There is nothing very new or very technical here; I just want to avoid certain natural misunderstandings.

Pure rationality itself is a single, formal thing - a connection between bodies of evidence and sets of beliefs, through chains of proper inference. But a useful distinction can be drawn between different applications of this single concept, in terms of the available bodies of evidence. I say that a belief *p* is subjectively rational for a person *S* at a time *t*, if *p* is what *S* rationally ought to believe at *t*, given all of the evidence available to *S* at or before *t*. I do not mean whatever *seems* to the person to be rational. I mean what someone really ought to believe, not just what he thinks that he ought to believe, given all of the evidence that he has had so far. This strong conception will rule out as fully rational some people who have made errors in

reasoning in the past that they cannot now correct. Weaker notions of subjective rationality are no doubt worth exploring, but one of my goals here is to make a strong defense of traditional believers, so I am requiring them to be completely "epistemically responsible" agents, beyond any relevant criticism respecting the rationality of their background beliefs.[1]

I will not try to define "rationally ought to believe" more precisely; common intuitions should be good enough.[2] My immediate point is just that different people frequently have access to different pools of evidence, so it can be equally rational for them to come up with different beliefs. All such beliefs, if they are properly inferred from all the evidence available, will be subjectively rational for the people who hold them.

I also want to distinguish this private aspect of rationality from public or objective rationality, which determines what *anyone* ought to believe, given whatever evidence is *generally* available at the time. I realize that this is vague, and I apologize for using the word objective here to mean something like globally inter-subjective. It might have been better to reserve the term objective rationality for just the formally correct relation of belief to evidence. But I am trying to get at what we mean when we say that some belief is rational *simpliciter*, not expressly relative to one believer or a certain pool of evidence. This common usage, in statements like "it is not rational to believe that the world is flat," seems to require an implicit reference to the pool of evidence that *we* (i.e. some relevant class of normal people) all have some sort of access to. When we talk about *the* evidence for a belief, as distinct from someone's evidence in particular, this is the pool we mean.

So, relative to the premises that Socrates is a man, and that all men are mortal, it is rational (in the pure, formal sense) to conclude that Socrates is mortal. If a person *S* at time *t* justifiedly believes the two premises, then it is subjectively rational for *S* at *t* to believe the

conclusion. Since it is public knowledge that Socrates is in fact a man and that all men are mortal, we can say that it is objectively rational (or, as we often put it, just plain rational, or rational given the evidence) to believe that Socrates is mortal.

The Socrates example is one of deductive reasoning, a matter of a logically necessary connection between the evidence and the conclusion drawn. But I will take it for granted that there is such a thing as inductive reasoning as well. If we are not to be skeptics about empirical beliefs in general, then we must allow as rational some beliefs that depend on inductive (or perhaps "abductive," or anyway, non-deductive) generalization and prediction. Both the nature and the justification of inductive inference are mysterious, but whatever is the right connection between empirical evidence and empirical conclusions, it should apply in both the subjective and the objective case. For example, it may be subjectively (inductively) rational for one untutored person in Europe to believe that all swans are white, and for another in Australia to believe that all swans are black, while it is objectively (inductively) rational, i.e. rational given the pool of evidence available to people in general, to believe that some are white and some are black.

As the products of subjective rationality for two different agents can conflict, so can either one conflict with those of public or objective rationality. A certain person at a certain time may be denied important evidence that most other people have, and therefore come to different conclusions from theirs, without committing any errors in reasoning. Or an individual may have some extra evidence, beyond what lies before the general public, but which might turn out to be misleading. For example, I may have been kidnapped and returned to Earth by aliens, with all of the extraordinary experiences such an event is liable to involve, though nobody else on Earth has any evidence of this fact. So only I believe the truth about what happened to me, and everybody else who disagrees is wrong - but that is not their fault. Or perhaps it was all an incredibly well-

wrought hoax, perpetrated on me by one Steven Spielberg at a cost of a hundred and sixty million dollars, for no reason I could be aware of. In this case, I am the one who is wrong - but it is not *my* fault. In the example, we are all reasonable people (except maybe Spielberg), all doing our best with the imperfect evidence at hand. This is the model that I wish to apply below to disagreements over religion and many other questions, where it often happens that one side (or each side) considers the other irrational. I want to argue that the main source of disagreement in many such questions is that people on the different sides have different total evidence. The people on both sides are drawing the conclusions that as individuals they rationally *ought* to draw from *their* evidence. Sometimes that evidence is misleading, in which case the conclusions drawn, on one or both sides, turn out to be false. And this is not anybody's fault; no one is making a mistake in reasoning. Sometimes we all just get stuck.

The second main distinction that I want to make is between two levels or orders of evidence, belief, rational belief, etc., regarding testimony. First-order evidence is whatever is available to an individual without dependence on the word of others. Whatever comes to me directly through my senses, memory, and faculties of inference is my first-order pool of evidence. Second-order evidence is whatever one can access only indirectly, through reliance on the word of others. So if I hear someone say to me that it is raining in Paris, then I have first-order evidence that such-and-such a person has made the sound, "it is raining in Paris," and I have second-order evidence that it is raining Paris. One's first-order beliefs are then those based entirely on first-order evidence, and one's second-order beliefs are those based to a significant extent on testimony.[3] First and second-order rationality may then be defined as the correct reliance on first- and second-order evidence to form first- and second-order beliefs.

A common question about second-order, testimonial beliefs is whether they can be reduced to, or rationally derived from, more basic first-order beliefs. Hume thought that they can; Thomas Reid and several recent writers[4] have claimed that they cannot. This is not a central issue here. It is enough for my immediate purposes that testimony be seen as a reasonable form of evidence, derivative or not: that the fact that someone says something sometimes counts rationally in favor of someone else believing it. Typically, at least, this will happen when the second person has good reason to believe that the first person is a reliable source of information, at least on the topic in question. Thus the efficacy of second-order evidence will seem to depend, in practice if not in principle, on first-order evidence about its sources.

I do not claim that this distinction between first and second epistemic orders is at all crisp. For example, there are plenty of mixed modes like telescopes, which can rationally be relied upon by individuals only through a justified trust in the craftsmen who made them, their instructions, etc. Even our own sense-organs take on this mixed character, once they have been examined and pronounced however good they are by reliable others, which must affect our confidence in using them thereafter. But the distinction should be clear enough for present purposes: the arguments that I want to present about first- and second-order thinking are not very sensitive to such details.

