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The Evidential Argument from Evil

Edited by Daniel Howard-Snyder

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its rightful rejection.) The inability of Greek atomism to explain these facts constitutes a "difficulty" for but does not count as "evidence against" Greek atomism. Herein van Inwagen is playing humpty-dumpty with language. Responsible historians of science, such as Stephen Toulmin and June Goodfield in *The Architecture of Matter* (Chicago, 1962), 5672, make it clear that these recalcitrant facts counted as decisive evidence against *Greek* atomism. It is completely gratuitous for van Inwagen to say that it is "our 'elementary particles' and not our 'atoms' or our 'molecules' that correspond to the atoms of the Greeks." For their atoms correspond to or are identical with entities postulated by modern atomic theory only in the eliminative sense in which Zeus's thunderbolts are nothing but the flow of ionized particles. There just aren't any elementary particles in the world of the sort described by Greek atomism things with hooks on them, etc.

20. Van Inwagen, "The Magnitude, Duration, and Distribution of Evil," 165.

21. *Ibid.*, 183.

22. *Ibid.*, 182. My italics.

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12.

Reflections on the Chapters by Draper, Russell, and Gale

Peter Van Inwagen

In "The Problem of Evil, the Problem of Air, and the Problem of Silence" (chapter 8 [EAS]), I left the notion of epistemic probability at a more or less intuitive level. Reflection on Professor Draper's essay "The Skeptical Theist" in the present volume (chapter 9) and a letter from Alvin Plantinga have convinced me that the main point I was trying to make was obscured by my failure to discuss this notion systematically and by my shifting back and forth between the notions of epistemic surprise and epistemic probability. In this paper I shall discuss epistemic probability at some length, and I shall not mention "surprise" at all.

In the first section, I argue that judgments of epistemic probability can best be understood as epistemic judgments about nonepistemic (or "real, objective") probabilities. I go on to show how to reconstruct Draper's "evidential challenge" in such a way that it refers not to epistemic probabilities but to epistemic judgments about nonepistemic probabilities. I then present a restatement of the central argument of my chapter 8 specifically tailored to the reconstructed version of Draper's challenge. In Section II, I shall explain why I do not find any materials in "The Skeptical Theist" from which an effective answer to the restated version of

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my argument could be constructed. In Section III, I shall explain why despite what is said in "The Skeptical Theist" I continue to regard Draper's theses on how epistemic challenges must be met as intolerably restrictive.

I

How shall we understand the notion of the epistemic probability of a proposition? Draper proposes that we understand this notion in terms of the "degree of belief" that a fully rational person would have in the proposition in a given "epistemic situation." ¹ Draper's account applies only to the relative magnitudes of the epistemic probabilities of pairs of propositions. But a generalization of his idea is possible if we remember that philosophers of probability have sometimes attempted to spell out degrees of belief behaviorally, in terms of the odds that the believer would be willing to give on a bet. The generalization may be formulated by reference to the bets of an "ideal bookmaker." If I am an ideal bookmaker, then I accept bets at my discretion; I'm interested only in maximizing my winnings (I have no other interest in money); I need fear no losing streak, however long, for I can borrow any amount at no interest for any period; I am in a situation in which it is possible to settle any bet objectively; my "clients" always pay when they lose, and they never have "inside information" that is, information not available to me about the matter being betted on . . . and so on (add such further clauses as you deem necessary). Suppose also that there is only one way for an "ideal bookmaker" to accept a bet: people come to him and say things of the form, "I'll bet you k dollars that p . Will you give me odds of m to n ?" "I'll bet you ten dollars that the sun will not rise tomorrow. Will you give me odds of 10 to 1?" This is equivalent to: Will you agree to pay me one hundred dollars if the sun does not rise tomorrow, provided that I agree to pay you ten dollars if it does?) When a bet is offered in this form, an "ideal bookmaker" must either take it or leave it; no negotiation about the odds or anything else is allowed. (An ideal bookmaker never declines a bet because of the amount the bettor puts on the table; no bet is too small, and because of his enviable credit situation no bet is too large.)

Now that we have the concept of an ideal bookmaker, we may define epistemic probability. Before stating the definition, I will give an example that illustrates the intuitions that underlie the definition. Suppose a fair die is to be thrown. What is the "epistemic probability" (relative to my present epistemic situation) of its falling 2, 3, 5, or 6? The following thought experiment suggests a way to approach this question. I imagine that I am an ideal bookie, and I say to myself, "Suppose someone said to me, 'I'll bet you ten dollars [or whatever; the amount is irrelevant] that the die will fall 2, 3, 5, or 6.' What odds should I be willing to give him (assuming that I am fully rational)?" If there is nothing very unusual about my present epistemic situation, the answer is obvious: I should be willing to give him any odds lower than 1 to 2. (I should, for example, accept the bet if he proposed odds of 9 to 20; I should be willing to pay him \$4.50 if the die fell 2, 3, 5, or 6, provided that he agreed to pay me ten dollars the amount of his bet if it fell 1 or 4.) I therefore it seems evident manifest in my behavior a belief that "it's 2

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to I that" the die will fall the way he has bet; that is, I must regard the probability of the die's falling 2, 3, 5, or 6 as equal to $2/3$. And this value it seems evident should be the "epistemic probability" of the die's so falling for someone in my epistemic situation. The intuitions behind these judgments may be generalized and the generalization treated as a definition:

The epistemic probability of p relative to (the epistemic situation) K =df (1) 0 if a fully rational ideal bookmaker in K would be willing to give any odds to a client who bet that p ; (2) 1 if there are no odds that a fully rational ideal bookmaker in K would be willing to give to a client who bet that p ; (3) $n/(m+n)$ otherwise, where m and n are determined as follows: m to n are the highest odds that have the following property: a fully rational ideal bookmaker in K would be willing to give a client who bet that p any odds lower than those odds.

What shall we say about *conditional* epistemic probabilities? I propose the following. If K is

the epistemic situation of some person at the world w , let $K \& p$ be what is common to that person's epistemic situations in all the worlds closest to w in which he rationally believes that p . (Roughly, $K \& p$ is the epistemic situation that someone whose actual epistemic situation is K would be in if he rationally believed that p .) Let us then say that the conditional epistemic probability of p on q relative to K is equal to the epistemic probability of p relative to $K \& q$. Consider, for example, the epistemic probability (relative to my actual epistemic situation) of the proposition that my wife has quit her job, on the (false) hypothesis that she has just told me that she has quit her job. I would go about estimating this probability as follows: I would first try to determine what I could about the nature of the closest worlds in which I rationally believe that my wife has just told me that she has quit her job (I suppose these would be the closest worlds in which she just *has* told me that); I would then imagine myself conducting in one of these worlds an "ideal bookie" thought experiment like the one imagined above (I should have to assume that the differences among my epistemic situations in the *closest* worlds are irrelevant to the assignments of odds: that the thought experiments would yield the same odds in all those worlds); I would go on to calculate the epistemic probability for me in those worlds of the proposition that my wife had just quit her job. When I try all this, I do not feel lost; I am fairly confident in my judgment that the conditional probability I am calculating has a value of unity or so near unity that I may as well treat it as unity for any practical purpose.

Does this account of epistemic probability at least approximate to what Draper means by epistemic probability? I think so, but there is an annoying technical adjustment that must be made before this statement has any chance of being correct. Draper's presentation of his "evidential challenge" requires that the probability of O on theism be (prima facie) pretty low. But I try a thought experiment. I ask myself, suppose that I rationally believed that theism was true; what odds would I give someone who bet that O was true? Well, I *do* rationally believe that theism is true, so what odds would I in fact give? The answer is: either no odds at all because I am *certain* that O is true or at any rate very long odds indeed. Or so I judge. It may be that I am wrong in thinking that I rationally accept theism. It

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may be that in all of the closest worlds in which I rationally accept theism, I observe a hedonic utopia, and would give any odds to someone who proposed a bet that O was true. But I do in fact believe that I rationally accept theism, and I shall hardly be impressed by an argument for the irrationality of my accepting theism that proceeds from a premise that is inconsistent with this belief. But Draper (fortunately) does not really ask me *actually* to accept the thesis that $P(O/\text{theism})$ is low. Rather, he asks me (in effect) to imagine that I am in a different epistemic situation, and argues that if I were in that situation, I should accept this thesis. He asks me (in effect) to "subtract" O from my present epistemic situation, and to understand his judgments of epistemic probability as relative to the resulting epistemic situation my "corrected epistemic situation," so to call it. ² (Someone who was in my corrected epistemic situation in the actual world would have led a sheltered life indeed!) Now I am not sure that everything Draper says or implies about my corrected epistemic situation is coherent. One's being in this situation by definition implies that one has almost no knowledge of the actual distribution of pain and pleasure in the natural world, and yet Draper's arguments for the correctness of the judgments of epistemic probability he endorses imply that someone in my corrected epistemic situation would possess knowledge of the biological utility of pain and pleasure that (so far as I can see) would be impossible without extensive knowledge of the distribution of pain and pleasure in the natural world. I will not make anything of this, however, for, even if these observations are correct, Draper's argument can be stated in a way that does not involve the difficulty I think I see.

