KNOWLEDGE:
Its Acquisition and Expression

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INTRODUCTION

0.1. The subject-matter This is not, really, a book on how to think, because there are no rules on how to think.

Thinking, as I have tried to show in my book *Living Bodies,* is a spiritual act, one that is "transparent" to itself, or one that knows what it is doing while it does it. If you are a human being, you have the same power to think that every other human being does. You may not have the same data available (because of lack of information or lesser or greater brain-power to be able to hold data in your consciousness at one time); but, given the data, your capacity to think about it is the same as anyone else's. Spiritual acts have nothing by which one could be said to be greater or less than another.

Nor is it a book, exactly, on what thinking is. That again is something you find out about in the philosophy of man.

What the first part of it is is a book on the *relation between our acts of thinking and the object we are thinking about.* When we think about an object, is what we are thinking about "in our mind" or "outside" it; do we think accurately about it, so that what we think it is is what it actually is, or is thinking about the object distorted,

and if so how?

That is, the first part of the book deals with *truth,* and whether our knowledge of things is *objective* and accurate, or whether we don't know things as they truly are.

DEFINITION: The name of the science that investigates knowledge from the point of view of its relation to what is known is EPISTEMOLOGY.

Then, once we have settled, so far as it can be settled, in what sense or to what extent our knowledge is objective, accurate, and truthful, we will take up *the relation of our knowledge to the expression of our knowledge* in such a way that it can be communicated to others: in other words, language as an expression and communication of knowledge.

Once we have looked at what language does as an expression of (factual) knowledge, we will then take up *ways in which our language can be manipulated so as to give us new knowledge that we didn't have before*.

DEFINITION: The name of the science that gives the rules for manipulating statements to get new statements is FORMAL LOGIC.

It might seem that when we get to logic, we are then giving lessons in how to think. But this is not really true either. When we *reason,* we are using logic *and thinking,* so that we see what we are doing, why we are doing it, and why the new statement emerges from our manipulations, as well as what the new statement means.

For instance, if you put together the statements, "Every human being is something that begins to exist," and "everything that begins

to exist is something that is not master over its own existence," you see how you have to say, "every human being is something that is not master over its own existence." Either that, or you have to disagree with one or the other of the two statements.

That is reasoning; when you do logic *and* see how the conclusion follows from what you have said. It involves thinking.

But logic itself is just the manipulation of the statements, and good logic is the manipulation of the statements in such a way that a new statement is forced (that is, good logic follows certain rules whose purpose is to force new statements). And you don't need to think to do logic, even good logic. Machines can do it--in fact, sometimes better than we can, because thinking sometimes gets in the way of doing logic accurately (if the statements are confusing).

Anyone who can read this book can actually do much more complicated logic that it will talk about; just as anyone who can speak English can "do" more complicated grammar than the kind of thing people study in English classes. What the book will try to do is what grammar courses do with the language in another respect: this book will try to show *what the structure of logic is,* and *why the various manipulations work*.

The practical usefulness of the logic section of this book, then, is more or less the same as the practical value of studying grammar: when unusual cases come up, a person can fall back on the rules and find out what is the correct procedure. Thus, in grammar, you might wonder whether "between you and I" is correct, or whether it should be "between you and me." If you know that prepositions take the objective case, then it has to be "between you and me," however "vulgar" this might sound. Similarly, when you see "Every German Shepherd is a dog, and nothing that whinnies is a German Shepherd; and so--what?" you will be able to figure out that the correct conclusion is, "Some dogs do not whinny."

0.1. The subject-matter

Of course, we aren't usually vitally interested in non-whinnying dogs, but it's nice to know logic to be able to spot what are called "fallacies" that are foisted upon us by everyone from politicians to salesmen.

0.2. Plan of the book

So we will first take up the relation of our knowledge to its object.

The first topic under this heading will be whether we are ever absolutely certain of anything at all: that is, whether it is ever the case that it is absolutely impossible for us to be mistaken. It turns out that it is. We are absolutely certain of some facts, and to deny this is to assert it.

Next we will deal with the issue of whether what is true and certain for you is true just for you or whether there are things that are known to be true that are true for everyone. And again, it turns out that there are some facts that do not depend on a person's point of view--and the assertion that everything depends on your point of view is an assertion that some things (the assertion itself) don't depend on your point of view.

We will then discuss the basic law of all knowledge: the Principle of Contradiction: something that is known for certain by everyone, no matter what his point of view.

This will lead us into a discussion of certainty, and we will discover that there are different sorts of certainty, each of which is a kind of certainty and not probability or likelihood, but that not everything that is known for certain is known with absolute certainty.

But the facts that can be known with absolute certainty are generally facts that deal with our knowledge of our own knowledge; and at this point, we will bring up the question of how we know about things outside us, if our knowledge is based on reactions to things, and reactions are subjective and not objective.

Having set up the problem, we will try to solve it by discovering the objectivity of relationships among our reactions to things; and these relations (concepts) are parallel to the relations among the things "out there": and those relations are called "facts." Hence, our objective knowledge is that of facts.

We will have to say something about abstraction at this point, and why, though abstraction leaves something out, it does not of itself distort our knowledge, so that we actually can know facts about the world outside our minds.

We will then discuss what truth is, as the relationship of agreement between what we think the fact is and what the fact actually is. We will find that it is possible to make mistakes, and how, having made them, we can set about discovering that a mistake was made and correcting it.

This relation between the fact and our knowledge of it will be explored a bit, showing that that same relation, from one point of view, is the truth/error relation, from another is the good/bad relation, and from another is the relation we call "humor." We will not spend much time on the latter two ways of considering the relation, however, since this is a book on knowledge or truth.

Truth will then be investigated more fully, in its various senses: the truth opposed to error, that opposed to lying, and that opposed to falseness. We will see how something can be true (in one sense) and not true (in another) at the same time, with no contradiction.

The truth/lie and truth/false relations will lead us into an investigation of the expression of our factual knowledge in perceptible form, or in language in general.

After an initial discussion of what language is about, we will get into the type of language that expresses factual knowledge: what statements (or propositions) are, and what their parts correspond to

in our knowledge of the facts. We will learn what the subject of a statement is and why there are such things, and what the predicate is, and why it is different from the subject.

That will then allow us to start manipulating language, and doing logic.

First, we will learn logical operations dealing with a single proposition: how you can "convert" it and "obvert" it and get new propositions from it.

Then we will learn what you can do with terms by manipulating their "quantity" and "quality," so that from the same two terms, you can get whole sets of propositions, which have various truth-relations with each other. After that, logic will take up combinations of propositions; what is the meaning of "and," and "or" in its various senses, and "if-then"; and we will develop "syllogisms" dealing with these.

Then we will take up what has traditionally been called the "categorical syllogism," showing how combinations of two propositions with three terms can yield new propositions.

There will follow a listing of some common fallacies, and how to avoid making them, as well as how to spot them and refute them when someone else has made them.

Having been through all this, you should have a better acquaintance with this tool you have that is almost the same as your very reality: your mind; and you should have a better idea how it connects with your world.

0.2. Plan of the book

CHAPTER 1

Doubt and Skepticism

1.1. How to appear wise

"If there's one thing certain in this world, it's that there's nothing certain in this world."

That's a statement you sometimes hear from people who are supposed to be intelligent. It's on a par with, "No generalization is worth a damn—including this one."

But when you think about it, why would a person make a statement like that? If it's true, then you shouldn't listen to it—because if it's certain that there's nothing certain, then it's *not* certain that there's nothing certain (because the statement itself is not certain)—and if it's not certain that there's nothing certain, then there might be something certain, in which case, it's just plain silly to say that there's nothing certain.

Or if no generalization is worth a damn, then (as the statement admits), the generalization that no generalization is worth a damn isn't worth a damn, and so why should anyone pay attention to it—unless there are generalizations that are worth a damn, in which case *this* one, certainly, is worth a good deal less than a damn.

Statements like this are such obvious stupidity that when apparently intelligent people make them, we assume that they contain a "kernel of profound truth" or something, and we marvel

at the depth of intelligence of the people who can see so clearly the fallibility of our intelligence.

But I'll tell you a secret. The emperor has no clothes.

There's no profundity underneath these statements; they're plain silly. You can always sound "deep" if you make a statement and then contradict it—because you sound as if you understand the paradoxical nature of reality. Now reality is, in some respects—in many respects, in fact—paradoxical; but it doesn't follow that every paradoxical statement gets at something about reality.