Finally, I need to make it clear that I am talking only about rational or justified belief, as distinct from knowledge.[5] We allow ourselves to say that people rationally believe things that they do not know. There are three main reasons for this. First and most obviously, knowledge implies *truth*, and many justified beliefs are false. I may have believed with good reason that my wife was cheating on me, and then discovered (maybe only after I have strangled her) that I had been expertly deceived toward that conclusion by my best friend - so, plainly, I could not have

known what was not true to begin with. Second, even ignoring the issue of truth, the term "knowledge" implies greater *certainty* than mere belief. I may believe with good reason that Ralph Nader will lose the presidential election in the United States this year, and be right, but not know it in the sense of being truly certain. Third, knowledge implies *understanding* in a way that simple justified belief does not. I may believe with good (second-order) reason that photons exhibit something called wave-particle duality, but I barely understand what this claim means in terms of the theory that explains it - hence, in a way, I do not really know that the claim is true.

I am particularly concerned to avoid a side-issue over whether there is such a thing as second-order knowledge, in the full sense of the term. Plato for one, and Locke for another, firmly deny that mere testimony can ever provide us with real knowledge.[6] But this depends on their strong view of knowledge as something like understanding, not justified true belief. Both Plato and Locke do accept that testimony can often be used to transfer mere justified or rational belief (true or otherwise) from one person to another. This weaker claim is all that I need for my argument that most people do believe what they rationally ought to believe.

3. The subjective rationality of faith.

Sometimes, the total pool of evidence we have will make it rational for us to override our own tentative, first-order conclusion about something in favor of someone else's expressed opinion. This will typically occur when we have sufficient reason to believe that the other person or group has a more reliable overall view of the question than we do. To the extent that another person is an eyewitness, or an expert, and we are not, it is likely to be rational for us to forego our own first-order beliefs in favor of theirs. Even when our own view is privileged in some way, we should sometimes still defer to the opinions of others. For example, when I think,

based on my own direct experiences, that I am having a heart attack, but then my doctor checks it out externally and tells me no, that I am only suffering from something called "acid reflux," then I should probably just abandon my own prior opinion, and adopt his in its place. This is because he is much more likely overall to be right, under the circumstances, than I am. In general, if we are rational, we should believe whatever is most likely to be true, given all the evidence we have. It is, in principle, irrelevant whether the initial source of this belief is our own first-order judgement or someone else's. In a conflict of belief, if we are justified in believing that someone else is more likely to be right on the question than we are, then we should defer to their opinion. As a strictly subjectively rational matter, we should "stick to our guns" when faced with controversy only if we are justified in believing that we are the ones most likely to be right.[7]

I should make it very clear that I am not suggesting that one can think somebody else's thoughts. When I adopt through deference somebody else's opinion, the belief that I end up with is still definitely mine. I am not rationally out of the picture just because I have deferred to the beliefs of another. I am still drawing the best conclusions that I can from the total evidence available to me, which of course includes my own direct experiences and reasoning based on them, but also includes my experiences of other sources of information besides myself. At the end of the day, my coming to the best *overall* conclusion may entail giving up my own *first-order* conclusion. But it is still me thinking, from my own traditional, first-person point of view. So my claim implies no form of "group-think" social epistemology, i.e. one that takes social groups as basic subjects of belief. There is no relativism, or social constructivism, or anything of the sort involved in what I am saying. I am speaking only of the total evidence that each individual has for his own beliefs, and claiming that this evidence can sometimes force a reasonable person into epistemic conformity with others around him.

Still, the principle of rational deference that I am arguing for is very strong. It does imply that there are cases in which, if the practical question is only what one should believe at the moment, one might as well simply shut down his own epistemic faculties, and rely reflexively on someone else instead. In general, it says that person *S1* ought to defer to person *S2* with respect to proposition *p* just in case *S1* has sufficient reason to believe that *S2* is more likely to be right about the truth or falsity of *p* than *S1*. But it can happen that *S1* finds out, or at least comes rationally to believe, that *S2* is *always* more likely to be right than *S1*, in which case it looks like *S1* should just adopt *S2* as an authority, and stop trying to figure things out for himself. This may be true for a certain class of mentally retarded people, for example, who come correctly to believe that their own opinions (i.e. their own first-order beliefs) about most things are simply not to be trusted, and they should rely instead on some set of trustworthy, non-retarded people around them. A larger class is children. Almost all small children, at least up to five or six years old, including very intelligent ones, are in this position with respect to their parents. The children know enough to know that they are far less reliable overall than are their parents, hence that they are rationally best off (though perhaps not best off overall) accepting whatever their parents say, on almost every subject.[8] Of course, ordinary parents are not *really* especially reliable on every subject, including theology, physics, etc. But the young child is in no position to make such distinctions. From his point of view (i.e. given all of the evidence that he has accumulated so far), whatever his parents tell him about virtually anything is more likely to be true than are the products of his own, separate efforts.

Consider an ordinary child's belief in the existence of Santa Claus. It may seem that such children must be making some kind of juvenile mistake in reasoning, to come to such a poorly evidenced conclusion. But from the subjectively rational point of view, there is usually nothing

wrong with them at all. They are not making any mistakes, given the evidence they actually have. They believe in Santa Claus because their parents have told them that he exists, and their parents are the most reliable people that they know. Even if they find the first-order case for Santa's existence pretty unconvincing on its face, and even if their older brothers and sisters have explained repeatedly to them what suckers they are being, the fact remains that most kids still have greater total reason to believe what their parents are telling them, however things otherwise seem. It is, ordinarily, only once the parents themselves have relented, that a young child gives up this belief, however suspicious or "conflicted" he has become in the meantime.

I am not trying to pose as a psychologist. It may be that the best causal explanation of why children tend to accept the beliefs of their parents involves other forces in addition to the kind of reasonable inference that I have described. My point is not that they come to hold such beliefs entirely because they are rational. What I am saying is simply that many such beliefs *are* rational, and surely this is an important aspect of the total explanation for their being held.

