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"Quid est veritas?"

The answer to this, perhaps the most infamous of all questions, was so obvious that Pilate's interlocutor did not bother to state it. Truth was there, standing before Pilate in the flesh and utterly undeniable. Since that occasion, however, the question has been re-asked many times, with answers becoming increasingly skeptical. The reasons for this are many not the least of which is that denial of truth leads to interesting intellectual unsolvable but publishable puzzles.

It's only a conjecture, but skepticism about truth is often seen as sophistication: acts transgressive to tradition are rewarded in academia, and if you accept the old ways of truth and realism, there's no "research" to be done. This makes finding an audience for truth difficult. More than sixty years ago Donald Williams, exasperated over the pretended puzzlement of induction, said the intelligentsia: [1]

> in its dread of superstition and dogmatic reaction, has been oriented purposely toward skepticism: that a conclusion is admired in proportion as it is skeptical; that a jejune argument for skepticism will be admitted where a scrupulous defense of knowledge is derided or ignored; that an affirmative theory is

[1] Williams, Donald *The Ground of Induction*, New York: Russell and Russell, 1947, pp. XX.

> a mere annoyance to be stamped down as quickly as possible to a normal level of denial and defeat.

Ayway, the explanation the warm reception solipsism, skepticism, relativism and like continue to receive are not our main interest. Truth is.

Truth exists, and so does uncertainty. Uncertainty acknowledges the existence of underlying truth: you cannot be uncertain of nothing, you are uncertain of something, and if there is something, there must be truth. Probability, which is the science of uncertainty, therefore aims at truth; probability assumes and is a measure of truth. Probability is not the quantification of truth, or not always, because not all uncertainty is quantifiable. Probability explains the limitations of our knowledge of truth, it never denies it.

Why a discourse on truth in a book devoted to probability? Since probability is the language of uncertainty, before we can learn what means we need to assimilate the language of truth. Since probability aims at truth, what does the target look like? What does it mean to be uncertain? How do we move from uncertainty to certainty? How certain is certain? It will turn out that statements of probability (assuming they are made without error, an assumption we make of all arguments unless otherwise specified) are true. So knowing truth must be our foundation. What follows is not an disquisition on the subject, merely an introduction sufficient to launch us into probability. The chapter is also a necessity because the majority of readers have grown up in a culture saturated in relativism. After all, let's don't forget the reason Pilate's question is so well remembered.

1.1 Realism

No definition of truth is better or more succinct than Aristotle's: "To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, and of what is not that it is not, is true." This is called correspondence and reflects the metaphysics of (moderate) realism. But please let us not say the correspondence *theory* of truth. Aristotle's definition is not a theory, it is instead a statement of the Way Things Are. Theories are beholden to masters and subject to bicker-

ing among their schools. This is emphasized because when we later say of a proposition "It is necessarily true", this is *never* meant to imply that the proposition is true *in* or *because of* some theory. The proposition is necessarily true for reasons in the proposition itself, not because it fits into some artificial framework. We also want to keep away from theory because when it is found, as it usually is, that part of a theory is false, people have a tendency to dismiss the entire theory. Or that they demand of a logic or probability statement that it explain this or that aspect of somebody's theory of logic or probability. "How would Carnap reply to your contention?" is a question I am not prepared nor obligated to answer.

Moderate realism is the commonsense position that there exist real things, an existence independent of our minds, that an external world is out there and that we can know it, that we can "know things as they are in themselves" to use the buzz phrase. Realism is thus a humble philosophy and accords with everyday life. This philosophy for instance holds that greenness exists apart from or in addition to individual green things, that color exists independent of individual colored things. Mathematicians are realists when they insist all triangles have three straight sides and an interior sum of angles of 180°. Individual approximations to or implementations of triangles also exist, but given the way the world is, all are imperfect representations of the universal ideal. Try drawing one. Catness exists and so do individual cats. We can tell cats from dogs because we know the nature of both. Knifeness exists as do individual knives, even though it's not always clear if a given object is a knife or only acts like one. To throw out the concept of knifeness because you can't decide whether this semi-sharp stick is a knife, is both silly and self-contradictory.