In my view, Draper makes his argument needlessly complicated by framing it in terms of the

concept of epistemic probability. I will, as I promised, reconstruct his argument in terms of epistemic judgments about nonepistemic probabilities. The reconstructed argument is a more straightforward argument, and it does not require the evaluation of probabilities relative to an epistemic situation that no one is in fact in.

Let us return to the case in which I have judged that, in a bet on a die's falling a certain way, it would be rational for me to take the bet at any odds less than 1 to 2 (and at no higher odds). Let us ask a simple, obvious question: *Why*, exactly, would that be the rational determination of the odds I should accept? Only one answer seems plausible: Because I judge that it is rational for me to accept the thesis that the *real, objective* probability of the die's falling 2, 3, 5, or 6 is $2/3$. If I did not make that judgment (perhaps because I had reason to believe that the die was biased) I should not take the bet at all, or I should figure the odds differently. In my view, this answer may be generalized: epistemic probabilities exist only in cases in which it is possible to make reasonable judgments about certain real, objective probabilities. (I accept this rather vague principle despite the fact that there are tricky problems about how to apply it in certain cases. A rational ideal bookie would be willing to give you any odds lower than 9 to 1 on a bet that the billionth digit in the decimal part of π as yet not calculated would turn out to be '6.' But the real, objective probability of its being '6' is either 0 or 1; whichever it is, it is certainly not 0.1, which is, by our definition, the epistemic probability

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relative to our present epistemic situation that the billionth digit in the decimal part of π is '6.' I believe, however, that the rationality of those odds does depend on the fact that a certain judgment of real, objective probability is rational. Something like this one: in general, the real, objective probability of someone's winning a bet about the value of some as yet uncalculated digit in the decimal part of π is 0.1.)

Epistemic probability, then, is not a "ground floor" concept either in epistemology or in the philosophy of probability. Epistemic probability is to be explained in terms of the concept of real, objective probability and some epistemic concept or concepts, such as the concept of rational belief. Consequently, anyone who refuses to believe in real, objective probability should refuse to believe in epistemic probability as well. In typical cases, the only possible way to arrive at the conclusion that m to n are the highest odds such that a rational ideal bookie would accept a bet that p at any odds lower than m to n is first to determine what it is rational to believe that the real, objective probability of p is. (Then one calculates as follows: If this probability is i/j , set $m=j-i$ and $n=i$.) In *all* cases, a rational judgment about the real, objective probability of *some* proposition is required.

In my reconstruction of Draper's argument, I shall not speak of epistemic probabilities but rather of epistemic judgments about real, objective probabilities. (And these epistemic judgments will be made from the point of view of our actual epistemic situation, and not the epistemic situation of someone who is ignorant of the actual patterns of suffering in the natural world.) In other words, in the reconstructed argument, reference to epistemic probabilities will be eliminated in favor of reference to the concepts I have defined epistemic probabilities in terms of.

Before presenting the reconstructed argument, however, I must say something about "real, objective probability" or, as I shall say, "alethic probability" (on the model of "alethic modality"). What I shall say represents my own understanding of this thorny concept. (Those who prefer some other account may be able to adapt what I say about Draper's arguments and the arguments of EAS with no important modification.) The account I shall give presupposes some sort of modal realism, and it presupposes that real, objective probabilities attach not only to propositions about cards and dice and balls in urns and nuns over fifty who die in

motorcycle accidents (that is, not only to propositions concerning the probability of choosing an object having a certain property when one chooses at random a member of a large set of actual objects), but to a much wider class of propositions. Examples of propositions in this wider class are the proposition that my wife will quit her job within six months (the probability of this proposition is not to be identified with the probability of, for example, a forty-nine-year-old psychiatric nurse's quitting his or her job within six months, despite the fact that my wife is a forty-nine-year-old psychiatric nurse, and the same point applies to any large, well-defined set of objects to which she belongs); the proposition that God exists; the proposition that there are vast amounts of animal suffering in nature.

Let us suppose that some sets of possible worlds have unique *measures*; these measure the proportion of logical space (of the whole set of worlds) occupied by these sets. ³ And let us further suppose that all of the sets of worlds in which we shall be interested in this paper are among those that have such measures. The

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alethic probability of a proposition is the measure of the set of worlds in which it is true. The conditional alethic probability of the proposition p on the proposition q (where the set of worlds in which q is true is not of measure 0) is the proportion of the region of logical space occupied by worlds in which q is true that is occupied by worlds in which p is true. ⁴ For example, if 13 percent of the region occupied by worlds in which A is true is occupied by worlds in which B is true, then the conditional alethic probability of B on A is 0.13. In the sequel, I shall frequently use phrases of the form, 'the proportion of the p -worlds that are q -worlds.' Such phrases are to be understood as abbreviations of the corresponding phrases of the form 'the proportion of the region of logical space occupied by worlds in which p is true that is occupied by worlds in which q is true.'

An example may help to tie this together. The conditional alethic probability of the proposition that there is intelligent life on other planets in the galaxy on the proposition that Project Ozma has negative results before the turn of the century is the proportion of the (Project Ozma has negative results before the turn of the century)-worlds in which there is intelligent life on other planets in the galaxy.

We make judgments of alethic probability, both in everyday life and in the sciences. (Or we do in effect. The concepts I have introduced may not be part of the cognitive repertory of most people, but most people make judgments that entail and judgments that are entailed by propositions that are alethic probability judgments in the present sense.)⁵ And it would seem that very often such judgments are justified. For example, I judge that the conditional alethic probability of the sun's rising tomorrow on the present state of things is nearly unity, that the conditional alethic probability that the number of Douglas firs in Canada is odd is 0.5 on the proposition that I am in my present epistemic situation, that the unconditional alethic probability of a 's being actual (where ' a ' is a proper name of the actual world) is 0, and that the conditional alethic probability of there being intelligent bacteria on the proposition that: there exists a physical universe is 0. Of course I *could* be wrong about these things; I could be wrong about almost anything. Nevertheless, I could give cogent arguments (or so they seem to me) in support of these probability judgments, and I *believe* that they are fully justified. But there also seem to be cases in which one is simply not in a position to make any judgment about the probabilities of certain propositions. This is hardly surprising. One reason it should not be regarded as surprising can be easily grasped by reflection on the fact that probability judgments are judgments of proportion, judgments about the proportion of a region of logical space that is occupied by some subregion of that region. And leaving aside for the moment the particular case of judgments about proportions of logical space, and considering judgments of proportion in the abstract it is evident that there are cases in which

we are not in a position to make certain judgments of proportion.

I have drawn one of the numbers from 0 to 100 in a fair drawing from a hat, but I am not going to tell you what it is. I have put that many black balls into an empty urn and have then added 100-minus-that-many white balls. Now: What proportion of the balls in the urn are black? You have no way of answering this

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question: no answer you could give is epistemically defensible: "35 percent" is no better than "6 percent"; "about half" is no better than "about a quarter"; "a large proportion" is no better than "a small proportion," and so on. 6

Ask me what proportion of the galaxies other than our own contain intelligent life, and I'll have to say that I don't know; no answer I could give is epistemically defensible for me. The answer could be "all" or "none" or "all but a few" or "about half." I see no reason to prefer any possible answer to this question to any of its equally specific competitors, Or such is my judgment. I could be wrong about the implications of what I think I know, but, then, as I say, I could be wrong about almost anything.

I conclude, therefore, that there are cases in which one is not in an epistemic position to give any answer to a question of the form "What proportion of the F's are G's?" There would seem to be no reason to suppose that this general principle about judgments of proportionality is inapplicable in the case of regions of logical space. And it seems evident that it does apply in that case.

What proportion of the possible worlds in which things happen exactly as they have happened in the actual world before 1993 are worlds in which there is a devastating thermonuclear war between 1993 and 2093? In what proportion of them is there discovered a surveyable proof of the Four-Color Theorem during that period? I, at least, do not profess to have any idea about what the right answers to these questions are. That is, I do not profess to have any idea of the probability (conditional on things being as they now are) of the occurrence of a thermonuclear war or the discovery of a surveyable proof of the Four-Color Theorem during the next hundred years. In what proportion of the worlds in which I am now in my present actual epistemic situation does either of these things happen in the next hundred years? Again, I have no idea.