This kind of reasonable belief in Santa Claus can be clearly distinguished from a case presented annually in the comic strip *Peanuts*, where the character Linus has his own, idiosyncratic belief in what he calls the Great Pumpkin, on the basis of no evidence whatsoever, either first- or second-order. Every Halloween, he expects this thing to rise out of a local pumpkin patch and bring presents to all of the children in the world. And every year, it doesn't happen, and he sees that it doesn't happen, and he keeps believing in the Great Pumpkin anyway, all by himself. I say that this extreme "fideist" Linus is subjectively irrational, where the ordinary Santa Claus believer is not.

My point applies to true as well as false beliefs, of course. For example, I believe that the last Tsar of Russia was a man named Nicholas, not because I have any first-hand evidence for

this fact, but just on other peoples' say-so. If I refused to believe in this Nicholas, just because I have no direct evidence of his existence, then, given what I know about the reliability of many of my sources, I would be making a serious error in reasoning. Or if I believed on the same evidence that there were two such people, Nicholas and another one named Freddie, I would also be committing an error. In such matters - and there are many such matters - we should believe no more or less than what we have been told.

Now I want to apply the same basic analysis to religion (more specifically, religious *faith*) in general.[9] The prevailing view is that religious faith is an irrational (or just non-rational) alternative to belief based on evidence. Explanations of other people's faith vary from hope, fear of death, etc. to political "brainwashing," but the common thread is that believers are persuaded by essentially psychological or social, not epistemic, forces.[10] But I say that if someone grows up in a society in which his parents and everybody else believe in reincarnation, for example, then if he is rational, he will defer to all of his elders, and believe in reincarnation too. He may have no direct, first-order evidence for this view (though he may or may not have been taught that some things *count* as first-order evidence for it), but this makes no practical difference. Given the evidence that he actually has, he must conclude that those around him are much more reliable, at least on big public issues, than he is himself. Therefore, if he wants to believe what is most likely to be true, he ought to accept whatever these trustworthy people, his elders, tell him.[11] If what they say makes little sense to him, then that is too bad - just as it is too bad for me that I cannot make heads or tails of quantum mechanics.

We say that people ought to "think for themselves". But what would that be like in these cases? Should I do my own particle physics? If not, then why should every member of a traditional society do his own metaphysics? How could it be rational for him to evaluate the

cosmic situation on a purely first-order basis, and then accept his own restricted conclusions in preference to the unanimous testimony of the most trustworthy people he knows? To think that one can figure this sort of thing out for himself would imply that he believes that his own first-order epistemic machinery is somehow more reliable than everybody else's. Unless he is an extremely unusual person, he has no evidence for this at all. Even if it strongly *seems* to him that he has good direct evidence for his own, different first-order view, and that everybody else is screwing up somehow, his knowledge of their overall epistemic record and abilities, compared to his own, should surely force him to defer. Those few people who refuse to defer under such circumstances can be said to suffer from the second-order form of irrationality that is usually called arrogance. The more common attitude toward doctrines that may not seem directly to be right, but are adopted on good grounds of testimony, is what Christians since Augustine often really mean by *faith*, and what I am calling second-order rationality.[12]

This is what explains the great stability of religion, and other traditional beliefs. It is because human beings are usually quite rational in the subjective sense - i. e. we make about the best sense that can be made of the total evidence we have, including second-order evidence - that normal people growing up in traditional societies so "uncritically" absorb the views of those who went before them. The common prejudice among scientific Westerners, that generation after generation of highly civilized Egyptians, Chinese, Hindus, Incas, Moslems, etc. are all somehow effectively deficient in their reasoning, shows its absurdity, I think, when placed against this reasonable alternative.

Here is a major objection, first posed to Augustine's view by Hume, in his famous essay on miracles (*Enquiry* 10). What if a religious claim is so bizarre that the probability of even

unanimous testimony in its favor being true is lower than the probability that everybody else is simply wrong? Hume claims that miracles are, by definition, events of very low probability, since they violate what seem to be the laws of nature. To be persuaded by second-order evidence of miracles, then, requires that one assign an even lower probability to the proposition that the testimony in question has somehow misfired, through past deceit, ill-will, undue credulity, mistaken perception, or any other fallibility of our reliance on others. Hume asserts, quite reasonably, that in the case of a conflict, the real probability of any human authority's being correct will never be as high as the probability that the usual apparent laws of nature are in force.

From an external point of view, Hume is correct about these probabilities. So his argument is valid, objectively speaking. But he is not considering every ingredient of the *subjective* probabilities involved, when an individual is actually confronted with a question like this. In particular, he leaves out what the individual may justifiedly believe about his own ability to figure such things out. Even if the individual has read Hume's argument himself, and finds it very persuasive on its face, he does not know for sure that he has understood it fully. If he then shows Hume's essay to his parents, teachers, etc., and they all say that it does not work, this counts as a powerful, subjective argument against it *for him*, even if he cannot grasp their actual objections.

But what if the religious (or other second-hand) belief in question contains, not an improbability, but an outright contradiction? If rationality is supposed to be a useful thing, must not the rational person be allowed to apply autonomously at least some basic tests for coherence? The answer is yes and no. Rationality does plainly require that one's overall view of things be basically coherent. But this does not entail that each belief that a person has must make sense *all by itself* to that person, when this conflicts with rationality's demand that one make the best

available sense of one's *total* epistemic situation. If everything that your elders ever told you had struck you as highly improbable in the first place, then you would indeed have good reason to doubt the next implausible suggestion that you hear from them, based on their previous performance. But, to whatever extent they have established their reliability (in the relevant subject matter) to you, you have that much inductive reason to believe whatever next thing they assert, however oddly it strikes you. If they have established a degree of relevant reliability that is superior to your own, as is usually the case for parents and their children, then you can easily end up with better overall reason to defer to what they tell you than to believe something else that appears to make far better sense. If such a situation causes some local inconsistencies to crop up within one's set of beliefs, this is unfortunate, but often unavoidable.