These natures (or ideas) are universals. They don't exist as physical objects in some ethereal realm, *à la* Plato. Instead they exist in the objects which instantiate them—redness exists in red apples, knifeness exists in cleavers—or they exists as ideas in intellects, as immaterial knowable concepts. This is the realism of St Thomas Aquinas and the Scholastics, a modified form of Aristotle's. I do not defend this (what I take to be) this obviously correct view, except to state it. Many resources

exist for the student to learn more.[2]

Contrary to realism is nominalism, which denies universals exist. So you can have, under this view, individual triangles but no concept of an ideal, universal triangle. That leaves out mathematical definitions and, it would seem to follow, all of mathematics, since this field is founded on universal truths (see below). Thus two drawings of triangles are not two drawings of triangles, just two drawings which might have vague similarities, the similarities bespeaking of no central thing in common. How, then, could we even have the word *triangle*? *Man* is also therefore a meaningless term: there are individual bipedal creatures which might coincidentally look somewhat alike and share some DNA, just as they are more dislike than various quadrupedal creatures. The higher concept of man or human being holds no higher meaning. Things do not instantiate natures.

Nominalism comes in various forms and subtleties, but none hold any interest for probability and statistics. If there were no universals, there would be little point in conducting experiments or grouping data, which admits of universals. The act of collating says, does it not, "All these data represent the same underlying truth." Even those dismal objects p-values admit of universal "null" and "alternate" hypotheses; these surely do not point to physical substances. And neither is probability, as de Finnetti taught us in a loud voice, a tangible physical quantity, something that can be measured with a physical apparatus. Probability, like logic as we'll see, assumes universals.

Somewhat related to nominalism is idealism, the concept that reality does not exist, rather that individual physical objects do not exist, but that only universals do. Our thoughts are it, our thoughts are everything, our thoughts define existence. Then how do we know when you and I are thinking of the same thing? We cannot. it is easy to see why academics are prone to these kinds of philosophies. The best overview and refutation of idealism is found in David Stove's essay "Idealism: A Victorian horror story."[3]

There are many other ways for thought to go wrong, and

[2] An excellent introduction are given in Edward Feser's, *Aquinas*, 2009, Oneworld Publication, and *The Last Superstition*, etc.; a more thorough treatment is had in Oderberg, David, *Real Essentialism*, 2008, Routledge.

[3] Stove, David. *The Plato Cult*, etc.

those which have a bearing on probability will be outlined later. For now, I'll boldly state all scientists are realists, or ought to be. There's no use for a scientist who subscribes to some form of idealism. After all, if the universe is only in his mind, there's no guarantee that the universe which is my mind is in any way the same thing as the universe in his. Why not indeed just make up how the universe is? Saves research time.

1.2 Epistemology

Can we know any truths? Yes. And if you disagree you necessarily agree: you'd at least know that you can't know anything, and if you woke up you'd also know that proposition is false. That is, any attempt made to deny there are truths is self-contradictory (how we know self-contradictory propositions are false is discussed later). Roger Scruton said that the people who tout theories (and it's always theories) which deny truth and our knowledge of it are inviting us to disbelieve them, an invitation which I eagerly accept.[4] Except to note the curious ardency and proselytizing energy which infuses those who hold skeptical beliefs, I won't further discuss them.

That there are truths and we can know them is traditionally called rationalism. As a prime example of a known truth, take Aristotle's principal of non-contradiction. The epistemic version states that a proposition cannot be both true and false simultaneously (given the same evidence). It is impossible, and not just unlikely, for somebody to doubt this principle. It is possible, and unfortunately not uncommon, for some to *claim* to doubt it. But claiming and doing are not identical as everybody knows, and is why we have the words like *deception* and *lying*—words, incidentally, which admit there must exist truth and knowledge. Claiming to doubt the principal of non-contradiction is like the man who boasts of disbelieving the theory of gravity. No matter the level of his earnestness or the length of his scholarly credentials, he's still going to meet a flat end when he strolls off the roof.