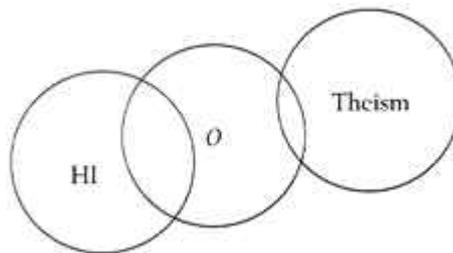
There are, therefore, cases in which someone is not in a position to make any judgment about the proportion of the worlds having the feature F that also have the feature G just as there are cases in which someone is not in a position to make any judgment about the proportion of the galaxies that have a certain feature. And just as one may offer cogent arguments for the conclusion that no one is in an epistemic position to make any judgment about what proportion of the galaxies have a certain feature, there are cases in which one may offer cogent arguments for the conclusion that no one is in an epistemic position to make any judgment about what proportion of the worlds that have F also have G. In general, such arguments will not be proofs. They will have to be judged by the same standards that we employ in evaluating philosophical or political or historiographical arguments. The standards that are appropriately applied to such arguments are like the standards that are appropriately applied in the cases of arguments for nominalism or the military value of the Stealth bomber or the importance of the exhaustion of the Spanish silver mines for an understanding of late Roman politics.

I will present my reconstructed version of Draper's argument "directly" in terms of the idea that I have used to explain alethic probability: that regions of logical space have measures having the features I have specified. It will be seen that this allows us to bring to bear on the

evidential problem of evil our intuitive capac-

ities for making judgments of relative size and proportion. This will be useful, because we have employed these intuitive capacities all our lives in our reasoning about regions of ordinary, physical space and about sets of discrete items.

Here is the argument. Consider three regions of logical space, those in which, respectively, O , theism, and HI are true. (I will identify a proposition with the region of logical space in which it is true. This identification is an aid to concision and is not essential to the argument. Given this identification, $p \& q$ is simply the region of logical space common to p and q .) And let us assume that HI and theism are of the same size, or at least that neither is significantly larger than the other. Given what it seems reasonable to expect if theism is true and what it seems reasonable to expect if the Hypothesis of Indifference is true, there is a good prima facie case for saying that the proportion of HI that overlaps O is much larger than the proportion of theism that overlaps O . Given that HI and theism are of the same size, it follows that the part of O that overlaps HI is much larger than the part of O that overlaps theism. We may represent this diagrammatically (two features of the diagram are without significance: the way the diagram represents the size of O relative to the sizes of HI and theism, and the way it represents the proportion of O that overlaps neither HI nor theism):



The actual world, a , must fill within O . Hence, in the absence of further relevant considerations, the thesis that a fills within HI is epistemically preferable to the thesis that a falls within theism. (Compare the following judgment about physical space: if a meteor has fallen somewhere within the United States, then, in the absence of further relevant considerations, the thesis that it has fallen in Texas is epistemically preferable to the thesis that it has fallen in Rhode Island.) But if p and q are inconsistent, and p is epistemically preferable to q , then it is not reasonable to accept q . Hence, the theist who wishes to be reasonable must find "further relevant considerations." The theist must either refute the strong prima facie case for the thesis that the above diagram correctly represents the relative sizes of the region HI & O and the region theism & O , or the theist must accept the diagram and present an argument for theism, an argument for the conclusion that a falls within theism (and hence within theism & O , a very small region of logical space). If the diagram is correct, therefore, an argument for theism would be in effect an argument for the conclusion that a fills within a very small region of logical space (relative to the "competing" regions that surround it). It would, in consequence, have to be a very strong argument to carry much conviction, and even weak argu-

ments for theism (as opposed to arguments for the existence of a designer of the world or a

first cause or a necessary being) are in short supply.

The theist, therefore, has only one option: to refute the *prima facie* case for the correctness of the probability judgments displayed in the diagram. There is, in practice, only one way to do this. ⁸ The theist must find a region of logical space *h* that has the following two features:

- h* overlaps a large proportion of theism;
- O* overlaps a large proportion of theism & *h*.⁹

This will force us to redraw the diagram (the reader is invited to try it), since it will have the consequence that theism must overlap a significantly larger part of *O*. We should then have to admit that (given that HI and theism are of equal size) the *prima facie* case for the conclusion that the proportion of HI that overlaps *O* is much larger than the proportion of theism that overlaps *O* has been overcome.

Here is a spatial analogy. Two nonoverlapping storm systems of equal size, East and West, overlap the United States. There is a *prima facie* case for the thesis that the proportion of West that overlaps the U.S. is much larger than the proportion of East that overlaps the U.S. Therefore, the part of the U.S. that overlaps West ("U.S./West") is, *prima facie*, much larger than the part of the U.S. that overlaps East ("U.S./East"). Therefore, in the absence of further relevant considerations, the thesis that a particular person, Alice (whom we know to be somewhere in the U.S.), is in U.S./West is epistemically preferable to the thesis that Alice is in U.S./East. Therefore, anyone who believes that Alice is in U.S./East is unreasonable, unless he can do one of two things: give an argument for the conclusion that Alice is in U.S./East (and it will have to be a fairly strong argument, owing to the fact that U.S./East is known to be considerably less than half the U.S.), *or* find a geographical region *r* that has the following two features:

- r* overlaps a large proportion of the total region occupied by East;
- the U.S. overlaps a large proportion of the region common to *r* and the total region occupied by East.

If we could find such a region, then, because East and West are of equal size, we should have refuted the *prima facie* case for the thesis that the proportion of West that overlapped the U.S. was much larger than the proportion of East that overlapped the U.S.

This is how I would represent, in terms of (our epistemic judgments about) alethic probabilities, Draper's version of the evidential argument from evil. Or, rather, this is how I would represent its overall structure. There is a lot that could be said to put flesh on these bones, and much of it could be read off Draper's original paper, simply by making some fairly mechanical adjustments in terminology. I have been interested here in finding a reconstruction of the argument that I am confident I have a fairly clear understanding of, rather than in presenting a really finished argument.

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Now let us see how the reasoning set out in my chapter 8 looks when it is applied to the reconstructed argument.

II

The most important thing I tried to do in chapter 8 may be described in our present terminology as follows: to argue for the proposition

We are not in an epistemic position to judge that only a small proportion of theism

overlaps S . 10

I proposed (in effect) the following principle:

We are not in a position to judge that only a small proportion of the p -worlds are q -worlds if there is a proposition h that has the following two features:
a large proportion of the p & h -worlds are q -worlds;
we are not in a position to make a judgment about the proportion of the p -worlds that are h -worlds.¹¹

This principle is simply an application to the special case of judgments concerning proportions of regions of logical space of a general form of reasoning that we should find it very hard to reject in the case of other sorts of judgment of proportion. Let us consider two examples, one involving proportions of geographical regions, and the other involving proportions of finite sets of discrete items.

We are not in a position to judge that only a small proportion of Spain is arable if, for a certain geographical region R , Spain and R overlap and most of the Spain- R overlap is arable and we are not in a position to make any judgment about the proportion of Spain that overlaps R .

We are not in a position to judge that only a small proportion of the balls now in the urn are black if some balls have just been added and if most of the balls that were just added are black and we are not in a position to make any judgment about the proportion of the balls now in the urn that were just added.

Both of these judgments seem undeniably correct. (They would be correct even if we knew that no part of Spain outside R was arable, and that none of the original balls in the urn was black.)