Try it. Doesn't it sound really intelligent to say things like, "The nice thing about a small college like this is that it's so big." "Enjoying yourself is such a depressing way to get through life." "Nothing attracts like repulsion."

You can read a meaning into these things, and sometimes a rather deep one. But the fact is, they were just made up by putting together opposites. "The best way to sound intelligent is to be really stupid."

- **Now that you're in on the secret, don't be fooled by people who make clever statements. Examine what is said to see if it makes sense.**

1.1.1. The prevailing "wisdom" The reason this has to be mentioned at the outset is that the present age thinks it has made the Great Discovery.

This is supposed to be something that the world had no inkling of before: that we now finally realize that "absolute truth" is a myth; that we can reach likelihood and even high degrees of probability, but we must give up the quest for certainty, because it's a quest for the end of the rainbow—no matter how far you pursue it, it recedes off into the horizon.

1.1.1. The prevailing "wisdom"

Admit it: suppose somebody tells you that something is absolutely true, without the slightest possibility of a doubt; don't you automatically disbelieve him? It's not possible, you think, for anybody to be that certain—and be right. Our minds just aren't built to be able to reach that degree of certainty. We can always be wrong.

Oh yes? How certain are you that we can always be wrong?

You see, you've been drinking in the "prevailing wisdom" of the age ever since you learned that there's no Santa Claus. You take it so for granted that no one can really be absolutely sure of anything that you'd never admit that anyone could be—you're so sure that we can't be sure.

I had to listen for four hours once to lectures to the faculty of our college, whose purpose was to get us to be better teachers. The "new discovery" in the learning process was this: Students (the lecturer said) begin at Stage One, by thinking that there is "truth" and the teacher has it. When they learn that the teacher doesn't know everything, then they reach Stage Two, which is that there is "truth" out there somewhere, but nobody (yet) has got hold of the truth of it; but our goal as teachers was to bring students to Stage Three, the final stage in learning, which is "critical relativism," which abandons the search for "truth" and evaluates what people assert with a critical eye.

Well, I evaluated this assertion with a critical eye, and saw that either this "new discovery" was a "truth" that the lecturer thought she had and was trying to inform us of (in which case, Stage Three wasn't the final stage of learning), or (if we were at Stage Three) we should take her assertions with a grain of salt, because who was she to know whether it really was futile to abandon the quest for "truth"?—in which case, Stage Three was as likely as not to be an illusion. And if it wasn't, what was she doing up there trying to convince us that if we were really smart, we shouldn't be listening to

her?

Needless to say, I posed a question which as politely as I knew how hinted that if she was right about the abandonment of "truth" as a goal, then how was it she was trying to convince us of this "truth"—at which point, I was relegated to Stage Two. I hadn't arrived yet. Sad.

My own experience with students is that, once they're in college, and (from what I can gather) once they're well into high school, they're entrenched in Stage Three, with such dogmatic assurance that it's almost impossible to get them to admit the possibility that "truth" might even exist, let alone that they might be able to latch on to some part of it.

The object of this part of the book is to lead you from Stage Three back through Stage Two and on to Stage One. Yes, Virginia, there is "truth"; and you will get acquainted with it as we progress, provided you aren't so wedded to the "truth that there is no absolute truth" that you refuse to follow.

God knows we're ignorant; and we certainly should admit it. But please, entertain the possibility that we might not be *totally* ignorant, and don't close your minds with the supposedly absolute knowledge that absolute knowledge is beyond our grasp.

If you do, there's no hope for going on. You'll just read this and say, "Well, that's your opinion," and not examine anything, and think yourself wise in taking everything written here "with a grain of salt," on the grounds, "Well, *I* might not be able to prove him wrong, because he's got a Ph.D., but who does he think he is to say that anything he says is absolutely true? That's bound to be wrong."

I've talked to people who have said that no one can be certain of anything; and when I asked them, "Are you certain of that?" they wouldn't admit they were—because if they did, then they'd be certain of something, wouldn't they? And they were so sure that

1.1.1. The prevailing "wisdom"

nothing could be known for certain that they wouldn't admit they were sure.

Remember what I said: Now that you're in on the secret, don't be fooled by what sounds wise. Examine it to see if it makes sense. How can it make sense to say that nothing can be known for certain? How could you be certain of that? And if you can't be, then why do you say it? The most you could say would be, "Well, I've never been certain of anything yet; but I might meet something tomorrow that can be known without the slightest possibility of a doubt."

1.1.2. Skepticism

The other thing about this Great Discovery is that it's nothing new.

A man named Pyrrho of Elis, who lived around 300 B.C. in Greece, was one of the earliest important figures in this view of things. Those who followed him called themselves "skeptics," which means "examiners," and their idea was to "examine" everything to see if you could find absolute truth in it; and their conclusion—if you can call it that—was that you couldn't.

But skepticism, in one of its many forms, is actually a stage of thought that passes. It comes about after an age of confidence that we've got "the answer" because of some scientific advance, and then one of two things happens. Either another scientific advance occurs, making the first one seem false (as quantum physics and relativistic physics made classical physics seem totally wrong—and we were so convinced that it was unassailable); or the ordinary people push the scientific advance beyond its evidence into areas where it shows up as false. And if *science* is wrong, can we really know anything at all?

One of the amusing things about skepticism is that when it occurs, it's always heralded as the Great New Discovery, and True Wisdom, and The Last Word, and Unanswerable, and The

Admission of Human Fallibility Opposed to the Stupid Certainties of the Past, and so on. It is arrogance masquerading as humility, and it poisons the wells of knowledge, because it presumes to have "examined" and found out that you can't really be sure of anything—and therefore there's no need to examine further.

But then what happens, historically, is that skepticism becomes skeptical of skepticism itself, because those who are interested in the facts don't bother themselves with whether they can "really know" or not, and proceed to find out things and actually learn something. A scientific breakthrough occurs, the people become confident once again in the ability of our minds to know, and skepticism dies for a while until this discovery once again proves that it wasn't quite what we thought it was.

Our own brand of skepticism, as I mentioned above, came about because we were sure that, even if other areas of knowledge were a waste of time, we at least had hold on "the truth" in physics and mathematics. But at the turn of this century came quantum physics, which didn't fit with classical physics, and relativistic physics, which repudiated Newton's "laws" of motion and gravitation. And the advent of non-finite mathematics and the rejection of Euclid's "axiom" that only one line parallel to another can be drawn through a point (which rejection, by the way, is at the foundation of Einstein's General Theory of Relativity) made mathematics, from something that described the "real world" into a kind of axiomatic game that was fun to play, but wasn't "true" except with its own "internal truth." And then Kurt Goedel showed that even the internal truth of mathematical systems supported statements like "This theorem, which follows from the axioms, doesn't."

Well, if you can't find truth in the King and Queen of modern-day sciences, where can you find it? So we've all become skeptics.

1.1.2. Skepticism

1.2. Doubt

That's why we're where we are today, basically.

It's more complicated than that, of course, and has to do with the philosophies of Immanuel Kant and Georg Hegel to explain why we put so much trust in science and let everything else go, but we'll see more of Kant and his effects later. Our job is to see through the skeptical position and realize that at least some things can be known without the slightest possibility of a doubt.

But let's first get clear what we're talking about when we talk of doubt.

DEFINITION: DOUBT is the realization that what you think is true might actually be false.

That is, doubt is the state of mind you're in when you think you might be mistaken. If you know that you *are* mistaken, of course, then you're not in doubt any more; you know what the facts are (or at least you think you know).

So doubt is a *subjective* state; it's a state where you hesitate to make an assertion that "such-and-such is definitely a fact" because it might not actually be a fact.

Notice, however, that it's not of itself an *emotional* state. You don't have to be worried to be in doubt; you just have to suspect that what you think is true might not be true. If this worries you, then you doubt and are worried about it; but the doubt isn't the worry. You may doubt, for instance, that we're the only intelligent beings in this universe, and the possibility that there might be E.T.'s somewhere that know things may or may not bother you—in which case, your doubt does or does not cause you emotional distress. You may, by the way, be convinced that there *are* other intelligent creatures, in which case, you have an *opinion,* not a doubt.

But just to clear up what might be a confusion, let's have separate

technical terms for these two states that are both ordinarily called "doubt."