The metaphysical versions of the non-contradiction principle are that something cannot be and not-be at the same time,

[4]Scruton, Roger, *Modern Philosophy: An Introduction and Survey*, London: Penguin, 1996, p. XX.

and something cannot exist and not-exist simultaneously. Existence is therefore an ontological truth. You cannot exist and not-exist at the same time; further, it is impossible, and not just unlikely, to believe that you exist and that at the time don't exist. This is not the same as saying, for example with respect to certain very small objects in physics, that you do not *know* if or where a thing exists or not.

Anyone not suffering from a disabling mental defect knows that an external world exists. This is another way to state realism. Anybody asking the question of another, "Does an external world exist?" has answered it affirmatively, since to ask it requires a person to ask and another to answer it, hence an external world in which to ask it, hence we can know it exists, hence we know there are other people, too (the tradition way to phrase it is that we know there are "other minds").

Another truth known to everybody is that solipsism is impossible. Again, if you disagree with me, you agree with me and acknowledge the complete fallaciousness of your position because, of course, to disagree with *me* implies someone other than yourself exists, hence solipsism is false.

But what if I were an illusion? What if, I mean, you were hallucinating me? From David Stove's masterful essay "'I only am alone escaped to tell thee: Epistemology and the Ishmael Effect"[5]

> [I]t is true, and also contingent, that some of us sometimes hallucinate. But it does not follow from that, (even if Descartes thought it did), that it is logically possible that all of us are always hallucinating. Some children in a school-class may happen to be below the average level of ability of children in that class, but it not logically possible that all of them are. Neither is it logically possible that *we* are all always hallucinating. For we—that is, all human beings—are perceived by (unless indeed we are hallucinations of) at least one human being: ourselves if no other. Whence, on the supposition that we—that is, all human beings—are *always* hallucinating, it follows that all human beings are hallucinations

[5]Stove, David, *The Plato Cult and Other Philosophical Follies*, Cambridge: Basil Blackwell, 1991, pp. 61–82.

> of at least one human being. And that is not logically possible.

Empiricism is how some cope with hallucinations. This philosophy in its extreme form insists that all knowledge must be grounded eventually in empirical observation, that no metaphysical truths exist. Empiricism, and its cousins pragmatism and positivism, rejects dogmatically knowledge anchored on intuition, the *a priori*, and especially divine revelation. This is contrasted with the realism-rationalism view which says all knowledge begins in sense impressions, but then moves from those to grasp universals, which are entities which cannot be checked or verified empirically. Divine revelation is ruled by moderns out of bounds by fiat; whereas a less rigid attitude would say to test each claim of the miraculous separately. Worst for empiricism is that no mathematics or logic can be checked empirically; specifically, mathematical axioms cannot be seen, touched, tasted, heard, or smelt. That logic in particular cannot be wholly empirical is dealt with in the next chapter, a useful exercise because probability follows directly from logic.

1.3 Necessary & Conditional Truth

Given "x, y, x are natural numbers and $x > y$ and $y > z$" the proposition "$x > z$" is true (I am assuming logical knowledge here, which I don't discuss until Chapter 2). But it would be false in general to claim, "It is true that '$x > z$'." After all, it might be that "$x = 17$ and $z = 32$"; if so, "$x > z$" is false. Or it might be that "$x = 17$ and $z = 17$", then again "$x > z$" is false. Or maybe "$x =$ a boatload and $z =$ humongous amount" then "$x > z$" is undefined or unknown unless there is tacit and complete knowledge of precisely how much is a boatload and how much is a humongous amount (which is doubtful). We cannot dismiss this last example, because a great portion of human discussions of uncertainty are pitched in this way. Not for the last time I'll say statisticians have been too quick to turn probability into mathematics.