In chapter 8, I posed a certain hypothesis I shall call D (for 'defense').¹² I argued that a very high proportion of the theism & D -worlds are S -worlds (all of them, as far as I can judge) and that no one is in an epistemic position to offer any answer to the question, What proportion of the theism-worlds are D -worlds?¹³

If I am right about D , it follows (by the above epistemic principle) that no one is in a position to judge that only a small proportion of the theism-worlds are S -worlds.¹⁴ And, therefore, no one is in a position to judge that the proportion of the HI -worlds that are S -worlds is "much greater" than the proportion of the theism-worlds that are S -worlds.¹⁵

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I see nothing in "The Skeptical Theist" to undermine either the general epistemic principle I have appealed to or my application of it. Draper offers three counterexamples to what he supposes to be the general epistemic strategy of "The Problem of Evil, the Problem of Air, and the Problem of Silence."¹⁶ I have the space to examine only one of them. I choose the "smoking" example. (I record my conviction, without supporting argument, that an examination of the other two would yield similar results.) Consider the following propositions:

SS Smoking is safe (i.e., does not *cause* serious diseases)
SH Smoking is hazardous
MLCSmokers get lung cancer much more frequently than nonsmokers

Draper begins by pointing out that the following probability judgment is *prima facie* correct:

$$P(\text{MLC}/\text{SH}) > P(\text{MLC}/\text{SS}).$$

I agree. When I think about it, it seems to me that the proportion of the smoking-is-hazardous-worlds in which smokers get lung cancer much more frequently than nonsmokers is unless there is some relevant factor that I have not thought of far greater than the proportion of the smoking-is-safe-worlds in which smokers get lung cancer much more frequently than nonsmokers. (If I were asked to defend this judgment, I would list possible kinds of explanation of smokers' getting more lung cancer than nonsmokers that did not depend on the causal agency of the habit itself, and argue that, because these explanations postulated very special sets of circumstances, they were intrinsically improbable. But my argument would, in the last analysis, have to be based on intuitive judgments of probability.)¹⁷ Having called attention to the *prima facie* correctness of this judgment, Draper argues that (if the epistemic strategy of chapter 8 could be applied in the case of any evidential challenge) someone who believed that smoking was safe could defend his belief against an evidential argument based on this judgment simply by contriving the following "defense":

GENET: Lung cancer is due to genetic causes, and people who are genetically predisposed to lung cancer are genetically predisposed to smoke.

If this were so, it would certainly be a grave blow to, if not a refutation of, my argument. For I not only accept his contention that the above probability judgment is *prima facie* correct, but I would agree that if this judgment is *prima facie* correct, then, unless one can discover either a pretty strong argument for the conclusion that smoking is safe or some way to overcome the *prima facie* correctness of the probability judgment, then it is not reasonable for one to believe that smoking is safe. (It does not follow that it would be reasonable for someone who had no relevant evidence but MLC to believe that smoking was dangerous. Our real-world knowledge that smoking is dangerous is based on the work of epidemiologists who have done far more than establish a positive correlation between smoking and can-

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cer. They, have, for example, discovered evidence that conclusively rules out GENET.) And Draper is certainly right to contend that merely calling attention to the hypothesis I have labeled GENET does nothing to undermine the *prima facie* correctness of the probability judgment.

But *am* I committed to the thesis that GENET can be used as a "defense" to block a Draper-style evidential argument for the thesis that it is not reasonable to believe that smoking is safe? An argument parallel to my counterargument to the evidentialist argument from evil (one that employed GENET in the role I gave to D would go like this:

We are not in an epistemic position to judge that only a small proportion of the SS-worlds are MLC-worlds, owing to the fact that most SS & GENET-worlds are MLC-worlds, and we are not in an epistemic position to make any judgment about the proportion of the SS-worlds that are GENET-worlds.

But we *are* in an epistemic position to make a judgment about the proportion of the SS-worlds that are GENET-worlds. We are in an epistemic position to make the judgment that this proportion is very low. Surely only a very small proportion of the worlds in which smoking is safe are worlds in which there is such a thing as lung cancer and it has a genetic cause and the very same factors that genetically predispose people to get lung cancer also genetically predispose people to smoke? (What proportion of the worlds in which it's safe to

wear gold jewelry are worlds in which skin cancer has a genetic cause and the very same genetic factors that predispose people to skin cancer also predispose them to enjoy wearing gold jewelry?) Suppose that you know that you are somehow to be "placed" in a world in which smoking is safe, a world that has been chosen at random from among all the worlds in which smoking is safe. How likely do you think it is that you will find that in this world lung cancer exists, has a genetic cause, and, moreover, a genetic cause that predisposes people to smoke? I wouldn't bet on this complex of factors turning up. I suppose my reasoning is that in general, in the absence of further considerations, worlds in which two things that are logically and causally unrelated (save, possibly, by a common cause) have a common cause must be "rare"; worlds in which a taste for avocados and the enjoyment of medieval Latin lyrics have a common cause (genetic or social or whatever) do not, I would judge, collectively take up much logical space. In any case, if I were not in a position to judge that only a small proportion of SS-worlds were GENET-worlds, I should not have been able to give the argument that convinced me that Draper's initial probability judgment was *prima facie* correct: I should not have been able to say, "the proportion of the smoking-is-hazardous-worlds in which smokers get lung cancer much more frequently than nonsmokers is unless there is some relevant factor that I have not thought of far greater than the proportion of the smoking-is-safe-worlds in which smokers get lung cancer much more frequently than nonsmokers." I was able to make this judgment only because I was able to judge that the proportion of smoking-is-safe-worlds in which smokers get lung cancer much more frequently than nonsmokers is low. And I should not have been able to make this judgment if I were not in a

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position to judge that only a small proportion of SS-worlds are GENET-worlds. 18 Indeed, much of the argument of the present paragraph is no more than a spelling out of the reasons I had initially for accepting the *prima facie* credibility of the judgment ' $P(\text{MLC}/\text{SH}) > P(\text{MLC}/\text{SS})$.'¹⁹

III

With some risk of oversimplification, we may call the following statement Draper's Thesis:

If the probability judgment ' $P(p/q) > P(p/r)$ ' (where p is known to be true and q and r are incompatible and there is no reason to suppose that the unconditional alethic probability of r is significantly greater than that of q) is *prima facie* correct, this fact confronts the r -ist with an evidential challenge that can be met in only two ways: The r -ist must either present a fairly strong argument for r or else must discover an r -dicy (this last term being a generalization of 'theodicy' in Draper's technical sense).

I continue to insist that Draper's Thesis is overly restrictive. My discussions of "the Problem of Air" and "the Problem of Silence" in chapter 8 were intended to make this conclusion plausible.

I can discuss what Draper says in "The Skeptical Theist" concerning the Problem of Air or I can discuss what he says concerning the Problem of Silence. I do not have sufficient space for an adequate discussion of both. I choose to discuss the latter. (Not that I don't have plenty to say about the former.)

Carl Sagan, let us suppose, assents to the thesis that there is intelligent life elsewhere in the galaxy ("noetism"). But there is the fact of cosmic silence; and there is the fact that cosmic silence seems *prima facie* to be much more probable on the Hypothesis of Isolation (that we are "alone") than it is on noetism; and there is the fact that there seems to be no reason to

think that the unconditional alethic probability of noetism is significantly greater than that of HI; and there is the fact, or let us suppose there is, that Sagan has no very strong argument for noetism; and there is the fact that he can devise no "noödicy," no hypothesis h such that h is highly probable on noetism and such that "cosmic silence" is highly probable on the conjunction of noetism and h . Do these facts together entail that his assent to noetism faces an epistemic challenge that cannot be met, and that he should therefore withdraw this assent? No, say I, for there is an hypothesis h (there are in fact several) such that "cosmic silence" is highly probable on the conjunction of noetism and h and also such that no one is in a position to say what the probability of h on noetism is. Therefore, I reason, no one is in a position to say that the probability of cosmic silence on noetism is small. It should be stressed that the conclusion of this piece of reasoning is not that Sagan's belief is reasonable. (There are presumably those who would say that the fact that he has not got a strong argument for noetism is by itself enough to render his belief in noetism unreasonable.) It is not even that the fact of cosmic silence does not entail that his belief is unreasonable. It is rather that a certain argument does not show that his belief is unreasonable.²⁰

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Draper does not believe, or so I would interpret what he says, that Sagan's belief is unreasonable. But he sees Sagan's epistemic options differently from the way I do. He argues that there is an hypothesis that Sagan can appeal to that satisfies the conditions for being a (fairly) successful noödicy:

The argument from silence against noetism is relatively weak because of a fairly successful "noödicy": it is antecedently very likely that intelligence need not lead to both technology of the right sort and a desire to communicate with life on other planets. If it weren't for several accidents of history, culture, and environment, it wouldn't have led to these things on earth! Of course, cosmic silence is some evidence favoring the Hypothesis of Isolation over noetism. But it's not very strong evidence. The ratio of the antecedent probability of cosmic silence on the Hypothesis of Isolation to the antecedent probability of cosmic silence on noetism is greater than one, but it is not very high. ²¹

What exactly is the argument here? Let us remember that for h to be a noödicy it must have this feature: the probability of the proposition that our civilization, a civilization that . . . (insert here a description of our level of technological development and the history to the present date of Project Ozma and all other relevant facts) will have observed, as of this date, no signs of extraterrestrial intelligence is high on the conjunction of noetism and h . What noödicy does Draper propose? To take him at his word, it is this:

Intelligence need not lead to both technology of the right sort and a desire to communicate with life on other planets.