DEFINITION: SUBJECTIVE DOUBT is the emotional condition of being worried whether what you think is true might be false. It is *purely subjective* when there are no *facts* which would indicate the possibility of error.

DEFINITION: OBJECTIVE DOUBT is having some facts which would indicate that what you think is true may be false.

@ Note that objective doubt is (as we said above) a subjective condition (it's a state of *your* mind). Nevertheless, it is *objective* because there's facts to back it up (it's based, somehow, on the way the world "out there" actually is). Subjective doubt has nothing to go on except your fear that you might be mistaken.

Now doubt's opposite is *certainty*. We will discuss various kinds of certainty later; but for the moment, let's define it, distinguish objective from subjective certainty (parallel to our distinction about doubt), and then talk about *absolute certainty*.

DEFINITION: CERTAINTY is the realization that you are not mistaken in what you think is true.

DEFINITION: SUBJECTIVE CERTAINTY is "being convinced" emotionally that you are not mistaken. It is *purely subjective* if there are facts known indicating that you might be wrong, and you refuse to consider them.

DEFINITION: OBJECTIVE CERTAINTY is knowing facts

which would make it impossible or in fact not the case that you are mistaken in what you think is true.

DEFINITION: ABSOLUTE CERTAINTY is the realization that it is impossible for you to be mistaken in what you think is true.
DEFINITION: UNIVERSAL SKEPTICISM is the position that absolute certainty is never possible for the human mind.

That's a lot of definitions. Let's pause to look at them. When you're certain, you "know you're right." If the "knowledge" is of the order of "Don't bother me with facts; my mind is made up," then you have purely subjective certainty. If you can give *reasons* to support your position ***and there are no reasons against it*** then you have objective certainty. Note that you don't have to know that there *can't* be any reasons against your position in order to be objectively certain of it, but just that there aren't any that you know of.

Again, even objective certainty is a subjective state: ("I know that X is true for Reason Y, and I know of no reason why it is false."). It is objective because it is based on the way the world is "out there" insofar as you know it.

Absolute certainty is a type of objective certainty. In it, you know of a fact that says it is impossible for you to be mistaken. Obviously, if such a state is possible, you can't be wrong.

As far as skepticism goes, there are skeptics and skeptics. Before the beginning of this century, there were a lot of people who were skeptical about things like the immortality of the soul, the existence of God, and so on, but were certain that what physics and math said was true; but then that, as I said, seemed to be a dream also, and now there is a kind of universal skepticism around.

It might be a good idea to be a skeptic in certain matters; I am very skeptical about what scientists say, especially in areas outside their field. What we want to examine at the moment is universal skepticism.

1.2.1. Descartes' methodic doubt

Around 1600, there was a man named René Descartes. You may have heard of him.

His Latin name is "Cartesius," and he is the discoverer of the "Cartesian coordinates" and analytic geometry. He had an interesting kind of skepticism, whose purpose was precisely to get his own times out of their skeptical condition (that Galileo, among others, was responsible for).

His doubting was not because he wasn't sure of anything. As a good Catholic, for instance, he was sure of the truths of his faith; and as a man of common sense, he was sure that there was a real world and that he wasn't dreaming it all up. But he decided to fight fire with fire. If people doubt everything, let's look at doubt, and see if there's something that you can't possibly doubt.

So he chose doubting as a method, to see if you could arrive at what is absolutely certain. He began by doubting the obvious things that we weren't sure of, and continued by considering that sometimes when we're dreaming we think we're actually seeing things—so maybe we're dreaming now. And since there might be some demon who is trying to convince me that there's a real world and that I have a body, then I can doubt this.

But then he came up with, "Yes, but when I'm thinking, no demon can convince me that I'm not thinking, or that nobody is thinking." And this led to the "philosophical" statement that he is famous for, and almost everyone has heard:

"I think, therefore I am." ("Cogito ergo sum" in Latin.)

Here, he thought, he had found the absolutely indubitable

statement. Anyone who is thinking can't doubt that he is thinking, or that he exists; it's impossible, because doubting is a form of thinking, and how could you doubt without knowing that you doubted—in which case you don't doubt that you're there, doubting.

It sounds very convincing, the way he puts it. The trouble is that if you accept as a possibility that everything can be doubted, you've dug a hole you can't really get out of.

And, in fact, historically, it turned out that people found ways of doubting Descartes' "I think, therefore I am." "How," they asked, "are you so sure that there's a person 'behind' this thinking? You might say that 'thinking is going on, and therefore thinking is going on,' but how do you know that there's anything more than just the thought? 'You' might just be an aspect of the thought itself, and not 'something that thinks.'

And in fact whole philosophies were built around the idea that there isn't any "person" who thinks, but that what each of us is is just a "stream of consciousness," like a movie that is going on. John Dewey held something like this.

So what Descartes thought was impossible to doubt actually got doubted—and in fact denied by intelligent people.

Now why did I say that methodic doubt digs a hole you can't climb out of?

- Because methodic doubt admits the possibility that the mind is incapable of reaching absolute certainty; but *since the mind is the only tool you have to get rid of the doubt,* once you make this admission, you're using a dubious tool to arrive at absolute certainty.

Hence, it's not possible to arrive at *absolute* certainty if your mind

is possibly incapable of it. How could you ever be certain that *this time* your mind wasn't failing you—since you know it can fail?

But what this means in practice, interestingly enough, is that, if you start from admitting the possibility of never arriving at absolute certainty, you become *certain* of the *impossibility* of arriving there—for the reason stated in the preceding paragraph. And in fact, you could say that you're *absolutely* certain of it, because there's no way that it could ever be the case that you wouldn't have to admit that there *might* be some way you could be mistaken, no matter how sure you seem to be.

But that's where we all are, isn't it? Absolutely certain that you can't really reach *absolute* certainty? But that's madness.

The point is that universal doubt as a method for getting rid of doubt has an implication that poisons the method and makes the goal impossible—and makes skepticism an absolutely certain position; which is clearly insane.

Hence, it seems that methodic doubt is not a way to go about settling the question of universal skepticism.

1.2.2. Something that can't be doubted

So let's forget about doubting as a method for removing doubts, and see if there's something that no person who knows what is meant by the words can doubt. Descartes' "I think therefore I am" can give us a clue, however. Even those who doubted Descartes' "I" as a thinker admitted that if

there is thinking, there is thinking.

So suppose we take the following:

There is something.

1.2.2. Something that can't be doubted

meaning that it is not the case that there is absolutely nothing at all, or that nothing at all exists, or however you want to put it.

Now if you try to doubt that, there is at least the doubt, and that's something, or there is the statement or idea, or whatever it is that you're doubting—and that's not absolutely nothing. So there is something.

It's impossible to *doubt* this without having that peculiar kind of awareness called *doubting*, whether there is a 'you' who is doing it or there is just the doubt itself as a kind of disembodied thought; in which case, you *know* that there's *something or other*, and not simple nothingness.

Now of course, you could *define* "nothingness" in such a way as to include this state of consciousness (if you said, for instance, that "nothingness" means "nothing physical—no object that the consciousness refers to"); but that isn't what I mean. I mean nothing at all. You know that the consciousness is occurring, and so you know that something is happening, however you may define it.

So, twist and turn as you might, you can't actually doubt that there is something.

- **And since it's not possible to doubt that there is something, then there is something we can be absolutely certain of.**

Our minds, then, *can* reach absolute certainty. There isn't the slightest possibility that we could be mistaken when we realize that there is something; because even the mistake would be something. There is no way it could be *true* that there is nothing at all, and have somebody realize it; so as long as there's a doubt or any thought at all, there is something.

Sure, it's conceivable that we could all go out of existence, and then *if that happened*, there would be nothing at all; but in that case,

there would be no doubt, because there would be no one to wonder if there was anything or not. So as long as there's the possibility of doubting anything, it can't be doubted that there is something, because the doubt itself is always something.

All this long journey for this? That we know that there's not absolutely nothing at all? Ah, but remember where you were before we started. You thought that it was always possible for us to be mistaken. Now you know that there's at least one instance where it's impossible that you could be mistaken, because the mistake would be something.

"If there's one thing certain in this world, it's that nothing is certain in this world." You once thought, perhaps, that that was wise. Now you know that it's not only silly, but false. Universal skepticism is not a viable position in knowledge.