Included in the premise "x, y, z natural numbers and $x > y$ and $y > z$" are not just the raw information of the proposition, but the tacit knowledge we have of the symbol $>$, of what "natural numbers" are, and even what "and" and "are" mean.

This is so for any argument which we wish to make. Language, in whatever form, must be used. There must therefore be understanding of and about definitions if any progress is to be made. This may be more or less obvious depending on how much philosophical training you have had (more is not necessarily better). But it must be kept in mind when we talk about how the mathematical symbols of our formulae translate to real things, matter of actual decision. Just because a statement is mathematically true does not mean that the statement has any bearing on reality. Later we talk about sin of reification which occurs when this warning is ignored.

We have an idea what it means to say of a proposition that it is true or false. This needs to be firmed up considerably. Take "a proposition cannot be both true and false simultaneously". This proposition, as I said above, is true. That means there exists evidence which allows us to conclude the proposition is true. This evidence is in the form of mental, which is to say metaphysical, propositions which include our understanding of the words and English grammar, and of phrases like "we cannot believe its contrary." There are also present tacit (not formal) rules of logic about how we must treat and manipulate propositions. Each of these conditioning propositions or premises can in turn be true or false conditional on still other propositions, or ultimately on our intuitions. That is, we eventually must reach a point at which the proposition in front of is just *feels* true. There is no other evidence for this truth other than this strong feeling, or sense. Observations and sense impressions may give partial support to this feeling, but they are never enough by themselves. This is proved in parts in this chapter and in the next two.

In mathematics, logic, and philosophy the kinds of propositions which are true because our intuition tells us so are called axioms. Axioms are indubitable. An example is the principal of non-contradiction: propositions which we cannot believe are false (though, given our humanness, we can always claim they are false). As said, we need understanding also of the words and grammar, and maybe the plain observation of a necessarily finite number of instance of propositions that are only true or only false, none of which are the full proof of the proposition: there comes a point at which we just believe and, indeed, cannot do other than believe. Axioms are true based on *no* evi-

dence except our faith that our intuitions are correctly guiding us. Axioms, to which I append the unproved rules of logical manipulations, are knowledge we have before any other, knowledge which is usually called *a priori*.

This leads to the concept of truly true, really true, just-plain true, universally, absolutely, or the *necessarily* true. These are propositions, like those in mathematics, that are true given a valid and sound chain of argument which leads back to indubitable axioms. It is not possible to doubt axioms or necessary truths, unless there be a misunderstanding of the words or terms or chain of proof or argument involved. Necessary truths are true even if you don't want them to be, even if they provoke discomfort, which (of course) they sometimes do. Peter Kreeft "As Aristotle showed, [all] 'backward doubt' terminates in two places: psychologically indubitable immediate sense experience and logically indubitable first principles such as 'X is not non-X' in theoretical thinking and Good is to be done and evil to be avoided in practical thinking."[6]

A man in the street might look at the scratchings of a mathematical truth and doubt the theorem, but this is only because he doesn't comprehend what all those strange symbols mean. He may even say that he "knows" the theorem is false—I'm thinking of the parade of brave souls who claim to have squared the circle. But his error is of the same kind as the man who cannot comprehend anything, though not the same degree. Thus understanding the *whole* of an argument is a requirement to our admitting a necessary truth (it is obviously not required of the necessary truth itself!).