But I see no reason to think that cosmic silence is highly probable on the conjunction of this proposition and noetism. If, out of thousands of intelligent species, *one* never developed the relevant technology and desires, it would be true that intelligence *need not* lead to these things. Even if we knew that this proposition was true, therefore, this knowledge would not put us in a position to assign a high probability to cosmic silence. It would, therefore, seem reasonable to suppose that a successful noödicy must be a stronger proposition, something like this:

In the case of only a very small proportion of intelligent species does intelligence lead to both technology of the right sort and a desire to communicate with life on other planets.²²

But let us not forget the second requirement on a successful noödicy: it must be highly probable on noetism. Draper says of his proposed noödicy that it is antecedently very likely that it is true. I would translate this thesis into my terminology as follows: its probability, conditional on our present relevant knowledge (minus our knowledge of the fact of cosmic silence), is high. I am willing to grant that if it is reasonable for us to make this probability judgment, then it is reasonable for us, now, to judge that the conditional alethic probability of the proposed noödicy on noetism is high. But why are we supposed to think that it is reasonable for us to make this probability judgment? *Is* it "antecedently very likely" that the

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proposed noödicy is true? I can't see why anyone would think so. Suppose me to be ignorant of the fact of cosmic silence. If God told me, when I was in that epistemic situation, that there were millions of intelligent species in the universe and asked me what proportion of them I thought would at some point in their "careers" develop high technology and a desire to communicate with other intelligent species, what could I say but "*Thou* knowest, Lord"? I suppose that if I had to guess, I wouldn't make the guess "Very low," since the only intelligent species whose course of development I am familiar with *has* developed these features. (But that is a pretty feeble consideration.) And I doubt whether any human being is in a better position to answer this question than I am.

Draper, it will be remembered, makes the following remark: "If it weren't for several accidents of history, culture, and environment, it [intelligence] wouldn't have led to these things on earth!" If this is taken as an argument for the thesis that in only a very small proportion of intelligent species does intelligence lead to both technology of the right sort and a desire to communicate with life on other planets (I expect Draper intended it only as an argument for the "need not" proposition), it is not cogent. Species typically last more or less unchanged for many millions of years particularly if they do not develop industrial pollution and thermonuclear weapons. Suppose that the "accidents of history, culture, and environment" to which Draper alludes had not happened and that we had, as of this date, not advanced beyond the technological level of the ancient Mediterranean civilizations. What is the probability on this supposition that we should *never* develop an advanced technology, literally, in a million years? If this probability is high, think how fantastically low the probability of what actually happened is: the development by *Homo sapiens* of an advanced technology within a few thousand years of the invention of agriculture and the wheel and writing! (If there are evidential difficulties with any thesis discussed in this paper, the thesis that there was only a low probability, say, the way things were in 1000 B.C. of humanity's ever, in the course of its entire span of existence, achieving a high technology must face some of the gravest ones!) We must remember that such evidential difficulties as noetism may face are almost totally insensitive to the outcome of disputes about how long, on the average, it takes a species that does develop a high technology to do so. Suppose we somehow knew that the pace of our technological development has been of extraordinarily improbable rapidity, and that, if there are any other intelligent species, those that develop a high technology will, on average, take about a million years (from the time, say, of their invention of writing) to do so. Anyone who, in this imaginary epistemic circumstance, accepts noetism, faces an evidential challenge from the fact of cosmic silence that is essentially the same as the one that any actual believer in noetism faces.

Draper has failed to discover a noödicy, but he has no reason to be embarrassed by this failure for, or so it seems to me, it is quite evident that no human being is in an epistemic position to discover a noödicy. We simply do not *know* enough to discover one. But then, if Draper's Thesis is correct, it follows that "Sagan's" belief is unreasonable. Although I do not share this belief, it does not seem to me to be unreasonable. At any rate, it is not shown to be

unreasonable by

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the mere fact of his being unable to perform the quite impossible task of discovering a noödicy. (It would interest me to learn whether Draper thinks that anyone *has* ever met any evidential challenge to some belief by discovering a "-dicy.") I conclude that Draper's Thesis is false.

IV

My comments on Professor Russell's chapter 10 will be entirely concerned with one of his notes (number 12).²³ In that note, Russell seems simply to deny the conclusion of my argument without any discussion of the argument. (I mean my argument in note 11 of chapter 8 and the similar argument in the paper cited in that note.) Let me present an imaginary situation and ask Russell what he would do if he were in that situation.

Atlantis is sinking. Russell is in command of the last refugee ship. There are one thousand people left in Atlantis (all men, let us say). They are standing in a queueposition in the queue was determined by a fair lottery and is now unalterable on the dock, clamoring for admission to his ship. Russell must admit the first n men in the queue ($0 < n < 1000$); the value of n has been left entirely to his discretion. If he takes no refugees on board, he and his (crewless, fully automated) ship will *certainly* reach the mainland safely. Each refugee he admits will reduce the chances of a safe arrival of the ship at the mainland by 0.1 percent. (Thus, if he takes only the first man in the queue, the two of them will have a 99.9 percent chance of a safe arrival; if he takes everyone, the ship will *certainly* sink; if he leaves behind only the last man in the queue, there is a 99.9 percent chance the ship will sink.) A very distressing moral problem faces Russell, and I do not know what I should do if I were in his place. But the following statement seems to be reasonable:

Whatever the morally acceptable course(s) of action for someone in Russell's situation may be, none of the following is morally acceptable: to take none of the refugees; to take only a handful of them; to leave none of them behind; to leave only a handful of them behind.

It follows from this statement that whatever it is that Russell should do, it will have this consequence: He will have to close the hatch in the face of someone whose admission would not significantly decrease the ship's chances of reaching the mainland safely.²⁴ (If you think that 0.1 percent would be a significant decrease in the ship's chances, increase the number of refugees till each man admitted causes only what you would regard as an insignificant decrease in the ship's chances.) This example is artificial only in its simplicity. There are certainly real moral problems that are similar in structure, although an adequate statement of any of them would require a lot of qualification and detail.

If the defense I proposed in chapter 8 is true (that is, if the three statements it comprises are true), then God is in a precisely analogous moral situation. Although He may have miraculously saved all manner of fawns from forest fires, if

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He is to preserve the lawlike regularity of the world there must come a point at which He will

refrain from saving a fawn (or whatever) even though performing this act of mercy would not significantly decrease the lawlike regularity of the world. This "must" is the must of logical necessity, which constrains even an omnipotent being.

V

I once heard Keith Lehrer say, speaking of the late and much lamented James Cornman, "You either love him or you hate him. I *love* Jim Cornman."

I *love* Richard Gale.

No, honestly, Richard, I really mean it. You're a great guy and a good philosopher, no matter what everyone says.

But seriously, folks . . .

Richard (chapter 11) has learned from Stephen Potter, or has perhaps discovered independently, the following trick of disputation: "to say something so absolutely inappropriate on about five levels simultaneously that it seems hopeless even to try to answer back." (The respected music critic, in cocktail party conversation, admits that he isn't really too keen on Wagner; Potter's colleague induces "conversational paralysis" by replying, "But Wagner's worth five hundred of your modern jazz saxophonists.") This technique is displayed with particular brilliance in Richard's final section on theodicy, but good use of it is made throughout his chapter. I have, however, been able to escape conversational paralysis on a few points, and I will attempt to stammer out some replies.

(1) Would my general strategy for dealing with Draper's "evidential challenge" lead to radical skepticism if consistently applied? No. As I said, a "defense" may not be improbable on anything we think we know. (The point is made in various ways in many places.) And all "Cartesian" hypotheses (hypotheses about evil geniuses, brains in vats, and so on) are highly improbable on what we think we know, for we think we know that the vast majority of our perceptual beliefs about our immediate surroundings are true. (I do not say that this statement constitutes a cogent reply to the standard arguments for "Cartesian" skepticism. I do say that it's true.) And the defense presented in my chapter 8 is not improbable on anything we think we know. Or, if Richard thinks it is, he should have argued for that conclusion. I *did* argue, and at great length, that my defense is not improbable on anything we think we know, and my argument did not (as Richard suggests) depend on the defense's incorporating any sort of reference to in-principle-unobservable supernatural entities. My defense, in fact, refers only to the physical world and the character of physical law and to values. (And it does not presuppose any particular theory about values. It does not, for example, presuppose a "nonnaturalistic" theory of the nature of value.)