1.4. Self-evidence

Certain facts, then, are known to be true as soon as you know what they are.

That is, as soon as you know what you are talking about, you are certain that what you are saying is true. Such truths are said to be "self-evident" or "immediately evident"

DEFINITION: EVIDENCE is the cause of our knowledge that something is a fact.

DEFINITION: IMMEDIATELY EVIDENT means that the knowledge itself causes our knowledge of its factuality.

DEFINITION: SELF-EVIDENT means immediately evident.

That is, evidence is what you use to "prove" that something is

true. Ordinarily, you prove that Y is true by taking some X, known to be true, which couldn't be true unless Y were also true. Thus, you can prove, for instance, that you will die because you know that the human body is so constituted that it can't go on forever in the condition it is in.

- **Not everything has to be proved.**

If everything had to be proved, then nothing would be able to be proved. Why? Because you can prove that Y is true *only if you already know that X (its evidence) is true*. Thus, if X also needs proof, you only know that Y is true after you have proved X (by means of your knowledge of the truth of W, which proves it).

But if *all* things known have to be proved, then Y cannot be known to be true until X is proved, which cannot be known until W is proved...and so on forever, since every piece of evidence would itself need proof. But since you could never get through the proofs needed, you would never be able to prove Y; and this would be true no matter what Y is. Hence, if everything needs proof, nothing at all can be proved.

- **Not everything can be proved.**

This is not something that is necessarily true, but is in fact true. That is, by the statement above, there must be some immediately evident facts, because otherwise everything would have to be proved—in which case, nothing could be proved. But it is possible that something could be *both* immediately evident *and* provable by means of some other fact. It wouldn't *need* proving, but it *could* be proved in this way.

- Nevertheless, there are certain facts, (like "There is something") whose "proof" would already rely on their truth; and hence there are some facts that cannot be proved.

That is, if you are going to try to *prove* that there is something, you would have to do it by means of some other fact. But this other fact is already something, which presupposes that you already know that there is something. Hence, there is no other fact you could use to prove that there is something, because that other fact could only be known if you already knew that there is something; your proof would *depend on* what you were trying to prove by it.

DEFINITION: BEGGING THE QUESTION is an attempt to prove something by a fact whose truth depends on the truth of what you are trying to prove. It is a *fallacy (a case of faulty reasoning)*.

Therefore, there must be, and in fact there are, at least some immediately evident truths: things we know to be true simply by knowing the meaning of what we are talking about.

They need no proof, since they are truths that deal in one way or another with our awareness itself (e.g. that it is something), and to deny them would mean that we are unconscious. Our awareness needs no "medium" by which it is aware of itself, and in fact *has* no "medium" by which it is aware of itself; and hence, our knowledge of our act of knowledge is im-mediately evident to itself.

"Immediate," then, does not mean "right away," when it is used in this context. It means "without using something else" and is connected with the word "medium" or "means" or "middle-ground" between it and itself.

And that is why "immediately known facts" are "self-evident."

They are their own evidence, because our awareness of our awareness *is* our awareness. Hence, it is its own evidence that it is happening.

And the immediately evident facts we are talking about can have no proof, because any proof would, as I said, already presuppose our knowledge of their truth, and would beg the question.

So how do you know that there is something?

By knowing what you mean by the statement, "There is something." It is self-evident.

SUMMARY

It seems wise to say that there's nothing anyone can be certain of. But "wise" sayings (since the world is in part paradoxical) can be easily manufactured by making contradictory statements. Don't be fooled by this.

Our age has found that many things, even in science, that we used to be certain of are in fact false, so that it is now assumed that the best we can get is probability. This position is called "universal skepticism," and existed in 300 B. C. with Pyrrho of Elis.

A person has subjective doubt if he is afraid he is mistaken. A person has objective doubt if there is some fact indicating that what he thinks is true might be false. A person subjectively certain if he is convinced he is right even against the evidence; he is objectively certain if (a) there are facts indicating that he is right and (b) no facts he knows of indicating that he is wrong. He is absolutely certain if he knows a fact indicating that it is impossible for him to be mistaken.

Rene Descartes in 1600 tried to "doubt everything doubtable" to see if there was some absolutely certain fact; but this method implicitly doubts the power of the mind to reach certainty and so

undermines itself; and his “I think, therefore I am,” which he thought absolutely certain, was doubted by those who said there might not be anything but the thought.

Nevertheless, there are things that no one can doubt (except subjectively), among them “There is something,” in the sense that there is not absolutely nothing at all. One who would doubt this knows that there is the doubt, which is something. Thus, we can be absolutely certain of at least one fact.

Evidence is the “reason why” we know some fact to be true (the cause of our knowledge of its truth). A fact is immediately evident or self-evident if it itself is its own evidence; since our knowledge knows our knowledge, the fact of our knowledge is self-evident.

Not everything can be proved, because a fact which needs to be proved is known to be true only after its evidence is known; and if all facts had to be proved, there would never be an end to proving the evidence; thus no fact would ever be known to be true.

Not everything needs proof, because some facts are self-evident, and the attempt to prove them presupposes that you already would know the fact. This begs the question.

1.4. Self-evidence

CHAPTER 2

Opinion and Absolute Knowledge

2.1. Modern-day closed-mindedness So now we know we're absolutely certain of at least one thing. and so o the modern-day skeptics' "wisdom" is actually foolishness.

Let me reiterate, however, that there is plenty to be skeptical about; it is just that skepticism, as a basic philosophy of knowledge, is false.

Many people, however, don't profess skepticism; in fact, what they hold seems to be just the opposite. "Everyone," they say, "has a right to his own opinion." This was made famous by Voltaire around the time of the American Revolution by his statement, "I disagree with what you say; but I will defend to the death your right to say it."

This sort of thing goes by the name of "open-mindedness"; and if you presume to deny it, and say, "nobody can believe X," then you are greeted with shock. "What do you mean? That nobody has a right to believe X? Who are you to deny somebody his beliefs? You bigot!"

Remember the secret in the last chapter. What are these people

doing? By calling you a bigot and yelling at you, aren't they saying, "You have no *right* to believe that there are positions no one can hold!"

In other words, the position that there are positions that can't be held is a position that can't be held. The position actually holds *"Everyone has a right to* ***every other opinion but the opinion that it is*** **false** ***that everyone has a right to his own opinion.***"

So it sounds like we've got another position that sounds wise and sensible, but is actually foolish. This one even sounds moral, but in the name of "respecting everyone's opinion," it forbids people to have a certain opinion.

Is this open-mindedness?

- **The secret of this chapter is that it's cleverly-disguised *closed*-mindedness.**

Why is that? Because it says that "everybody has to respect everybody else's opinion." If you presume to disagree with someone, to prove that he's wrong, you aren't "respecting his opinion." And what this means in practice is this:

"I'll let you hold whatever opinion you want to hold, but *you must let me hold on to all my opinions, and not try to disagree with them or prove me to be wrong*." Don't try to make me change my mind, in other words.

You see? Under the guise of "respecting everybody's opinions," you're actually *preventing* anybody from trying to change *yours*; so you can hold on to your prejudices and stupidities secure in the thought that (a) anyone who tries to persuade you differently is a "bigot" and shouldn't be listened to, and (b) you're really a very open-minded person, willing to "accept" any view (as long as you

don't have to entertain the possibility that it might be true).

But open-mindedness is not "accepting" *others'* opinions in this sense; it is precisely the willingness to entertain *evidence* that might *prove that your own opinion is false*. So by this perversion of "open-mindedness" the person has effectively *shut* his mind to any evidence.

Now then, does it even make sense to say that everyone has a right to his own opinion? What does "to have a right" mean, anyway?

To make a long story short (an analysis of rights in general took twenty-five pages in another book I wrote), I have a "right" to do something when I "can" do it in the sense that (a) it is not morally wrong for me to do it and (b) it is morally wrong for anyone to try to stop me.

Now if you're talking about *having* an opinion, then (b) doesn't apply, because no one is *capable* of preventing you from having an opinion. No one can get into your mind and erase an opinion you have. So there's nothing I can do about the opinion you have except disagree with it and give you reasons for changing your opinion—but that won't force you to give it up if you want to hold onto it.