Think about the Problem of Evil. You grow up believing, on the basis of the testimony of your parents and other adults, in an all-powerful, all-knowing, and completely benevolent God. One day it occurs to you that the existence of such a God is frankly contradicted by the pointless suffering experienced by millions of innocent people (and other creatures) every day. Now, what should you think? I say that you are faced with a choice which is, in principle, still pretty simple. Should you continue to trust your elders in this matter, or should you trust yourself instead? Admittedly, you have found yourself in a certain psychological state - the state of being persuaded by an argument that a certain complex proposition in incoherent. But is this a reliable indication of the truth? Has something suddenly made you an expert on what is and isn't actually incoherent, as distinct from what merely seems to be incoherent? Suppose that your parents, priests, etc. now tell you that they are aware of your argument, and assure you that it can effectively be countered (through a very subtle rejoinder, or perhaps through some other process that goes "beyond" argumentation). As long as you understand that your own faculty of reason

is not a superior indicator of necessities and possibilities, then you will have little more total reason not to defer to your parents now than you did before the problem occurred to you. This is so, moreover, even if you turn out to have been right, and the Problem of Evil is in fact objectively devastating to traditional conceptions of God - indeed, even if you "know" that it is so, in the sense that you are aware of the correct first-order path to that conclusion.

The same point holds outside of religious or traditional beliefs. I have a friend - a philosopher, not a physicist - who claims to have proven that relativity theory is incoherent. He may, for all I know, be right. But I am sure that this person is not justified (in the subjective sense) in holding this as a belief, if he really does. It almost doesn't matter whether relativity actually is incoherent, or how good this fellow's argument is, objectively speaking. Once he has shown it to the experts, and they have turned it down, he simply must defer to them, if he is to be rational about it. I am in roughly the same situation myself, with respect to the coherence of quantum mechanics - except I realize that I am in no position to judge the matter, so I just accept the experts' view that this theory is correct. It seems self-contradictory to me, but that is not sufficient reason for me to disbelieve a theory, unless it is so frankly incoherent that I cannot even frame it in my mind. And even then, it may be rational for me to accept that such-and-such a theory, which I cannot even mentally express, is nevertheless probably true.

There is indeed a limit to how crazy one's beliefs can be, but it is a pragmatic, not an *a priori* one. If I believed that all amounts of money are the same, for example, then I would likely fail in life from that belief. If I believed that hydrochloric acid is health-giving and delicious, then I might well die. Beliefs that seriously interfere with the conduct of ordinary life are naturally hard to establish in the first place, and will be equally hard to maintain in the face of a recalcitrant world. This is why many of the most bizarre-seeming tenets of other people's

religions have to do with primal history, the afterlife, and other matters outside the scope of daily existence. Still, it is instructive to remember what some people actually put themselves through in terms of daily inconvenience, not to mention some extreme forms of self-denial and even self-mutilation, in order to live consistently with their traditional beliefs.

As John Rawls has said, the proximate goal of the exercise of reason is a kind of equilibrium. Each thing that a rational person experiences, first-hand or second-hand, must be processed as a piece of evidence about the world, factoring in whatever one knows about the reliability of its source. In order to make the best sense of the whole collection, one may well have to sacrifice something of the best sense to be made of some parts. What we seem to perceive with our senses usually counts for a lot, because we have good reason (much of it testimonial) to believe that our senses, especially our eyes, are very reliable. What we can figure out by pure, first-order reason also counts a great deal, for similar reasons, but not necessarily decisively in any case where there is contrary evidence as well. And testimony from any source not known to be deceptive also counts - sometimes less than other kinds of evidence, depending on one's total situation and experience with other people, but sometimes more.

Hence my point about traditional societies: when available testimony on some point is truly unanimous, its epistemic weight can simply overwhelm the other resources, a priori and otherwise, of the individual, rational mind. The most intelligent people in the world may end up believing almost anything, if it is part of an overall theory of the world that makes the best sense out of each individual's total experience, including everything that other people say to them. Religious faith is not, then, just an irrational "opiate of the masses". It is, essentially, the social realization of second-order rationality. These beliefs may have arisen *initially* through people's desire to have a comforting story about death, to control others, etc. - or perhaps some people

really witnessed miracles. But once these beliefs have been established, no further "backwardness" of any kind is required for their maintenance, and no political sort of repression, either. Once the process takes sufficient hold in any society, it will tend to persist indefinitely, from each generation to the next, as new members are raised into it. Of course, it is bound to happen that some people grow up deferring to beliefs that they do not find very plausible, or even fail entirely to understand, like many Catholics do not understand the doctrines of the trinity and transubstantiation. Such obscure beliefs might possibly be viewed as errors that have gotten entrenched, and that the epistemic community simply has no way correcting from inside.[13] I am not denying that it is a bad thing when mistakes or inconsistencies get passed on like this. My point is that when this happens, it is not because the people involved are irrational, in the subjective sense. It is because they are rational.

Unfortunately, too, a certain amount of flat-out intellectual repression does seem to make sense from within a traditional society. If all the members of a community are forced by rationality to adopt some belief, due to the great epistemic weight of testimony in its favor, then anyone who attacks that belief is *ipso facto* behaving unreasonably. It is not just raw power, then, which argues for the suppression of opposing views within traditional societies. Since the dissenting views themselves are rationally wholly unbelievable (though not for intrinsic reasons), it is hard to see from inside such a community why reasonable people should have to put up with them - especially in legislatures, schools, and other public theaters, where everyone agrees that reason ought to rule. Even in a non-traditional, modern society like ours, such repression may seem appropriate where unanimity is nearly total. For example, those who now allege that the Holocaust never took place are (and arguably should be) denied nearly all forms of public support for the dissemination of their view, not simply because the view is false, or because it is

nasty, but because such a view can only be held *irrationally*, in light of the great mass of physical and especially testimonial evidence to the contrary.

Here is a second objection, or a possible restriction. My account of rational deference so far assumes something close to unanimous testimony on the part of one's elders or one's whole community. But many religious and other traditional believers maintain their views despite conditions of controversy, even as members of tiny minority groups. Can at least this kind of deference - to local authorities, in the face of known disagreement from others - be counted as irrational? I say perhaps, but not necessarily. It will depend on the immediate epistemic conditions for the individual believer. For example, if a child is raised by evidently highly trustworthy parents and others whom he knows, both to accept some minority belief and strongly to distrust the majority that disagrees, then that person's belief may be rationally stable for a long time - perhaps his whole life if he is sufficiently "protected" from the outside world. This is certainly a common pattern with minority religious groups like the Amish or Hasidic Jews, or other fairly self-contained epistemic communities. But there is also a tendency, perhaps a stronger one in very mixed societies like ours, for such minority beliefs to break down (i.e. to stop being rationally justified) under the pressure of conflicting testimony from "outsiders" who have nevertheless shown themselves to be reliable sources - at least, not too much less reliable than the believer's original community. Travel, military service, and college education have long served this dissolusive role, by confronting previously sheltered individuals with evidence that many non-believers can in fact be trusted.