(2) Richard, twice at least, accuses me of a double standard, of requiring atheists to prove things when I don't require theists to prove the theses that occupy the corresponding or analogous places in their worldview. This is a misunderstanding. I do not require atheists, qua atheists, to prove *anything*. I have been

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addressing a certain argument against theism, and I have contended (whether rightly or wrongly) that there is a hole in the argument if certain things are not proved, or at least cogently argued for. If a theist were to offer an argument against atheism, I would hold that argument to the same standard. I have in fact done something very much like that: I have deployed "modal skepticism" against an argument of Plantinga's for the conclusion that belief

in God is rational, and against an argument of Swinburne's for the conclusion that the concept of God is coherent. ²⁵ I was an agnostic when I presented these arguments, but I accept them still. I accept (the propositions that are, *per accidens*) the *conclusions* of Plantinga's and Swinburne's arguments, but I think that each of the arguments has a hole in it, a hole that could be filled only by arguing for a certain modal proposition (and which has not been filled and in my opinion can't be).

Here is an analogy. You say to St. Thomas, "There's a hole in your argument because you haven't shown that an infinite regress of causes is impossible." Thomas replies, "You're holding me to a different epistemic standard from the one you hold the atheist to: You don't demand that the atheist show that an infinite regress is possible." This would be a relevant reply if the atheist had published an argument for atheism that depended on the possibility of an infinite regress of causes, and if you had been maintaining that the atheist's argument was better than Thomas's, and if you had indeed demanded that Thomas show that an infinite regress was impossible and had not demanded that the atheist show that an infinite regress was possible. But if the only topic under discussion is whether Thomas's argument establishes its conclusion, then the protest that I have put into Thomas's mouth makes no sense at all.

Let us remember that the only conclusion of chapter 8 was that a certain evidential argument from evil does not succeed that it doesn't even come close to succeeding. But it is perfectly consistent with this conclusion to suppose that God does not exist, or that the concept of God is incoherent, or that, whether or not God exists, belief in God is not reasonable, or even that *some* evidential argument from evil shows that belief in God is not reasonable. (Similarly, someone who maintained that Thomas's argument failed because it did not provide any good reason to think that an infinite regress of causes was impossible could consistently maintain that a First Cause existed or even that a First Cause could be shown to exist by *some* causal argument.)

(3) I think that it will be evident to the unbiased reader of this book indeed to a goodly portion of its biased readers that although I have presented arguments for modal skepticism, Richard neither says what those arguments are ²⁶ nor presents any reason to suppose that we have the capacity to make judgments about modal matters that are remote from the concerns of everyday life. He does, however, suggest that I am selectively skeptical about modality, and to this charge I will respond.

I will begin by making it clear that by "modal skepticism" I do not mean the thesis that none of the modal judgments we make is justified. I make all sorts of modal judgments and (or so I believe) they are mostly true, and (or so I believe) I am fully justified in thinking that they are mostly true. (That I might not have

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been a philosopher, for example, or that there might have been more dogs in Paris in 1933 than there in fact were or that there cannot be liquid wine bottles.) In addition, there are many modal propositions that I am pretty sure are true, although I am not as sure about them as I am about the propositions I have just listed: that I could not have been a woman, for example, or that the earth could not have had a satellite the size of the actual moon that was made of green cheese. These last two judgments are not "remote from ordinary life" in at least one good sense: very straightforward scientific considerations, things you can learn from actual textbooks, underlie my belief that these things are probably absolutely impossible. ²⁷ I therefore do not regard myself as someone who, in Richard's words, "cannot modalize like normal people do." I can, and so can Richard. What he *can't* do, apparently, is to discriminate those cases in which his modal judgments are products of his ordinary human powers of "modalization" from those that are based on his immersion in a certain philosophical

environmentan environment composed of philosophers who unthinkingly make all sorts of fanciful modal judgments because *they've* always been surrounded by philosophers who unthinkingly make the same sorts of fanciful modal judgments. He is as unaware of his immersion in this environment as a fish is of its immersion in water. He is unaware that the modal beliefs he expresses or presupposes when he says, "We'd have had more room if we'd moved the table up against the wall" (e. g., that it was possible for the table to be up against the wall), and the modal beliefs he gives such confident expression to in his writings on philosophical theology have quite different sources. The former have their source in our ordinary human powers of "modalization" (for all that, they are not philosophically uncontroversial: they would be disputed by Spinoza); the latter have their source in his professional socialization, in (to borrow an expression of Rorty's) what his peers will let him get away with saying. He could be compared with a Greek mariner of Homeric times who thinks that his (well-grounded) belief that the mountain that has just appeared on the horizon is about thirty miles away and his belief that the sun is about thirty miles away stem from the same source, to wit, his ability to judge distance by eye.

That, at any rate, is my considered and sincerely held opinion. Perhaps it's not very nice of me actually to express it, but there doesn't seem to be any rule in force in this discussion that forbids saying things that it isn't very nice to say.

"Modal skepticism," as I use the term, is a thesis about the scope and limits of our ordinary human powers of "modalization." It is roughly this: If the subject matter of p is remote from the concerns of everyday life, then our ordinary human powers of "modalization" are not reliable guides to the modal status of p . (But this statement of the thesis is not quite right. We certainly know the modal status of 'If God exists, then there is an immaterial being' and the "subject matter" of this proposition is, no doubt, remote from the concerns of everyday life.)

Now what of Richard's charge that I am selectively skeptical about modality? Don't I (as a theist) hold all sorts of opinions about the modal status of various propositions that could not be notified by the modal skepticism I endorsed when I was criticizing the evidential argument from evil? Do these have their source in our ordinary human powers of "modalization"? I do indeed. Richard cites the possibil-

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ity of creation ex nihilo, an excellent example. Another good example, which I mention because I have written on it extensively, is this: it is possible that there exists a necessary concrete being. In my work on the ontological argument, 28 I have argued at length that our ordinary human intellectual powers are inadequate to the task of discovering whether it is possible for there to be a necessary concrete being. And yet I believe that there is a necessary concrete being and a fortiori believe that it is possible for there to be one. But I do not stand convicted of inconsistency, for I do not claim to have discovered that it was possible for there to be a necessary concrete being by holding the concept of a necessary concrete being before my mind and applying to it my ordinary human powers of "modalization." I believe it to be possible that there is a necessary concrete being because I believe it to be true that there is one. And I believe it to be true that there is one on the basis of a divine self-revelation (or at least I believe that that is why I believe this).²⁹ There is nothing at all puzzling about the idea of knowing the modal status of a proposition without having applied one's powers of "modalization" to it. It is really a very common occurrence. I believe that it is possible for human beings to know what the stars are made of because I know that they do know this, and not because I have held the concept of a human being who knows what the stars are made of before my mind and applied to it my powers of "modalization." I could list several important mathematical theorems to each of which I stand in the following epistemic relation: I know that it is true (and therefore possibly true) because it has been endorsed by people my

epistemic community recognizes as competent mathematicians, and they (so I believe) know it to be true on the basis of mathematical reasoning that I am incapable of following. In general, for almost every theological proposition that I claim to know is possibly true and which I could not know was possibly true by means of my ordinary human powers of "modalization," I would claim the following: this statement is *in fact* true and I know it to be true and this knowledge essentially involves testimony, testimony that derives ultimately from divine revelation. (But there is at least one important *false* theological proposition that I believe I know to be possibly true and which I could not have known was possibly true without some help from divine revelation: that God did not create anything.) If Jane is a proponent of the evidential argument from evil and if she claims to know that for example a hedonic-utopia-without-massive-irregularity is possible because one actually exists somewhere, and claims to know this on the basis of some sort of testimony (perhaps June told her and Feigl told June and Maxwell told Feigl and Maxwell was told by creatures from Arcturus), then my argument from modal skepticism would be simply irrelevant to her claim. There might, of course, be other grounds on which it should be judged doubtful.