Then what does it mean? We should *respect* others' opinions, and not categorically say, "You're wrong," still less *prove* that others' opinions are wrong, or (even worse) prove that their opinions are not only wrong but idiotic. Anyone can be wrong, and when we do this, we're acting as if *we* had "the Truth" and we're denying the other person his basic personhood.

Well, if anyone can be wrong, then you're not denying anyone his personhood by calling him wrong; that's part of being human. So it's no disrespect of the *person* to call his *opinion* wrong.

Still, it's embarrassing, and people have a right not to be

embarrassed, don't they? Suppose your friend forgot to put on his pants, and is about to walk out into the street in his undershorts. You'll embarrass him by telling him "you forgot your pants"; but you'll save him even more embarrassment (even possible arrest) by telling him.

And if he's wrong, it is the fact that he thinks that something false is true that's the problem; and anyone who knows better will think that he doesn't know what he's talking about. So in what sense shouldn't you tell him he's wrong?

Why is it immoral to try to correct a person when he believes that what is false is true? That's what "everyone has a right to his own opinion" must mean, on every supposition but one.

And here we get to the heart of the matter. You can make sense out of "everyone has a right to his own opinion" *only* if you assume that *no one's opinion is **really** any better than anyone else's. That is, that there is no **real** right or wrong opinion, only sincere or insincere ones.*

2.2. Relativism This position is also very ancient.

Again, back in Greece around 400 B.C., a man named Protagoras took the position that (as it's usually translated) "Man is the measure of all things." That is, "Human beings are the criteria for judging what reality is."

Another way of putting this is that there isn't any "reality out there" against which we can judge our ideas. Our ideas are the way we react to things outside of us, and your reaction to something may be quite different from my reaction to the same thing.

But if your ideas are based on your reaction, who am I to say (based on my own reaction) that yours are wrong? If I see something and it looks green to me, and it looks purple to you, which of us is

"really" right, so that one of us can say to the other, "You're not seeing it right; your reaction is false." That would be to suppose that my reaction is not a *reaction to* the color, but a *copy* of it, while yours is a mere reaction, a change in you *based on* the color.

None of us can get outside our minds to find out what reality "really is" independently of the way we react to it; and so none of us has anything to go on in knowledge but our own subjective reaction *to* reality. And therefore, none of us is in a privileged position to say that something is "absolutely true, and must be true for everyone—that anyone who disagrees with this is wrong."

But then what of this position? Isn't it absolutely true? That is, if *no* human being can do anything more than arrange and classify his reactions to things, *then it must be the case that no statement anyone makes can be known to be true for everyone without exception*. And this is known to be true for everyone without exception.

That is, it is absolutely true that everything is relative.

Not surprisingly, this position is called *relativism*.

DEFINITION: RELATIVISM is the position that what is "true" is true *only* for the person who thinks it is true, and may be false for someone else. Nothing is true for everyone.

What relativism claims is that everything depends on your point of view. But of course, that claim itself is supposed to be true for *everyone,* irrespective of anyone's point of view, because no one is in the privileged position of knowing what is true for anyone but himself. But then how does the relativist know something that is true for everyone?

Like the universal skeptic, he has contradicted himself. If he really

believes in relativism, he disbelieves in it, because he believes that everyone should "really" be a relativist.

2.2.1. Something that is absolutely true

Is there, then, something that can be known to be absolutely true for anyone, and doesn't depend on anyone's point of view?

Clearly, what the relativist believes as absolutely true ("that everything depends on your point of view") doesn't fill the bill, because that contradicts itself, and so isn't true at all, let alone absolutely true.

There is something.

Our old standby. How could there be a "point of view" from which that would be false? If there were one, the point of view would be something, and so it would be true that there is something.

So yes, there is at least one fact which is absolutely true for absolutely everyone. If someone says that it isn't true, he just doesn't understand what the words mean.

Well yes, but can't you reason this way? We have sometimes *thought* we were certain of things that were absolutely true, and then found out that we were wrong. It's like reaching into a bag and pulling out a red ball; you reach in again, and out comes a red ball; you do this three thousand times, and each time out comes a red ball. But then the next time, you reach in, and you pick out a white one. How can you be sure, now that this has happened, that the next time you reach in, you'll pick out a red one?

And if a person says that knowledge is like that, and even though there's nothing I can think of that would make it possible for "there is something" to be false, something might turn up

someday—shouldn't that person's opinion be respected?

In other words, doesn't the "absolute truth" of "there is something" depend on your point of view? If you just look at the statement, then it *seems* that it's absolutely true for anyone. But if you approach it the way I just did, then it isn't so obvious that it *has to* be true *for everyone*.

- **The fallacy in reasoning this way is not that of begging the question; it is called *false analogy*.**

When you make a mistake about something, you are making a mistake about *the object* of your knowledge. For instance, you might not realize that the room is lighted with blue lights, and you see a color as purple, and it's really red. Your impression of what the color was was different from what the color was.

But what we're talking about here is a characteristic of *your impression of what your impression itself is*. If the color seems purple, then you can't be mistaken that it *seems* purple, because again there's no "medium" between your impression and your impression by which it could be fooled.

So our knowledge of our knowledge itself is not like reaching into a bag and picking out a ball and *then* looking at it; it is more like what happens *when we look at it* after we've picked it out. And the analogy falls completely apart if you say that you don't know what color it seems to be when you are looking at it.

What this means is that the person who wants to "save" the absoluteness of relativism by taking some point of view like that and then arguing that because you can take that point of view, it all depends on your point of view, is denying the *evidence* because he wants his *theory* of knowledge to be true.

And remember what he's trying to do. He's trying to establish relativism as an absolutely true position. So even as he tries to prove that "everything really does depend on your point of view," he's trying to *dis*prove it; and so if he should ever succeed, he would fail.

2,3, Opinions Our friend the relativist can't be said to *know* that everything depends on your point of view.

How could you know something that isn't in fact true? He might *think he knows* it; but clearly he is mistaken; because if he isn't, he is. So we say that he has an *opinion,* not knowledge.

He, by the way, would not deny that relativism is an opinion of his. He thinks that there isn't any knowledge, and that everything that anyone thinks he knows is just an opinion.

DEFINITION: An OPINION is something that a person thinks is a fact, without having sufficient evidence that it is a fact.

Some opinions may be true; but this is just accidental, because the person doesn't have enough evidence to be able to *know* that they are true; he just *thinks* or *believes* they are. He may not doubt their truth, but his lack of doubt is *subjective certainty,* not *objective certainty.*

You might ask, though, how you can ever have anything but an opinion, because often the person thinks he has sufficient evidence when he doesn't. The relativist, after all, thinks that he has enough evidence that relativism is true—and he's wrong.

First of all, there are immediately evident facts: facts that are characteristics of our knowledge as known by us. Since these facts are self-evident and since it's impossible to be mistaken about them, then

you know you have sufficient evidence for knowing their truth.

Then there are necessary *implications* or *presuppositions* of these facts. These are things that *have* to be true or the other fact we know *couldn't* be true. For instance, it must be true that there is knowledge. It would not make sense to be able to *assert* that there is something if there weren't such a thing as knowledge.

You could also have sufficient evidence that there is a world "out there" beyond your knowledge if you could show that some immediately evident aspect of your knowledge itself would be impossible unless there was something that it was reacting to. In fact, we will see this in chapters that follow.

So knowledge, as opposed to opinion, ultimately goes back to immediate evidence: either the immediate evidence itself, or something without which the immediate evidence would not be what in fact it is.

2.3.1. Opinion, faith, and testimony

I mentioned earlier that a person who is certain that his opinion is true doesn't *know* that it's true.

You recall, I said that he only thinks or believes that it's true. It sounds, then, as if faith or belief is only an opinion, and not knowledge.

There is one sense of "belief" which means "opinion"; but this sense is different from other senses, because other senses are based on evidence.

DEFINITION: FAITH or BELIEF is knowledge based on testimony.

DEFINITION: TESTIMONY is a statement of fact by another

person.

That is, testimony is a factual statement by another person, where in addition to the contents of the statement itself, the following are conveyed to the hearer: (a) that the person is telling the hearer what he *knows* is the fact, and not simply issuing an opinion, and (b) the person is not lying.

An ordinary statement by an ordinary person, then, is not testimony; because most statements of "fact" by ordinary people are opinions, and do not necessarily base themselves on sufficient evidence. They may have more or less evidence, but we don't hold people in conversation to strict adherence to what they know.