Descartes, experienced himself in all three modes of outside contact, raises this issue of conflicting testimony in the *Discourse***.** He claims that such conflicts of authority tend to cancel

out the total weight of testimony in those situations, throwing the individual back on his own resources.[14] For example, if a third of my elders say that Odin is the king of the gods, and another third say that it is Zeus, and the last third say that there are no gods at all, then obviously I cannot take all of these propositions equally on faith. Let me then just ignore the whole lot of them, and do what I can to figure the situation out for myself. Perhaps I will end up agreeing with one side in the ongoing dispute, or perhaps I will come up with my own new theory, e. g. that there is only one god, or that the gods are democratic. In any case, according to Descartes, I should rationally come to believe whatever theory makes the most sense to me on first-order grounds, since the pool of second-order information I received was effectively nullified by the contradictions it contains.

I disagree with Descartes about this.[15] I think that the rationally correct procedure is to assemble all the candidate theories one can find, and then place the greatest faith in the one most likely to be true, all things considered. One's own first-order view of things is never more than one of these choices. And when it is opposed to the unanimous testimony of his elders, one's own view is almost always, as I have said, less likely to be true. But this is equally the case if one's own view is opposed by the *divided* testimony of his elders, because he is still less likely to be right than any of them. Here is a simple example. Plato says *X* about some philosophical issue, and Aristotle says *Y*. The best thing I can figure out on my own is *Z*. Now, what should I believe? Certainly not *Z*, unless I have good reason to think that I am as reliable a philosopher as either of the other two. From a strictly rational point of view, I should conclude that the correct answer is likely to be *X* or *Y* (or something else that I am not aware of), and acknowledge that I am not in a position to decide between them. My own view may be interesting to me, and I may

gain in various ways from the exercise required to produce it, but I am not in a position to judge that my own, personal opinion has any greater virtue than its plausibility to me.

The inductive conformism that I am recommending does have some limits. I do not wish to suggest that a person should automatically believe whatever the mere majority around him believe. If more philosophers believe in theory *A* than theory *B*, this may make theory *A* somewhat more likely to be true, *ceteris paribus.* But this relative likelihood does not itself suffice to meet any reasonable standard of belief. Only when there is an established consensus on an issue is it normally reasonable for someone to accept the judgement of others without further question. But at the same time, it is only in the unlikely case of a total breakdown of testimonial authority that one is ever truly thrown back on his own epistemic resources. If the disagreement among your elders reached the point where you had reason to judge that none of them was more reliable than yourself, then your own opinions could properly be seen as at least equally worthy of belief, compared to the theories of others. But again, it is only ultimately rational for you to prefer your own opinions if you have reason to prefer yourself as a source of opinions. If no one in the world, including you, stands out as a reliable authority on the relevant questions, then the rationally best thing to believe is nothing at all.

At the same time, there is undeniably a certain intellectual freedom that results from such an absence of coherent authority. If, as suggested below, it is natural for people to want a picture of the world that is reasonably complete, at least where action is likely to be required, then even in cases where a suspension of belief is rationally favored, the desire to believe may take control psychologically. This may explain why first-order reasoning seems naturally to thrive in those complex epistemic situations where traditional authority has broken down, and new beliefs, including quite bizarre ones, seem to arise and flourish with only the flimsiest objective evidence

in their favor. People anxious for a theory, but deprived of all authoritative guidance, might simply grab whatever is most psychologically attractive, on the rationally non-decisive grounds of first-order plausibility to themselves.

In ordinary intellectual life, where authority is less than absolute but holds some sway, first- and second-order justifications for belief are all mixed up. Our belief in our own intellectual powers is largely conditioned on our accepting the authority of various other people who tell us how reliable they think we are, and how reliable the various other authorities are. This judgement, in turn, affects our estimation of the reliability of each of them, and everybody else. For us to develop the best possible picture of the world, our conceptions of our own intellectual strengths and weaknesses must come into equilibrium with our beliefs about everybody else's, and in turn with our beliefs about the actual objects of everyone's opinions.

This is why it is almost never sufficient to justify upholding a dissenting opinion, merely to come up with a coherent first-order explanation as to why the orthodox opinion is wrong. Someone who believes that everyone else is a devil, for example, has a consistent view, which accounts coherently for everyone else's testimony to the contrary. Rationality requires, not just that one construct *some* coherent account of his entire evidential situation, but also that he make the *best* total sense of it. And it is highly unusual for the best overall theory to be one in which first-order evidence outweighs anything like unanimous testimony to the contrary.

4. The objective rationality of science.

We tend these days, as I have noted, to think of empirical science and associated attitudes toward discovery and truth as normal, and of religious belief and other kinds of "folk theory" as representing a failure of fundamentally scientific rationality. But the truth is the other way

around. Science is rare in history, for the reason that it requires, in effect, the *suspension* of ordinary individual rationality, in the ultimate pursuit of knowledge which is largely unavailable to its immediate discoverers. In general, for each basic scientist or other intellectual explorer, the probability of his own new theories turning out to be true will be far lower than the probability that the received view of the time, or some other person's innovation, will be proven right. The young child who announces, on the basis of his own observations and deductions, that Santa Claus does not exist, despite his parents having insisted that he does, may be said to be to be right in the sense that what he says is true, and is backed up with what turn out to be good first-order reasons. But he is also wrong, in the sense that he has no justification for preferring his own overall judgement to that of his parents.[16] The same goes for scientists and other intellectuals who wish to challenge the beliefs of their own authorities. For science to work requires that scientists *ignore* the epistemic weight of much of what they hear from those around them, since a rational respect for such testimony can place the subjective probability of any very new hypothesis at close to zero.