Conversely, when a mathematician says something akin to, "We now know Flippenberger's theorem is true", his "we" does not, it most certainly does not, encompass all of humanity; only those who can and *have* followed the line of reason which appears in the proof. That another mathematician (or man in the street) who hears this statement, but whose specialty is not Flippenbergerology, conditional on trusting the first mathematician's word, also believes Flippenberger's theorem is true, is not making (to himself) a well founded statement. He instead makes a *conditional* truth statement: to him, Flippenberger's theorem is *conditionally* true, given he accepts the word of the

[6]Kreeft, Peter. *Summa Philosophica* Part VI, etc.

first mathematician. Of course, necessary truths are *also* conditional, so the phrase "conditional truth" is imperfect, but I have not been able to discover one better to my satisfaction.[7]

Besides mathematical propositions, there are plenty of necessary truths. "I exist" is popular, and is only doubted by the insane (a considerable army). "God exists" is another: those who doubt it are like circle-squarers who have misunderstood or have not (yet) comprehended the arguments which lead to this proposition.[8] "There are true propositions" always delights (which also has its doubters who claim it is true that it is false). In Chapter 2 we meet many more.

There are an infinite number and an enormous variety of conditional truths. I don't mean to say that there are not an infinite number of necessary truths, only that conditional truths form a vaster class of truths. We met one conditional truth above in "$x > z$". Another is, given "all Martians wear hats and George is a Martian" then it is conditionally true that "George wears a hat." The difference in how we express this truth is plain enough in cases like hat-wearing Martians. Nobody would say in a general setting, "It's true that Martians wear hats." Or if he did, nobody would believe him. This disbelief would be deduced conditional on the proposition "there are no Martians".

But we often hear people claim conditional truths are necessary truths, especially in moral or political contexts. A man might say, "All liberals are intolerant of dissent" and believe he is stating a necessary truth. Yet this cannot be an necessary truth, because no sound valid chain of argument anchored on axioms can support it. But it may be an induction from "All the many liberals I have observed are intolerant of dissent", in which case the proposition is still not a necessary truth, because (as we'll see) inductions like this are fallible. As a hint: The man's audience, conditional on a typical background of watching television and so forth, might not believe the "All" means all, but only "many". But that substitution does not make the proposition "Many liberals are intolerant of dissent" necessarily true, either.

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[7] *Local* or *relative* truth have their merits, but their use could encourage relativists to believe they have a point, which they do not.

[8] Your author was once in that camp, until he read, *inter alia*, Feser, Edward, *The Last Superstition*, XX:XX, 20XX, pp. x–x.

Another interesting possibility is in the proposition "Some liberals are intolerant of dissent," where *some* is defined as *at least one and potentially all*[9]. Now if a man hears that and recalls, "I have met X, who is a liberal, and she is intolerant of dissent", then conditional on that evidence the proposition of interest is conditionally true. Why isn't it necessarily true? Understand first that the proposition is true for you, too, dear reader, if we take as evidence "I have met X, etc." Just as "George wears a hat" was conditionally true on the other explicit evidence. It may be that you yourself have not met X, nor any other intolerant-of-dissent liberal, but that means nothing for the epistemological status of these two propositions. But it now becomes obvious why the proposition of interest is not necessarily true: because the supporting evidence "I have met X, etc." cannot be held up as necessarily true itself: there is no chain of sound argument leading to indubitable axioms which guarantees it is a logically necessity that liberals must be intolerant of dissent.

We only have to be careful because when people speak or write of truths they are usually not careful to tell us whether they have in mind a necessary or only a conditional truth.

1.4 Science & Scientism

The example of the intolerant liberal is like propositions in science. Examples, "Radium has the atomic weight of X", "The speed of light is c", "The earth is warmed by the sun's rays", "Creatures evolve by natural selection", and on and on. These statements are all *contingent*, meaning there is no known route to their necessary truth. They are all conditionally true, given various facts and evidence. In any of these propositions none of the conditioned-on facts or evidence meets the test of a sound chain of valid argument leading to indubitable axioms. In other words, none of these propositions are logically necessary. It is a logical possibility that any of them might be (necessarily) false. That radium does not have the atomic weight of X might be false if the equipment, no matter how sophisticated or fine, erred in its measurements. That the speed of light is some number might also be false for the same reason. All physical

[9]I keep this definition throughout the book unless otherwise specified

formulas rely on "constants", such as the speed of light in a vacuum or Planck's constant, which are the result of measurements. They are not themselves deduced from earlier truths; i.e. there is nothing which we know of that states Planck's constant must of logically necessity take the precise value it does. That means any theory which relies on contingent premises might be false. It might be incredibly improbable, given the evidence we have, for our best theories to be necessarily false, but we cannot claim *any* are necessarily true.