An ordinary person, of course, *can* give testimony to something he has knowledge of; as, for example, something that he has seen for himself. We see this happen in court; and this is why "hearsay" is not accepted as evidence in court. The person in "hearsay" is basing *his* statement on *someone else's* statement, and it is therefore not known whether that other person was saying what he knew or was merely giving an opinion.

But then why do lawyers spend so much time examining witnesses?

- Testimony can be accepted as evidence when there is sufficient evidence **that the person knows what he is talking about** and **is not lying**.

That is, you have to have evidence (a) that the person is not making a mistake, and so merely giving an opinion that he thinks is knowledge, and (b) that he isn't trying to deceive you. If either of these two conditions isn't met, then you don't have sufficient evidence for accepting what he says as true. You may accept it, but your acceptance will then be an opinion, not knowledge.

Thus, for instance, a witness may say that he saw the man pull a

gun on the other man; but under questioning, it may turn out that what he saw was the gun in the man's hand *after* the shooting, and concluded that if he had it then, he must have pulled it out beforehand—while the defense may be claiming that in a scuffle, the man got hold of the gun after it was fired. So the person is not telling what he saw, but telling what "must have happened" based on what he considers a reasonable interpretation of what he saw.

Or again, it might be that the man claims that he saw the gun in the person's hand before the shooting, and you find out under examination that the witness is the dead man's brother-in-law. He would then have a reason for hating the person who was responsible for his death, and this would be a reason for lying. Thus, his testimony is suspect.

Notice that an *expert* witness is presumed to be able to distinguish between opinion and knowledge, and so examination of such a witness is generally confined to two areas: that of clarifying the meaning of what he is saying, and that of establishing that he has no personal interest in the case (any bias), which would make him consciously or unconsciously "slant" his testimony in a given direction.

Given evidence that the witness knows what he is talking about and is not lying, then a person who uses his testimony has *knowledge* and not an *opinion*.

Students in a class, for instance, are basically basing what they get out of the course on testimony. Even if the professor presents evidence (as, for example, I am presenting in this book), the student ultimately must take his word for it (a) that the professor knows the relevant evidence in the area that he is teaching, (b) that the professor has not hidden evidence which would invalidate his conclusion, and (c) that the professor is not falsifying the evidence he presents.

2.3.1. Opinion, faith, and testimony

The student is not in a position to be able to evaluate what the professor says against the evidence available in the field. If he were, he could teach the course himself. Hence, even though the professor presents evidence, the student's knowledge is *not really based on the evidence presented, but on the evidence coupled with the testimony of the professor that this evidence is sufficient to establish the conclusion*.

Students who do not realize this are apt to disbelieve what the professor says, because in a given instance they know some fact that the professor has not mentioned, and assume that because he has not mentioned it, he either does not know it or has not taken it into account. This might be the case; but it might also be true that the professor is well aware of this difficulty, but knows that it is not relevant to the point at issue and to bring it up would only create confusion in the minds of the students.

- For a student in this situation not to bring up the difficulty to the professor (either in class or out of it) is for him to degrade the knowledge he might have to the status of a mere opinion.

The reason for this is that he either takes the professor's word for it, but doubts whether the professor knows the fact in his possession, and thus has no sufficient knowledge of the validity of the professor's testimony, or he doubts the professor's word, based on his not mentioning the fact, assuming that he didn't mention it because he didn't know it, when there are many other reasons why a professor might not say everything he knows.

Now it is certainly true that professors are not omniscient, even in their own fields; and there are facts that a student might have that the professor might not know, and which might be relevant to his conclusion.

- For a student not to present these facts to the professor is for him

to do a disservice not only to his own knowledge, but to the other students, to knowledge in general, and to the professor himself.

If the professor resents this, then that's the professor's problem. Of course, presenting the fact as "You're wrong, Professor, because..." invites resentment and a putdown. However, if you say, "You didn't mention...; is this relevant?" your difficulty is generally welcomed.

But to back up to how you know the professor is trustworthy, how do you get evidence that the professor knows his subject and is not withholding evidence or slanting it?

- A student's basic evidence of the professor's knowledge and integrity is the evidence of the quality of the school itself.

It's unfortunately not all that hard to fool students into thinking that you know a subject when you don't. Anyone who's clever enough can fake the clues the students use in class. It's assumed, for instance, that if the professor occasionally admits ignorance, then he knows what he's talking about the rest of the time; or if he answers questions directly and doesn't beat around the bush, then he must know his subject (but direct answers can be made up, and don't have to be based on knowledge)—and so on. So the impression you get is as much an impression of classroom technique as it is of knowledge of the subject. It's no good as evidence.

But people who get out of school and start using what they learned in it find out whether what they learned is what is the case, or whether they were led to think they knew something when their professors actually didn't have a good grasp of the subject. So if the school has a good reputation, then this is good evidence that it has hired people who have given it evidence that they know their fields

and are people of integrity; and hence the student has evidence that what he gets taught in such a school will be knowledge and not opinion.

2.3.1.1. Religious faith A word should be said here about religious faith, because it is somewhat peculiar.

This is not the place for a Theological treatise, so I will just give a sketch of what "faith" means as knowledge based on Christianity and the Catholic dimension of Christianity.

First of all, "faith" in the Christian sense is a gift, not knowledge that one comes to purely on the basis of observable evidence.

Secondly, "faith" in that "gift" sense is as much "trust in the person" as it is "knowledge of a fact." Some sects of Christianity stress more the trust aspect (belief *in* Jesus), and some stress more the knowledge aspect (faith that the Resurrection actually occurred); but both are dimensions of the same gift, and in fact you can't have one without the other. The opinion, for instance, that Jesus actually did come back to life is not religious faith, however convinced the person might be that it actually happened; similarly a "trust" in Jesus in the sense of a blind affection for him and in the "meaningfulness" without its being at all relevant whether his claim to be God was true, or whether he actually made such a claim—this is not religious faith either.

With that said, religious faith (at least in the Christian sense) is not supposed to be *devoid* of evidence.

The basic evidence of religious faith, of is the testimony of God. Now this, of course, is absolutely trustworthy evidence, because if there ever was an expert, it is the omniscient God, and if there ever was a person who didn't lie, it is God, who is Truth Itself. Hence, anything God says is certainly true.

The basic problem, once having established that God said something, is what is meant by it. When Jesus said to Peter, "You are *petros* and on this *petra* I will build my church," did he (as Catholics claim) use the masculine ending because it would be strange in Greek to call a man a (feminine) rock, or did he (as some Protestants claim) mean that Peter is a "pebble" and on the Rock of himself (i.e. Jesus or the faith or something else) Jesus would build his church?

So, as the bumper-sticker says, "God said it; I believe it; that settles it." is fine, provided you can find out what it was that God actually *said*.

But that's the other point. What the testimony of God is is based on other evidence besides the revelation itself; because how do you know what counts as revelation?

Is it the Bible? But why these particular books, when there is the Gospel of Thomas, the Gospel of Peter, and other "Gospels" that are just as old as the ones in the Bible (in fact, some are older), and yet have not been recognized as "canonical," even though they have been known for centuries?

Further, what is the evidence that the books called the Bible are not themselves fraudulent; that the events they relate as happening actually happened? That is, is the Resurrection of Jesus one of those legendary stories that grew up in ancient times around famous people, the way Odysseus' descent into Hades and his return was a legend dealing with someone who probably really existed; or is it factual?

St. Paul seems to indicate (in 1 Corinthians) that he considers it a factual event that he has eyewitness testimony to. Is he deceived or lying?

There's no way ultimately to settle questions like this to the

satisfaction of a religious skeptic. That's why faith ultimately is a gift.

But the evidence dealing with it is a kind of corroboration of it. That is, there are certain things that are difficult (though not impossible) to account for, except based on the factuality of what is related in the "canonical" books. It is rather far-fetched that the fantastic stories, including the Resurrection, should have been held to be factual as little as twenty or thirty years after Jesus died (Think of someone saying today that John Kennedy actually came back to life), if they had not basically happened. This is even more true since the stories dealt with someone who was executed as a disgraced criminal. The manner of presentation of the facts is not really consistent with someone who was making things up to prove a point (e.g. John mentions after the Resurrection that they "knew that it was Jesus" whom they were looking at, "but they did not recognize him."), but of someone reporting what he saw. The fact that the "reporters" were not held in honor but themselves died horrible deaths because they persisted in claiming that these things were facts also is inconsistent with why a person would lie. And so on.