Here is an example, simplified a bit to illustrate my point. Galileo is a hero of science, but may not have been an altogether reasonable man. He certainly defied his elders (if the church authorities of his day can be counted as such), not just by disagreeing with received opinions, but also by denying that religious or social authority should carry any weight in matters of science. Galileo had the telescope, of course, and access to other recent developments, as well as the fruits of his own reasoning. But so did his opponents, who never seriously denied that astronomical *appearances* were as he claimed. The main issue between them was one of how to decide, and who gets to decide, what these appearances amount to in the greater scheme of things. And Galileo was, for much of his working life, openly contemptuous of the "ignorant

and superstitious" beliefs of the authorities around him. He was ultimately brought to trial by the church, gently imprisoned, and required to renounce his unorthodox views. Now, the common perception is undoubtedly correct, that Galileo was the premier founder of the modern scientific method, and for this he certainly deserves our thanks. He also authored many particular ideas which turned out to be right, or at least important improvements on the going theories of his day. So we can say that his opinions were rational ones, in the objective sense. But was he justified subjectively, in believing these new theories himself? There are grounds to think that he was not, because he never had sufficient overall reason to prefer his own approach to the received view of the Church. If he thought that he did, this would have required him also to believe that he, Galileo, was a better judge of the entire situation, encompassing both science and religion, than were the church authorities who argued that reliable scriptures ruled out certain of his physical hypotheses. And it is not clear how he could have had sufficient reason to believe this claim about himself (even if it was, objectively speaking, largely true). He must have known that he was very bright. But unless he believed justifiedly that he was brighter than everybody else, or privileged in some other general way beyond the resources of his elders, there was no adequate internal reason for him to prefer his own authority, as it were, to theirs. We are glad that he did, of course, because he turned out to be right, at least approximately, both on substance and on scientific method. But he himself could not have known that. Far from being a martyr to reason, as he is usually portrayed, he was a man whose total epistemic situation made it rational for him to recant when he was finally ordered to do so.[17]

In the practice of science, subjective and objective rationality part company. The fact that radical inquiry of the sort that Galileo practiced is ordinarily irrational for individual thinkers makes it unlikely that science should ever emerge inside of a traditional society. But the fact that

empirical science *works* in the long run - i. e. leads to more true beliefs, providing for better technology, weapons, and so on - makes it hard to kill once it gets started. It spreads, not because it makes the most sense for the individuals who practice it, but because the societies in which it has taken hold tend to be more successful than those in which it has not. A scientist devotes his career to the development of some new theory: is it likely to be true? No. Each individual scientist is probably just wasting his time, if the goal is merely to increase his own stock of true beliefs.[18] But there are many scientists working at once, on many hypotheses. If any of them prove to be correct, then all of the consumers of the scientific product benefit, albeit at the expense of unsuccessful scientists, to the extent that the latter have convinced themselves of theories that will turn out to be false.[19] Thus scientific reasoning appears to involve a kind of *epistemic altruism* on the part of individual scientists, intentional or not.[20] By refusing to defer to others when it is subjectively rational for them to do so, they sacrifice the greatest likelihood of having true personal beliefs, for the sake of producing better beliefs for everybody in the long run.[21]

This is true not just for empirical science. Intellectual progress in general results from the same kind of altruism. New ideas in ethics, cultural life, and even art must be launched initially in the face of such great second-order evidence to the contrary, that it makes little sense for their proponents to have any confidence at all in such hypotheses. The autonomous thinkers themselves are likely to lose, from a strictly rational point of view, whenever they actually believe in their own new ideas. But their successors, and their societies as a whole, gain much more when one of their hypotheses (of whatever sort) proves to be true or useful.[22]

It does appear that people naturally prefer believing something to believing nothing. As Hume says: "Nature, by an absolute and uncontrollable necessity has determin'd us to judge as

well as to breathe and feel..."[23] It is easy to see how the need for action in a largely hostile world entails a need for some kind of theory of that world, even if the only available theories are unjustified. Hence, rationality itself may be of limited survival value. A creature who found it very easy to suspend judgement whenever evidence was incomplete or contradictory would probably be less fit for survival than another who was more ready to jump to conclusions - for example, in the matter of whether one was about to be eaten by a tiger. But it is still not absolutely necessary for philosophers and scientists to believe their own theories, or believe anything at all on a given issue.[24] Intellectuals of all sorts can distinguish between the role of a creator or advocate of ideas, and the role of a disinterested judge of the truth. What is a good means of intellectual production, and what are good grounds for belief, are really very different questions. Philosophers and scientists are trained to produce new intellectual material that can be ground up and examined by others, and to engage in controversy in a spirit of healthy competition. But a fully rational person ought to withhold belief from hypotheses that have not yet been established, or at least made probable, regardless of his own personal role in generating or defending those propositions. To think that one's own products are especially deserving of assent - this is where a potentially useful, speculative posture turns into *hubris*. It is always possible to doubt, at least "metaphysically," even those thoughts which one finds most psychologically compelling. For a normal person can resist *assenting* to anything he knows is improbable, as we do when we find out that we are hallucinating, or that the proverbial stick in the water really is straight. Proper internal use of the phrase "it seems" should be adequate, though it must be sincere. For example, a raven may look totally, convincingly black to me, but nothing forces me to conclude from this that the raven really is black, since I always have the

option of concluding, in the face of any sort of evidence to the contrary, that it merely seems to be black.

Present-day physicists have the best possible attitude, I think, in not expecting themselves, individually, to be the ones who will turn out to be right. They have seen so many large and small "paradigm shifts" occur, even within the span of a single career, that they have learned to be quite sceptical of current theories. Still, they engage in their work with the zeal of people very close to achieving all that they desire. Their suspension of personal judgement does not dampen scientific enthusiasm for them, much as this would have surprised the ancient skeptics.[25] Perhaps the difference is that individual physicists do expect to see new pieces of the truth keep emerging through the institutional inquiry in which they play a part, so they consider their suspense to be essentially temporary. These scientists can see themselves both as producers of relatively raw ideas, and as potential consumers of a largely finished product.

As for the ordinary, modern consumers of ideas, they must respect the great success of science overall, but also pay attention to the frequent overthrow of current theory. Their most reasonable attitude bets heavily on science in the long run, but against the view that this or that particular theory is the whole truth of the matter. Many highly educated people come from a partially traditional background as well, and this often creates special epistemic problems for them, for example in the apparent conflicts between biblical creationism and modern geological and evolutionary theory. It may be that, as between scientific and religious authority, some such individuals will have enough total evidence to "fall" one way or the other, while others are left with no clear, reasonable choice at all, and may suffer greatly from the cognitive (as well as social) strain that this creates. Ironically, widespread attacks on the rationality of faith will tend

to push some people out of this uncertain state by second-order means alone, while pushing others into it.