Richard, no doubt, regards my claim to be the recipient of a divine revelation as not only doubtful but ludicrous, just as I should regard as ludicrous someone's claim to have been told by the Arcturians that there was a hedonic utopia somewhere out beyond Sagittarius. But the question whether my claim is defensible is not to the present point, for the truth of that claim is not among the premises of this paper or of chapter 8. Here I am defending myself against a charge of selective skepticism about the scope and limits of our powers of "modalization," and I

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am simply pointing out that I do not claim that, e.g., my belief that *creatio ex nihilo* is possible is based upon an exercise of those powers. Even if I am deceived and the revelation that I hold to be the ground of that belief is a fable, my scepticism about our powers of "modalization" is not selective. I was a modal skeptic before I was a theist, and I have always applied this skepticism uniformly and consistently to the claims of theists (Plantinga and Swinburne) and atheists. 30

Notes

1. Paul Draper, "Pain and Pleasure," chapter 2, note 2, in this book.
2. Cf. Draper, "Pain and Pleasure": "I will use $P(x/y)$ to represent the probability of the statement x , *independent of the observations and testimony O reports*, on the assumption that the statement y is true." (Italics in original.)
3. We adopt the following conventions concerning constraints on the notion of the measure of a set of worlds. All measures are real numbers between (and including) 0 and 1 (there are, therefore, no infinitesimal measures); the measure of the whole of logical space is 1 and the measure of the empty set is 0; if a set (*sc.* of worlds) has a measure, then its union with a set x has a measure iff x has a measure; if a set is exhaustively decomposed into a finite number of non-overlapping subsets each of which has a measure, the measure of this set (by the previous statement it has a measure) is the sum of the measures of those subsets; if a set of measure P has n members, where n is finite (and not 0), an m -membered subset of that set has the measure $m P/n$; if there are infinitely many possible worlds, any set of lower cardinality than the whole set has measure 0. It should be noted that these statements *define* "measure" only if the number of possible worlds is finite. If there are infinitely many worlds and surely there are? the notion of the measure of a set of worlds gets most of such content as it has from the intuitive notion of the proportion of logical space that a set of worlds occupies. I shall

sometimes speak of the proportion of logical space that a set of worlds occupies as its *size*. "Size" in this sense must be carefully distinguished from cardinality. The cardinality of a set may indeed be said to measure its "size" in one perfectly good sense of the word, but there are other measures of the "sizes" of certain sets, measures that are in general independent of cardinality. In point-set topology, for example, regions of space are identified with sets of points, and some regions are assigned such cardinality-independent measures of size as length, area, and volume. There is obviously a close conceptual connection between such measures and the concept of probability. Suppose, for example, that darts are thrown at a wall "at random" or "without bias" (i.e., by a method that favors no point on or region of the wall). The probability that a given dart that strikes the wall will strike a given region of the wall is the proportion of the whole wall that is occupied by that region: the ratio of the area of that region to the area of the whole wall. It is this conceptual connection between probability and area (and length and volume) that is the reason for the heuristic utility of thinking of the set of all worlds as forming a space such that many of its subsets may be assigned measures of size that (like length, area, and volume in respect of sets of points in space) are not in general functions of their cardinality. Just as two sets of points of the same cardinality may be "spread out" in such a way as to occupy different proportions of some region of the plane, so two sets of worlds of the same cardinality may be "spread out" in such a way as to occupy different proportions of logical space. Do we understand these ideas, the idea of sets of worlds being "spread out in logical space" and the idea of their having measures that depend not only on their cardinalities but also on the way they are spread out? In my view, we understand them as well or as badly as we understand the assign-

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ment of (real, objective) numerical probabilities to propositions like "My wife will quit her job within six months" or "God exists" or "There exist vast amounts of animal suffering in the natural world." This, at any rate, is true in my case.

4. Or, equivalently, the ratio of the measure of the set of worlds in which both p and q are true to the measure of the set of worlds in which q is true. This definition (in either form) can have counterintuitive consequences if the number of worlds is infinite and q is true in only a finite number of worlds. Consequently, one might want to define conditional probability "separately" for this case. I shall not bother about this very special case.

5. I concede that "pure" judgments of unconditional alethic probability are pretty rare, since the unconditional alethic probability of most propositions that interest us is either very, very large or very, very small. The true unconditional alethic probability of the proposition that the sun will rise tomorrow is (I should imagine) very, very small, since the portion of logical space in which the sun so much as exists is (I should imagine) very, very small perhaps of 0 measure. (Stephen Hawking has said that it is quite plausible to suppose that the set of worlds in which there is organic life is of 0 measure.) And, if this is so, then the unconditional alethic probability of the *denial* of this proposition is very, very large; perhaps 1. I take it that when we apparently say that certain propositions have real, objective probabilities like $2/3$ or 0.7116 , we are actually making this statement about their conditional probability on some "understood" proposition perhaps in many cases the proposition that records the state of things in the actual world at the time of utterance. And this would also seem to be the case even with many judgments that apparently assign propositions unconditional probabilities close to 0 or 1. For example, the judgment that the (real, objective) probability that the sun will rise tomorrow is very near to unity is best understood as the judgment that in almost the entirety of that region of logical space in which things are as they are at present in the actual world, the sun rises tomorrow.

The judgments of real, objective probability that a rational bookmaker uses to calculate

odds are usually judgments conditional on an hypothesis involving his epistemic situation at the time of the calculation. When, for example, he judges that the real, objective probability of *this* die's falling 2, 3, 5, or 6 a moment from *now* is 2/3, he is not judging that this or any die falls that way a moment from now in two-thirds of the whole of logical space (or even in two-thirds of the region of logical space in which things are exactly as they are at present in the actual world, for that might be false given strict, causal determinism which he may not be in a position to rule out); rather he is judging that in two-thirds of the region of logical space in which he is in *this* epistemic situation and *this* die (or perhaps the die that plays *this* role in relation to someone in this epistemic situation?) is thrown in a moment, it falls 2, 3, 5, or 6.

6. More exactly, no answer is better than any *equally specific* competing answer. Of course there are answers like "between 1 percent and 90 percent" that have a pretty good crack at being right. But this answer is no better than "between 7 percent and 96 percent" or "either between 4 percent and 6 percent, or else between 10 percent and 97 percent."

7. Or, more generally, an argument for some thesis that would undermine the prima facie credibility of the proposition that HI is epistemically preferable to theism. Arguments for the conclusion that *a* does not fall within HI or for the conclusion that it is more plausible to suppose that *a* falls within theism than within HI are other possibilities. For the sake of simplicity, I will not discuss other possibilities.

8. Of course there is the formal possibility that one might find some reason to reject the assumption that HI and theism are of about equal unconditional alethic probability, that they are regions of logical space of about the same size. The ontological argument is, in effect, an argument for the conclusion that theism (minus the creation clause) spans the whole of logical space, and thus is much larger than HI (which would presumably be the empty set of worlds if the ontological argument is sound). But every version of the ontological argument is either invalid or depends on a premise that enjoys an epistemic position no better than that of theism, whatever that position may be. No other known argument or consideration seems even relevant to the task of showing that the uncondi-

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tional alethic probability of theism is significantly greater than the unconditional alethic probability of HI.

9. Or a proportion that is not too small. I will ignore this refinement.

10. At this point, I abandon Draper's '*O*' for my '*S*,' simply because I am more comfortable thinking in terms of the distribution in logical space of certain patterns of suffering than in terms of the distribution of the sort of evidence on which we base our judgments about the actual pattern of suffering. But I don't think that this makes much difference, really, for I assume that there I neglect the fact that *O* is defined in relation to both pleasure and suffering, and not to suffering alone the measure of the set of worlds in which *O* is true and *S* is not is *O* or very, very close to *O*.

11. Suppose that someone were to argue that this principle, even if it were correct, could not be used to block an evidential challenge to theism, owing to the fact that $P(S/HI)$ could be "much larger than" $P(S/theism)$ even if $P(S/theism)$ were fairly high. (The former might be, say, 0.9 and the latter 0.6.) I do not think that *Draper* would argue this way. If I understand him, he argues that $P(O/HI)$ is, prima facie, much greater than $P(O/theism)$ because, prima facie, the former is at least not too small, and the latter is very small indeed. However this may be, I should not regard a Draper-style "epistemic challenge" as very impressive unless "much larger than" implied (at least) "several times larger than." If it could be somehow

demonstrated to me that $P(S/HI) = 0.9$ and $P(S/theism) = 0.6$, I should not regard this as a demonstration that it was unreasonable to accept theism in the absence of a strong argument for theism. I shall assume that if $P(p)$ is "much larger than" $P(q)$, this implies that $P(q)$ is "small" even if $P(q) = 1$.

12. In chapter 8, I was not perfectly consistent in the matter of whether the term 'defense' applied to the conjunction of theism and the "auxiliary hypothesis" or to the auxiliary hypothesis alone. It does not make much difference which way the term is used, but I ought to have been consistent. The "defense" I actually proposed the conjunction of propositions (1), (2), and (3) is a defense in the latter sense.

13. At any rate, my arguments, if they are correct, show that no one is in a position to rule out the answer "all of them." It may be that one could give a plausible a priori argument for the conclusion that various modal considerations entail that the answer must be "all of them" or "none of them." But a dispute about this point would be of no consequence. If the answer to the question, What proportion of the balls now in the urn were just added? were known to be either "all of them" or "none of them," that would not affect the validity of the conclusion that we are not in a position to judge that only a small proportion of the balls now in the urn are black.