A scientific statement is therefore a contingent statement, one which can only ever be conditionally true and not necessarily true. All scientific propositions are therefore subject to doubt. Not always reasonable doubt, of course. Here is a scientific proposition, "If I walk off the edge of the twenty story building I will fall." There is no chain of argument which proves this is universally true, therefore the proposition is contingent. It is not logically necessary that falling must occur. But I will not be walking off the edge of any twenty-story buildings. I'm also happy with the atomic weight of Radium.

All science is an attempt to remove as much of the contingency as possible from the supporting evidence for propositions of interest. The ultimate Theory of Everything would be one which is necessarily true, which begins at indisputable axioms and progressed toward a complete explanation for how everything works.

People before Newton knew apples fell, and would say so. The reasons they gave for this produced conditional truths ("Apples fall because they love the ground") and allowed good predictions (sure enough, the apple always fell). Nobody not delusional walked off mountains in *anno Domini* 1600 because they didn't understand Newton's theory of gravitation. Newton's great trick was to replace the highly contingent and dubious evidence with better evidence which had less contingency. He didn't remove it, of course. But then neither did Einstein when he refined Newton's premises. And still nobody has supplied a universally true argument which shows the logical necessity of gravity behaving the way it does. Scientists still labor to remove the remaining contingencies (and there are plenty).[10]. Whether they can eliminate them *entirely*, as in mathematical

[10]Whatshisname, *Book*, XX:XX, 19XX, pp. x–x

proofs, is not known. There is plenty of reason to doubt it, however; but that discussion would take us too far afield (gist: don't hold your breath waiting for it). Suffice to say that no known scientific theory is universally true. All are at best conditionally true, many are only probably true, and still others are certainly false (examples of these will follow).

Scientists, and their cheering section, have the bad habit of insisting that their conditional truths are universal truths, however. Many have the even worse habit of insisting their probable truths are not just conditionally but universally true. And, as you can guess, still more are deeply confused about what is true and what is false. Bad habits can lead to iniquity, which in this case is the sin of *scientism*.

This is the false belief that the only truths we have are scientific truths. Since scientific truths are only conditional at best, and likely only probable and sometimes false in fact, it is not possible that it is a universal truth that conditional or probable truths are universal truths. Tongue twisting? It is not from science we learn "I exist"; though, if it can be credited, some scientists would say that consciousness of our existence is an "illusion", an obviously self-contradictory proposition.[11] Science is also mute on all mathematical (necessary) truths, which is amusing because scidolators (those who practice scientism) often wield mathematical truths to show how scientific they are.

Jacques Barzun: *scientism* "Scientism is the fallacy of believing that the method of science must be used on all forms of experience and, given time, will settle every issue."[12]

Pascal[13]

> The world is a good judge of things, for it is in natural ignorance, which is man's true state. The sciences have two extremes which meet. The first is the pure natural ignorance in which all men find themselves at birth. The other extreme is that reached by great intellects, who, having run through all that men can know, find they know nothing, and

[11] Youknowhwo, etc.

[12] Barzun, Jacques, *From Dawn to Decadence: 500 Years of Western Cultural Life* by Jacques Barzun, 2000, HarperCollins, New York, p 218.

[13] Pascal, Blaise, *Pensees*, etc.

> come back again to that same ignorance from which they set out; but this is a learned ignorance which is conscious of itself. Those between the two, who have departed from natural ignorance and not been able to reach the other, have some smattering of this vain knowledge, and pretend to be wise. These trouble the world, and are bad judges of everything. The people and the wise constitute the world; these despise it, and are despised. They judge badly of everything, and the world judges rightly of them.