Hence, one could say that there is quite good evidence of the factuality of the basic events reported in the Gospels; but this is not going to give a person religious faith—because for someone to believe these fantastic things which make a difference in his life means for him to change his whole outlook on everything; and this is not humanly possible.

- But for the person who has the gift of faith, the *knowledge that it brings is* ***true knowledge****, not opinion.*

It is not simply "belief" or "subjective conviction," let alone an emotional commitment to something irrespective of the facts. It is a certainty that has reason on its side, even though what it believes does not superficially seem "reasonable," and even though the belief

is not based basically on reason itself. It is not irrational commitment, but transrational trust in the very Author of reason itself; and though it is not based on reason, it can offer better reasons in its favor than those who disbelieve in it can offer against it.

Religious faith, then, is basically an admission that reason is not ultimate in knowledge. Just as we know self-evident truths without reasoning to them (though we can show reasons for holding them to be self-evident) so there are other truths which can be known, not *by* reason, but *along with* reason.

But let us leave religious testimony by God and get back to this-worldly knowledge. We know now that there are absolute truths, and that there is knowledge and not just opinion.

The next question is what the basic laws of knowledge are. We have, of course, already implied them, because it is impossible to know anything without presupposing the laws of thought. It is time to bring them into the open.

SUMMARY

The apparent open-mindedness of those who claim "everyone has a right to his own opinion" is often only a disguise for closed-mindedness, because, although they will allow others to say or hold whatever they please, they demand that no one try to change their own opinions. The assumption behind this is that no one person's view of the truth is any better than anyone else's opinion.

There can be no real right to hold an opinion, because you a right can be claimed only if it is possible to violate it, and it is not physically possible to prevent anyone from holding an opinion.

Relativism, that every truth depends on the point of view of the person who holds it, stems from Protagoras around 400 B. C., who

held that what we know is basically our reaction to the world, not the world itself; and no one's reaction is any better than anyone else's.

But relativism contradicts itself, because it takes it that "nothing is absolutely true for everyone" (the relativist position) is absolutely true for everyone.

But the fact that there is no point of view from which "There is something" could be false (because the point of view is something) shows that there are facts we know which are independent of who knows them or what point of view he takes. There are absolute truths.

The fact that we have sometimes been mistaken does not mean that we can be mistaken about our knowledge itself.

An opinion is something a person thinks is a fact without having sufficient evidence for it. It is not knowledge. Knowledge ultimately bases itself on immediate evidence. What is known is either immediately evident, or something which must be true or the immediately evident fact would be false. Everything else is opinion.

Faith or belief is knowledge based on testimony, a statement of fact by another person. Testimony is evidence when there is evidence that the person making the statement (a) knows what he is talking about and (b) is not lying. Most knowledge gained in school is based on testimony from the professor.

Religious faith bases itself on what God (who knows everything and never lies) said. Hence, if there is evidence that God in fact said something, it is certain. The problem is with whether God said it and what it means; and this rests on the evidence of testimony of the witnesses of the statements. Since what God allegedly said has drastic implications about the way we are to live, help from God is needed as a gift to overcome our biases and see the evidence objectively. This is why religious faith is a gift, not because it is irrational.

2.3.1.1. Religious faith

CHAPTER 3

The Basic Laws of Thought

3.1. The Principle of Contradiction

One of the presuppositions in knowing anything at all for certain is the basic law of all thought: that there are no real contradictions.

This can be formulated in various ways, and is known as the *Principle of Contradiction*. (Actually, as everyone who has ever taught epistemology has said, it should be known as the Principle of Non-Contradiction; but it's always been known the other way, so we might as well keep the tradition.)

DEFINITION: The PRINCIPLE OF CONTRADICTION states that the same thing cannot be both true and false at the same time in the same respect. [Logical formulation] The same thing cannot be what it is not while it is what it is. [Ontological formulation]

The "logical" formulation of the principle states it in terms of truth and falseness (which exist in the mind or in statements, and so deal with thinking—*logos* in Greek. The "ontological" formulation deals with reality, because "ontology" is the study of being or reality.

DEFINITION: A CONTRADICTION is a statement that asserts and denies the same thing. Or it claims that what it says is true is false.

Thus the relativist position, for instance, is a contradiction, when it asserts as absolutely true that nothing is absolutely true. The skeptical position as a position is a contradiction insofar as it asserts as known for certain that nothing can be known for certain.

The reason I say that contradictions are *statements* is that you can't *think* a contradiction, because your thought is self-evident. You can't think that you're not thinking what you're thinking. Nor can you think that what you think is true is false; if you think it's true, then you know that you think it's true—and so you can't think that it's false. You can *say* things like this, but you can't *think* them.

In fact, you can say all sorts of interesting things that make certain types of philosophers write books. For instance:

"This statement is false." If by "this statement" you mean the statement "this statement is false," then, of course, that statement would be true if it were false, and false if it were true. It contradicts itself in a rather interesting way.

Or you can talk about the barber in Seville, who shaved all and only those in Seville who did not shave themselves, and then ask, "Who shaved the barber?" Obviously, if he shaved himself, he didn't shave himself, and if he didn't, he did. Just as obviously, there never was any such barber in Seville.

Statements like this are possible because they use words according to the rules of grammar; but they correspond to no thought, because the only way they can be made is by not realizing that they are nonsense until after you have made them; and thought knows what it is doing while it does it.

The philosophers (like Bertrand Russell) who write books about

such statements try to rule them out on linguistic grounds, such as by making a "law" that no statement is to refer to itself. But that would make "This statement is in English" meaningless, when in fact it is not only meaningful but true. Unfortunately, the "laws" of linguistics describe language as we use it, and don't prescribe it; which means that that "law" is not a real law of language.

3.1.1. Its self-evidence

Now why is the Principle of Contradiction presupposed in any knowledge?

Because if you know something, you know that it is true *and not false*.

If it were possible for something to be simultaneously true and false, then what is known to be true could be false insofar as it is true, and then it could not be known to be true and not false.

Thus, if the Principle were not true, then it couldn't be absolutely certain that there is something, because it would be possible that it might be false that there is something because it is true that there is something. (Forgive me for talking nonsense; but that's what denying the Principle of Contradiction gets you into.)

So if the Principle weren't known to be true, it would not be possible to be absolutely certain that there is something—and we are absolutely certain.

This should not be taken as a proof of the Principle; it simply shows that it is presupposed in anything we know. The only way you could "prove" it would be by means of something that you knew to be true *and not false,* which would of course presuppose that what is true cannot be false in the respect in which it is true—and so you have to admit the truth of the Principle before you could hope to prove it—which means that proof of it is not possible.

Similarly, the Principle needs no proof; since it merely is an expression in words of the basic way we think, and the operation of our mind is aware of itself while it is going on, then the Principle is immediately evident.

3.1.2. The Principle of Identity

There are some things that you could call corollaries or reformulations of the Principle of Contradiction.

These are statements that are different ways, really of looking at the same truth that is stated in the Principle.

DEFINITION: The PRINCIPLE OF IDENTITY states that what is is what it is.

DEFINITION: A TAUTOLOGY is a statement of an identity.

The Principle of Identity can also be called the Principle of Tautology, and it is sometimes formulated "A is A," where "A" stands for anything you want to put in its place: "A horse is a horse," "The Principle of Identity is the Principle of Identity," and so on.

Obviously, if this Principle weren't true, then the Principle of Contradiction wouldn't be true; because then something would be what it wasn't, and the same thing would be true and false at the same time.

Again, this does not prove the Principle of Identity, but merely shows that it, like the Principle of Contradiction, is presupposed in anything we think. It would be impossible to think of anything as true if it weren't what it was.

Some tautologies, by the way, are partial tautologies; for instance, "A hummingbird is a bird," where the "bird" is *contained within* the

meaning of the subject of the sentence, though the subject means something in addition to what is said in the predicate. Immanuel Kant called statements like this, where the predicate is contained within the meaning of the subject *analytic statements.*

DEFINITION: An ANALYTIC statement is either a total or partial tautology.