5. Conclusion.

Here is a final objection to my view. It can be claimed that I have no business asserting my thesis about controversial beliefs, given the fact that the thesis itself is novel, and bound to be controversial if discussed at all. Thus I am caught in an apparent paradox: if what I say is true, then by my own arguments I ought not to believe it. It does not make sense to be the only conformist, as it were, in town. But there is really no paradox here, since I desire to assert my thesis only hypothetically - not as a report of my own firm beliefs, but as a mere, suggested avenue of inquiry for others to pursue and evaluate. I have first-order reasons to believe in my conclusions, which I have given above. If I did not find the view pretty convincing myself, I would not have bothered writing it all down. But I really do not know what other philosophers are going to think about these arguments in the long run. If there are glaring errors, I may find that out pretty soon. But if my thesis is true, I doubt that I will ever know this, because most other philosophers will not agree very quickly, and I already know that my own opinion in philosophy, while modestly reliable as such things go, is not *especially* to be trusted.

Perhaps the only point on which there is a true consensus among philosophers is the principle of epistemic self-reliance itself - which is what I have been questioning. But even if I were attacking this principle head-on (e. g. by arguing for a straight, majoritarian conformism), I would still be obeying it, since this attack would be my own idea.[26] In any case, it has not been my purpose to attack the idea of intellectual autonomy itself. Instead, I have been trying to say what it really amounts to, and how it is best to be employed - that is, in the experimental,

"brainstorming" spirit of contemporary physics. So my position is a little awkward, perhaps, but no more paradoxical than that of any other intellectual who is working with the proper attitude toward his own, tentative results.

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NOTES

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[1] Some writers have used the terms objective and subjective to mark the difference between *really* and *apparently* rational belief, i. e. what merely seems to someone to be rational belief. Richard Feldman has argued plausibly that this distinction tends to collapse when looked at closely, unlike a similar distinction in ethics between really and apparently right action. See his "Subjective and Objective Justification in Ethics and Epistemology," *Monist* LXXI (1988): 405-419.

[2] A quick guess would be that S ought rationally to believe p just in case p has a subjective probability for S of greater than 50%. That is, p should be more likely true than not, from S's point of view. But this may be too low, or too uniform, a standard for belief, and in any case the proper definition of subjective probability is also controversial. My subjectively rational belief is approximately what William Alston means by deontologically justified belief in "Concepts of Epistemic Justification," in his *Epistemic Justification: Essays in the Theory of Knowledge* (Ithaca: Cornell, 1989), pp. 81-114. Alston's conception is much more elaborately defined, to respond to problems about which my view is indifferent.

[3] I am ignoring Wittgensteinian claims about the essentially second-order nature of meaning. It does not matter to my arguments here whether or not first-order experiences can be articulated in a purely private language.

[4] For two main examples, see C. A. J. Coady, *Testimony: A Philosophical Study* (New York: Oxford, 1992), and Tyler Burge, "Content Preservation," *Philosophical Review* CII, 4 (October 1993): 457-488.

[5] For convenience, I will ignore the issue of probabilized beliefs or degrees of belief, and just treat belief as an up-or-down decision.

[6] Here is Plato in the *Theaetetus* 201c: "...suppose a jury has been justly persuaded of some matter which only an eye-witness could know, and which cannot otherwise be known; suppose they come to their decision upon hearsay, forming a true judgement: then they have decided the case without knowledge, but, granted they did their job well, being correctly persuaded..." (Trans. M. J. Levett, Indianapolis: Hackett, 1992, p. 80). See also M. F. Burnyeat, "Socrates and the Jury: Paradoxes in Plato's Distinction between Knowledge and True Belief*," Proceedings of the Aristotelian Society* Supp 54, 1980, pp. 173-191. Locke agrees, in Book IV, Chapter XIV of his *Essay Concerning Human Understanding* (Ed. Peter Nidditch, Oxford: Oxford University Press, 1975, pp. 655-656), using the term probability to cover all justified belief short of knowledge: "Probability then, being to supply the defect of our Knowledge, and to guide us where that fails, is always conversant about Propositions, whereof we have no certainty, but only

some inducements to receive them for true. The grounds of it are, in short, these two following: First, the conformity of any thing with our own Knowledge, Observation, and Experience. Secondly, The Testimony of others, vouching their Observation and Experience."

[7] John Hardwig argues along similar lines for a somewhat more restricted principle of deference, to the effect that laymen can have good reason to defer to experts, especially in matters if science. He declines to count this reason as a kind of evidence. See his "Epistemic Dependence," *Journal of Philosophy* 98, 7 (1985): 335-349.

[8] There are other important features of a person's education beyond coming up with the most probable beliefs. It is commonly in one's long-term interest to develop his own critical faculties as well, for example, even at some cost to the correctness of their short-term beliefs. Perhaps this helps explain why children go through phases of unreasonable defiance, starting at a very young age.

[9] Religion and faith are not coextensive. There are plenty of traditional and other second-hand beliefs which have nothing to do with religion, and there are sources of religious belief that are not second-order. For example, many people claim to have their own, autoempirical religious experiences, anywhere from hearing vividly the voice of God, to the vague, "oceanic feeling" that Freud talks about. There are also some science-like ingredients of religion, including philosophical discussions among theologians. But the thing that really makes religion or

religious faith what it is, an institution as opposed to a mere set of doctrines, is its transmission through testimony from one generation of believers to another.

[10] The biologist Richard Dawkins gives a particularly blunt and hostile statement of this view: "...I think a case can be made that *faith* is one of the world's great evils, comparable to the smallpox virus but harder to eradicate. Faith, being belief that isn't based on evidence, is the principle vice of any religion. And who, looking at Northern Ireland or the Middle East, can be confident that the brain virus of faith is not exceedingly dangerous?" ("Is Science a Religion?," *The Humanist* 57, January-February 1997). He goes on to describe an ordinary religious education as a form of "mental child abuse". Most opponents of religion are at least more diplomatic.

[11] Alston discusses a similar case, *op. cit.* (pp. 95 and 145-146), and argues that a person who grows up inside a culturally "isolated community" cannot be *blamed* for adopting the peculiar traditions of his elders, in part because he will never have considered questioning them. In this weak sense, Alston allows that such people can be "deontologically justified" in their beliefs (his overall point is that such a conception of justification is faulty, precisely because it leads to such cases). The position that I am suggesting here is much stronger. I say that ordinarily, a culturally isolated individual is (from a subjectively rational point of view) positively *obligated* to believe in the local traditions, even if he has considered them quite thoroughly, and even if he directly perceives what is wrong with them. The only possible exception is if the individual has sufficient total reason to believe that he is more reliable on the subject than the sum of his elders.