The increasing politicization of science is also distressing. This is found whenever is heard somebody screeching (this is never spoken politely) about some contingent proposition, "The debate is over!", as if the level of frenzy removed the obvious contingencies from the proposition. This tactic is always an obvious fallacy, unless it is applied to a necessary truth. But this subject is too depressing to continue, so let it pass.

1.5 Faith

Faith is another difficult word. It has connotations of trust and honesty, but also of religion. In religion it's used to describe a kind of belief plus as a label for a system or practice, e.g. "the Methodist faith." But you'll also have noticed I used it above in the epistemology of truth. To repeat: the reason we know axioms are true is because our intuitions tell us they are, and we *trust* that our intuitions are not misleading us; that is, we have *faith* in our intuitions. Faith is in this sense ultimate belief. Incidentally, even though our intuitions sometimes mislead us, it is false that they always do (I dare you to write me disproving this, because when you try, you'll prove me right).

There is also a scurrilous and asinine definition of *faith* that it pleases some to state, which goes something like this: "Faith is believing *contrary* to evidence."[14] It is not possible to believe something you know is false. For example, I may claim to believe that I do not exist, based on God knows what evidence, mere mischievousness probably, but I may not believe in actuality. If I say, "I take it on faith that I don't exist", then this would fit the skeptic's definition. But nobody (except for the

[14] *Skeptic's Dictionary*, etc.

insane) makes statements like this. What usually happens is something far different.

What skeptics don't like is disagreement, so try to label their opponents fools. "God exists, and here is the proof" says the theist.[15] The skeptic has two strategies. The first is to dislike what the theist says but to offer no counter proof. He simply and on pure faith says to himself, "God does not exist." This is a conditional truth (conditional on hope), which can be believed. But it is only the ignorant who claim it is an necessary truth. It is therefore stupid but true to say that the theist's (ultimate) faith is believing *contrary* to the skeptic's invented evidence.

The second tactic is for the skeptic to claim he has found a flaw in a proof for God's existence. This may even be a genuine flaw. If it is, and the skeptic is unable to persuade the theist of it, but the theist still claims to believe based on the (flawed) proof, then the skeptic has a good example of somebody believing a claim contrary to faith. This rarely happens, however, simply because most people are not well equipped to judge philosophical arguments at a deep level. Usually, a theist will hear a skeptic has found a flaw, and might even believe the skeptic, but will still believe on other grounds. And this is not unreasonable given the skeptic never offers a necessary proof of God's *non*-existence. What the skeptic really wishes is that everybody would be like him.

1.6 Belief & Knowledge

The word *belief* is ambiguous: statements of belief can belie knowledge, certainty, faith, or even uncertainty. You can only know what is true, but you can believe anything. Belief (the word) is often accompanied by the idea of lying; many people lie and say they believe a thing, while secretly doubting or disbelieving. This is what makes politics. The dependability of a person's public utterances accurately matching his actual state of mind depend strongly on his milieu. In repressive or totalitarian societies, like in the Soviet Union or Western universities, the correspondence between public avowals and belief

[15] My favorite is here: Feser, Edward, Existential Inertia and the Five Ways, *American Catholic Philosophical Quarterly* etc.

is weak, or even negative. The point is that truth and belief are mental states and not public actions.

We have to be careful and settle on one of the many definitions of *belief*. *True belief* (or just belief) is averring to or the acceptance of a conditional or a necessary truth. I can also believe conditional truths like "George wears a hat" given "All Martians wear hats and George is a Martian". I had better believe it. Why? Because the rules of truths of logic demand it. If I doubted, which is to say if I did not believe "George wears a hat", it *must* be because I am using different evidence than the propositions "All Martians etc." What this different evidence is doesn't matter, but I *must* have it. I may *claim* to hold with "All Martians etc." but if I still don't believe "George wears a hat" then I must also be accepting other evidence which contradicts or trumps "All Martians etc."