14. It also follows that D has no epistemic probability on theism (relative to our epistemic situation) nor does D have an epistemic probability on, say, the totality of what science makes it reasonable for us to believe at the present time. It is easy to see that there are propositions that have no epistemic probability. Remember the case in which I chose a number n ($0 < n < 100$) at random, and placed n black balls and $100-n$ white balls in an empty urn. What is the epistemic probability (relative to a situation in which one knows just this much) of the proposition that the first ball drawn from the urn will be black? A rational ideal bookie, contemplating this situation, will see that because he has no way to determine what the real, objective probability of the first ball's being black is, he has no way to set odds. (Do not confuse this case with the following case: the number n has not yet been drawn and the bookie is told that it will be and then the urn prepared and then a ball drawn. In *this* case, the real, objective probability that the ball will be black is 0.5, and the bookie would take the bet at any odds less than even odds.) Although one way of setting the odds is *objectively* better than any of the others (if, for example, the number of black balls in the urn is in fact 36, the best course is to accept a bet that the first ball will be black at any odds lower than $(100/36)/36$ or $16/9$ and at no higher odds), the bookie has no way of *knowing* which way of setting the odds is objectively the best. An ideal bookie who was forced, in this epistemic situation, to post odds for a bet that the first ball would be black could only *choose at random* the odds at which he would accept the bet. No odds, therefore,

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are *the* odds that a rational ideal bookie in this situation *would* set, and, as a consequence, the proposition that the first ball drawn will be black has no epistemic probability relative to this epistemic situation. A more interesting, if more problematic example: In my view, the proposition that a surveyable proof of the four-color theorem will be discovered in the next century has no epistemic probability (relative to my present epistemic situation) on any proposition I know or believe to be true.

15. In note 9 to chapter 8 I wrote:

Well, one might somehow know the probability of S on theism as a function of the probability of HI on theism; one might know that the former probability was one-tenth the latter, and yet have no idea what either probability was. But that is not the present case. The evidentialist's argument essentially involves two independent probability judgments: that t

probability of S on HI is at least not too low, and that the probability of S on theism is very low.

This concession now seems to me to have been needless (although the point about the independence of the two probability judgments is certainly correct). If I know that probability is ten times probability B , then I know that B is less than or equal to 0.1, and I *am*, therefore, in position to make a judgment about the magnitude of B . If one is not in a position to judge that the probability of B is low, then it cannot be true that one knows that some other probability is ten times greater than B . If one is not in a position to judge that the proportion of Spain that is arable is low, then it cannot be that one knows that the proportion of France that is arable is ten times the proportion of Spain that is arable. (See note 11.)

16. Or to an improved version of it. I ignore the improvements, which I believe to be unnecessary and, in fact, to involve a condition that could not possibly be fulfilled.

17. I have been asked how a modal skeptic like myself can consistently regard such reasoning as justified. The answer is simple. I am a modal skeptic only about matters remote from everyday life and that is not the case in the present example. What *justifies* my intuitive judgments of probability in the present case, I do not know. In other words, I do not know how to refute the thesis that the modal (and probabilistic) intuitions we employ in everyday life are unjustified. I would point out, however, that there is an impressive convergence of judgment about modal and probabilistic theses of the sort that we make in everyday life, and that there is no such convergence in the case of modal and probabilistic judgments about matters remote from everyday life.

18. In my view, this judgment does not depend upon my knowledge of the relation between smoking and cancer. It is simply an application of very general and abstract principles about causal relations (primarily the "low probability of common cause" principle that I appealed to earlier in the paragraph to which this note is appended), principles that I may very well know a priori. Whether or not my knowledge of them is a priori, it is certainly knowledge that I possessed before I first learned of the correlation between smoking and cancer.

19. I ought to say something about Draper's argument for the conclusion that my way of dealing with the evidential argument from evil has the "absurd implication" that the acquisition of evidence for D could leave the theist in a worse epistemic position than he was in when he had no evidence for D . But I have failed to follow the crucial last step of the argument, the step contained in the words "which, since D just barely satisfies the condition of goodness, would be significantly less than $P(O/HI)$." (In this note, I will use Draper's symbols.) I'll try to explain my difficulty. Let us introduce a few numbers to focus our thoughts. Suppose that $P(O/HI)$ is 0.8 and $P(O/\neg D \& G)$ is 0.1. Suppose that we have discovered a body of evidence that has led us to peg $P(D/G)$ at 0.51. (Such a body of evidence, by the way, contrary to what Draper seems to imply, could not consist entirely of evidence that favored D . If p is, to use Draper's term, "aprobable" for one, and if one then turns up a body of evidence consisting entirely of observations that favor p , this could only lead one to con-

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clude that, for some n between 0 and 1, $P(p)$ lies between n and 1. A body of evidence that led one to peg $P(p)$ at 0.51 would have to include observations that led one to conclude that the probability of p was no higher than 0.51, and observations that favored p could not do that.) Since $P(D/G)$ is close to 1/2, so is $P(\neg D/G)$. It follows by the Weighted Averages Principle that $P(O/G)$ is close to $1/2P(O/D \& G) + 1/2P(O/\neg D \& G)$. But why should it follow from this where I fail to follow Draper's reasoning that $P(O/G)$ is significantly less than 0.8 (= $P(O/HI)$)? This would follow only if $P(O/\neg D \& G)$ were significantly less than 0.81. And why should we suppose *that*? There is certainly no mathematical reason to do so: it is easy to construct a model on which $P(D/G) = 0.51$, $P(O/D \& G) = 0.79$, and $P(O/\neg D \& G) = 1$. Then $P(O/G) = (0.51 \times 0.79) + (0.49 \times 1)$ close

to $1/2 (0.79) + 1/2 (1)$ or about 0.89, a figure that is significantly *greater* than 0.8.

20. The corresponding points apply to chapter 8. The conclusion of that chapter is not that assent to theism *is* reasonable. (There are those who say that the fact that the theist has no strong argument for theism is by itself enough to render the theist's belief unreasonable.) It is not even that *S* does not entail that the theism is unreasonable. It is rather that a certain argument—Draper's argument, or at least my version of it—does not show that theism is unreasonable.

21. "The Skeptical Theist" (chapter 9 in this book), note 21.

22. It is not at all clear that cosmic silence really is highly probable on the conjunction of this stronger hypothesis and noetism. Recall the "self-reproducing robotic probe" scenario. If even *one* intelligent species had initiated the program imagined in this scenario (and had done so more than fifty million years ago), we'd know about them. And many experts judge that (1) any species with a high technology and a desire to make contact with other intelligent species would eventually initiate such a program, and (2) it is highly likely that if there are *any* intelligent species other than humanity, there were some of them more than fifty million years ago.

23. Editor's note: In an earlier draft of this essay, van Inwagen had more to say about Russell's essay. Due to constraints on space, it was cut, along with over 30,000 words from other new essays in the book.

24. It seems evident to me that whatever it is that Russell should do, the actual concrete action he performs will have to be to some degree "arbitrary," for it seems evident to me that the correct principles of morality, together with all of the facts, are not going to endorse one and only one imperative of the form 'Admit the first *n* men in the queue.' And yet, in the end, he will have to admit the first *n* men in the queue, for some *n*. But whether what Russell should do would have to be to some degree arbitrary does not affect the point of the example: even if the correct moral principles and the facts tell him to admit (say) exactly 217 refugees, he will still have to close the hatch in the face of someone whose admission would not significantly decrease the ship's chances of reaching the mainland safely.

25. See "Ontological Arguments," *Nous* 11 (1977): 375-95, and my review of Swinburne's *Coherence of Theism*, *Philosophical Review* 88 (1979): 668-72.

26. Gale's discussion of "scientific essentialism" is of no relevance whatever to those arguments.

27. For a discussion of the "green cheese" example, see the review of Swinburne's *Coherence of Theism* cited in note 25.

28. See "Ontological Arguments," cited in note 25, and *Metaphysics* (Boulder: Westview Press, 1993), chap. 5.

29. Not that I think that God has explicitly endorsed the proposition that He is a necessary being somewhere in scripture or in the proceedings of some ecumenical council (I do not claim to be a direct or proximate recipient of divine revelation on these matters). I believe that God is a necessary being on the basis of philosophical reflection on what (I believe) God has explicitly revealed about Himself in scripture and tradition.

30. I wish to thank Evan Fales, James Sennett, James Taylor, and, especially, Alvin Plantinga for comments which have, I believe, greatly improved this paper; at any rate, they have led to extensive revisions.