[12] Augustine makes this testimonial notion of faith a central premise of his conversion to Christianity. In his *Confessions* Book 6, Chapter 5, he says: "I began to realize that I believed countless things which I had never seen or which had taken place when I was not there to see - so many events in the history of the world, so many facts about places and towns which I had never seen, and so much of what I believed on the word of friends or doctors or various other people. Unless we took these things on trust, we should accomplish absolutely nothing in this life. Most of all it came home to me how firm and unshakable was the faith which told me who my parents were, because I could never have known this unless I believed what I was told." (trans. R. S. Pine-Coffin, London: Penguin, 1961), p. 117.

[13] The process can be interrupted by an external force, of course, such as a conquering army. But even then, traditional beliefs are terribly hard to extinguish, and frequently outlast, or even absorb, such conquerors.

[14] Also at the beginning of the *Meditations*. He says: "...considering how many diverse opinions learned men may maintain on a single question - even though it is impossible for more than one to be true - I held as well-nigh false everything that was merely probable." (*The Philosophical Writings of Descartes*, vol 1., ed. John Cottingham, Robert Stoothoff, and Dugald Murdoch (New York: Cambridge 1988), p. 115. Descartes sees the need for a first-order criterion of rational belief (ultimately clear and distinct perception) as the only alternative to scepticism.

[15] But I do agree with Hardwig, *op. cit.* p. 343.

[16] Again, I am only speaking of purely rational justification. There may well be other good reasons, perhaps developmental ones, for children to be inclined to reject their parents' testimony.

[17] This is only the first layer of a full analysis of Galileo's situation. In real life, Galileo was not truly alone, and his opponents were hardly unanimous.

[18] Though one's *knowledge*, in the sense of understanding, is again a different matter. The practice of philosophy or science may well enhance one's understanding of the world, even while diminishing one's chance of being merely right. A "defiant child" like Marx or Freud, for example, might be seen as having gained a deeper overall appreciation of his subject, while being less correct than prior common sense about most points of fact. Such comparisons are, of course, impossible to quantify.

[19] What I am saying obviously applies more directly to what Thomas Kuhn calls revolutionary science than to his "normal" science. It is not, in general, the incremental advances, in accordance with accepted paradigms, that require suspended rationality on the part of their authors; it is big leaps of genius, in the face of direct opposition from one's elders. In ordinary life, professional scientists and other academics are in fact encouraged to function semi-

autonomously, on the basis of their mastery of authorized procedures. And this is not so different from the authority structure of the Church in Galileo's time, which also allowed for widespread scholarship and speculation, in that final authority still resides very firmly at the top of each profession. In the recent controversy over "cold fusion," for example, a small group of highly credentialed university scientists was decisively rebuked by professional organizations (including funding authorities) when it was decided that they had not correctly followed authorized procedures. For more on this case, and a far more detailed discussion of how authority actually works in science, see Philip Kitcher, "Authority, Deference, and the Role of Individual Reason," in McMullin, E., *The Social Dimensions of Science* (South Bend: Notre Dame, 1992).

[20] It is controversial among both psychologists and biologists whether altruism is truly possible. Some, for example Elliott Sober and David Sloan Wilson, believe (following Darwin) that altruism can evolve through the mechanism of group selection, where groups of cooperatively self-sacrificing organisms are able to outperform other groups comprising individually fitter, but less mutually cooperative ones. See their *Unto Others: The Evolution and Psychology of Unselfish Behavior* (Cambridge: Harvard, 1999). This is an inviting model for the notion of objective rationality that I am suggesting is the basis of science, but my point does not depend on such a theory being right. I am only claiming that science tends to progress against the purely *epistemic* self-interest of individual participants, in favor of the epistemic interests of others. As with other species, it is not required that this type of altruistic behavior in humans be recognized as such by its performers. In any case, scientists are usually compensated in a variety of non-

epistemic ways for their efforts, so it is arguably still in their *overall* self-interest to do what they do.

[21] I reiterate that I do not mean to imply that it is only whole societies (as opposed to individuals) that can know (or justifiedly believe) things, or any such radical thesis. When I say that a society gains in knowledge from the efforts of researchers who cannot know whether their hypotheses will be proven correct, I simply mean that future individuals in that society can know what their forebears could not, once an appropriate consensus is reached.

[22] Not that science and similar intellectual activities are unstoppable once they get established. Many times, societies have reached philosophical or technological plateaus, as in ancient Rome and China or medieval Japan, where a period of exploration gives way to some new set of orthodoxies. Even in the modern West, various forces periodically press for slower change, consolidation, or even a return "basics" of various sorts.

[23] *A Treatise of Human Nature* (London: Oxford University Press, 1967) I.IV.I, p. 183. Here he means to judge in general, not to make any particular judgements. But he also clearly states that beliefs about particular objects can sometimes be "extorted..by the present view of the object," though he says further that this implies no "dogmatical spirit" or conceit (*ibid.*, I.IV.VII, p. 274).

[24] Most likely, we have evolved a differential mechanism, leaving us best able rationally to suspend judgement in those matters where action is least likely to be required. This may explain

why most of us seem to need a full set of political opinions, but few of us feel compelled to have any belief as to whether there is life on other planets. It may also explain why philosophers and other sages are expected to withdraw, to some extent, from the concerns of ordinary life. In order for our rationality to reign in all matters, this natural need to believe, based on expected needs for action, must be to some extent suppressed.

[25] For example, Kip S. Thorne talks about the bets he makes with Stephen Hawking over controversial physical hypotheses, in his recent book *Black Holes and Time Warps: Einstein's Outrageous Legacy* (New York: Norton, 1994), p. 521. He does not automatically bet on the truth of his own work.

[26] It is more common to encounter the implicit conformist, who unquestioningly asserts the principle of "thinking for yourself," just because everybody else does. The *locus classicus* for this point is the famous balcony scene in Monty Python's film, *The Life of Brian*, where the reluctant savior Brian commands his followers to think for themselves, and they shout their agreement in unison.