We're finally ready to tackle *knowledge*, which is defined as believing in a necessary truth. You cannot have knowledge of a conditional truth, but you can believe one. Knowledge is also called "justified true belief", the justification being that chain of sound valid argument which leads to indubitable axioms. This means (though we haven't yet discussed them) we can't have knowledge of probabilistic propositions; not of the propositions themselves, I mean. It will turn out that propositions like "Given the evidence, the probability of X is p" is itself necessarily true: p is not true, mind, but the proposition in which it appears is.

Succinctly: we only know and must belief necessary truths, and we cannot know but can belief (and usually do) conditional truths.

There are other ways to think about knowledge. Here I paraphrase Laurence Bonjour[16]. In order to know (the truth of) a proposition p in the "Cartesian conception of knowledge" (a theory!) three conditions must be met, the first two of which are: a person must believe or accept p without harboring doubt, and the person must have a reason or justification that guarantees the truth of p. The third condition is the strangest: p must be true.

But Bonjour, like any authors, does not separate necessary

[16]Bonjour, Laurence, *Epistemology*, Rowman & Littlefield: Oxford, 2002, pp. 27–52

from conditional truths. I shall, of course, keep the distinction. There are always two aspects to consider: whether something is necessarily or conditionally true and whether somebody knows this. The failure to recognize distinctions in truth opens up a curious problem.

In a standard raffle somebody must win; via the rules of such games we therefore believe that p = "somebody must win." This is an existence proof, a statement of ontology, and a conditional truth. It is not a necessary truth because there is nothing proving it is logically necessary the raffle goes as planned. Who will win, unless the game be played in Chicago or Brooklyn, we do not learn until the drawing. If you are in the raffle (outside of Chicago or Brooklyn) is it therefore conditionally true that p = "I might win". You *believe* this given the accepted rules of raffles and because you own at least one ticket. The conditional proof of p is the reason and justification for *believing* p; it is also the proof p is conditionally true. Again, it is not necessarily true.

The example is worth giving because of so-called Gettier problems, named for Edmund Gettier the man who first inflicted them on philosophy.[17] Gettier claimed there were situations in which (he claims) a person has a justified true belief, yet that belief does not meet the test of knowledge. Keep p = "I might win" which you believe is true because your wife said she bought you a ticket for the raffle. Yet your wife was teasing; she didn't buy a ticket, only told you she did. However, unbeknownst to her or you, your mother did in fact buy you a ticket. Therefore you believe p, and indeed p is true, but, says Gettier, your belief cannot count as knowledge because your belief is based on a fiction.

Naturally, I do not account situations like these as problems in understanding uncertainty. Since truth is conditional, the conditions you use to judge the truth of p—your wife said she bought a ticket, your wife told the truth, the rules of raffles, etc.—prove p conditionally. That is, given those premises p is true. P is also conditionally true given the alternate premises "your wife lied and your mother bought you a ticket" (and removing 'your wife told the truth"). P is also conditionally true if you live in Chicago and you get the wink from your alder-

[17] *Ibid*, pp. 43–45.

man. There are many ways for p to be conditionally true. Your belief is driven by p's truth conditional on whatever evidence you used to prove p conditionally true.

But p is not necessarily true, you do not have knowledge that is. There is therefore no problem with the concept of knowledge as justified true belief. To the outside observer who is aware of what both your wife and and your mother has done, and who also is aware of the rules of raffles, also believes p is true, though in his case he is closer to necessary truth because he has removed more of the contingency than you have. And once again, as must be repeatedly emphasized, you can still can believe your conditional truth and act on it; so can the outside observer who knows of your wife's shenanigans and your mother's beneficence.

1.7 Truth

Because *true* is such a useful word, and because *necessarily true* and *conditionally true* are cumbersome, like most people in ordinary speech, I will use *true* to mean necessary truth, unless the context be so clear that calling a conditional truth "true" will cause no misunderstanding. I will also affix necessary or conditional on knowledge, to avoid Gettier problems.