Tautologies, of course, are useless sorts of statements, because they don't say anything *about* the subject, but only repeat it. They crop up every now and then, however, because people sometimes don't know the meaning of the words they use, and think their statements utter a fact about the subject when in fact they don't say anything. There was a friend of our family who used to talk about "sugar diabetes" as if this was one type of diabetes; and I once heard someone refer to "the urban areas of our cities," without realizing that "urban" means "of a city." And so on.

3.1.2.1. Definitions

Definitions are special kinds of tautologies. They use *combinations of words* to express the same meaning that the word defined has. The idea in a definition, of course, is that the predicate (the combination of words) is a group of words the hearer knows, and whose combination he can grasp; while the subject (the word to be defined) is an unfamiliar term).

DEFINITION: A DEFINITION is a statement whose predicate shows the meaning of the subject.

DEFINITION: NOMINAL DEFINITIONS use synonyms or derivations to reveal the meaning of the word.

These are the "dictionary definitions." It is assumed or hoped

that the reader knows the meanings of the synonyms or of the original words from which the word to be defined is derived.

Thus, "sincere" can be defined as "without wax," explaining that unscrupulous sellers of marble in Italy used to fill cracks in defective pieces with wax, which would make the block look intact.

Alternatively, "sincere" might be defined as "frank, candid, truthful, honest," with the idea that the list of synonyms would convey what the word meant.

DEFINITION: OSTENSIVE DEFINITIONS name or point to objects which exemplify the subject.

For example, to define a "planet" you could say that Jupiter is a planet, Saturn is a planet, Mars is a planet, but stars are not planets, the sun is not a planet and neither is the moon.

DEFINITION: CAUSAL DEFINITIONS (also called OPERATIONAL DEFINITIONS) define something as the cause of some effect which the predicate describes.

For example, you could define "existence" as "whatever can make a mind react."

DEFINITION: The ARISTOTELIAN DEFINITION defines by "genus and specific difference"; that is, it gives a larger class to which the object to be defined belongs, and then gives the characteristic which separates all members of the defined class from other members of the larger class.

"Man is a rational animal" is the Aristotelian definition of a human being.

Some philosophers consider the Aristotelian definition to be the only "true" definition; and therefore, words like "being" (which obviously has no larger class) cannot be defined. But it seems to me

that this is to take too narrow a definition of "definition"; and the assumption that, because something like "being" cannot be defined in the Aristotelian sense, therefore everyone knows what the word means, has caused a great deal of confusion in philosophy—because in fact different philosophers use the word in different senses.

3.1.3. The Principle of the Excluded Middle

There is another reformulation of the Principle of Contradiction.

This one stresses the fact that what is true is not false and what is false is not true; it is called the *Principle of the Excluded Middle*.

DEFINITION: The PRINCIPLE OF THE EXCLUDED MIDDLE states that there is no middle ground between truth and falsity, or being and non-being.

Basically, this says that you are either talking about something or you aren't talking about anything; if it doesn't exist, then there's nothing there to talk about, and if it does exist, then it exists. You can't get (in this sense) halfway into existence, so that you neither exist nor not exist.

Similarly, a statement (one that is meaningful, now) is either true or false. You may not know which it is, but it's one or the other. The Principle of Contradiction says that it can't be both true and false; this Principle says that it can't be neither true nor false.

Well, what about half-developed things, or even half-truths?

Half-developed beings *exist*; and so they are real. They haven't got all the *characteristics* they will eventually have (and that is why we call them "half-developed"); but they aren't half-real.

Similarly, half-truths are statements that are true in one respect and not true in another respect. "Human beings can make mistakes"

is, as I've tried to show, a half-truth. It is true that human beings can make mistakes if they aren't dealing with what is immediately evident; but they can't make mistakes if they are dealing with what is immediately evident.

Half-truths, then, are statements that can be taken in *several* senses, only some of which are true. But each of the senses is *either* true or false, and is not "halfway" true.

You mustn't be fooled into thinking that there's something deep or profound in these principles; they're simply statements of what might be called the "absolutely obvious"; they are *so* obvious that they sound either "terribly deep" or as if they have some hidden meaning—because otherwise, why would anybody bother to say them? But it is sometimes useful to bring into the open what is painfully obvious, that's all.

3.2. The Principle of Causality

Another self-evident First Principle of knowledge is one that has been denied lately.

Those who do so are (among others) called "Logical Positivists," such as Philipp Frank; but it was first denied, shortly before the American Revolution, by David Hume. I think the denial is based on a misunderstanding of it. But first let me state it and give what I think is the true interpretation of it.

DEFINITION: The PRINCIPLE OF CAUSALITY states that every effect has a cause.

DEFINITION: An EFFECT is a set of facts which, taken by themselves, contradict each other.

DEFINITION: The CAUSE is the fact which, when added to

the effect, makes the whole set of facts not a contradiction.

The Principle itself is, nominally speaking, a tautology, if you define "effect" nominally; because an "effect" is "something that has a cause"; and so the Principle, taken that way, merely says, "Everything that has a cause has a cause." Therefore, some philosophers have stated the Principle as "Every *event* has a cause," and have, I think, both watered down the Principle and muddied the water. First of all, one could grant, perhaps, that every event is an effect (but this would need showing—which would be why this Principle would not be a tautology—but it doesn't follow that every effect is an event.

The way I defined "effect," however, shows that the Principle is not a tautology, nor is it exactly a reformulation of the Principle of Contradiction, but an *application* of it to certain situations.

The Principle supposes that we can get into situations in which the evidence *available to us* is contradictory. When this happens, the Principle of Contradiction takes over in our minds, and we refuse to accept the evidence as a *complete* description of the situation, and so search for some other fact which will establish that there wasn't actually a real contradiction "out there."

Thus, if you put coins into your pocket and later reach into your pocket and find none, you have an effect, based on your knowledge of the behavior of coins. The effect could be stated this way. "I put those coins in my pocket, and if nothing took them out, then they're still there; but they aren't still there."

The conclusion of this syllogism is "Therefore, something took them out"; but you will notice that you have no *direct* evidence of anything taking them out of your pocket; so as far as the evidence you *now* have, the coins are both there and not there. But, because of the Principle of Contradiction, you cannot accept this as true.

Actually, there are several possibilities other than the conclusion which might be true: (a) you didn't actually put the coins in your pocket; (b) the coins are actually there, but you missed them when you felt in your pocket; or (c) these coins are peculiar in that they could self-destruct without your noticing it. Notice that each of these possibilities simply denies one or the other statements that you took for evidence.

All of these, the conclusion included, are called *explanations* of the effect.

DEFINITION: An EXPLANATION is a statement by which an effect can be shown not to be a contradiction.

The difference between an explanation and a cause is that the cause is a fact, and the explanation is simply a *statement* of what *could be* a cause. If you will, you could define the *cause* of a given effect as *the explanation which is the true one*.

There are, usually, an enormous number of explanations for any given effect, some involving very far-fetched assumptions (such as the self-destructive nature of the coins above). Of course, no explanation can itself be a contradiction, because then it simply compounds the contradictoriness of the effect and does not explain it. The problem, then, in using the Principle of Causality is to find which of the explanations is the true one.

For instance, if you call home, and find out that the coins are still on your dresser, then the cause of the effect in question is your faulty memory of putting them into your pocket. If you can prove that you actually did put them into your pocket, but then you discover that there's a hole in your pocket, and indeed you find coins on your driveway when you get back home, then the cause was undoubtedly that they fell through the hole. And so on. There are ways of

eliminating various explanations, or of assuring oneself that one has found the cause.

It isn't all that simple, of course; and finding which of many explanations is the cause is actually what science is about—but this would involve a book on philosophy of science, which is not our purpose here.

At any rate, what the Principle of Causality states is *that* any effect has a cause; and this is absolutely certain, because otherwise, there would be a real contradiction. But what the cause is is another story.

3.2.1. History of the Principle

Well, if everything is so obvious, why have people denied the Principle? (Note what you're doing when you ask this question; you're trying to find the *cause* of the apparently contradictory fact that (a) the whole thing is obvious, and (b) intelligent people have denied it.)

Let me give the briefest of histories of how the Principle was understood, to show the cause of why something self-evident has been denied.

I will begin with Aristotle, around 350 B.C. He developed a theory of "cause" as "the reason" for something, in the sense of "the answer to the question 'Why?'." Now of course, in fact we ask "why" when we don't understand something; and if we are confronted with an effect, it is a contradiction and doesn't make sense—and therefore, effects in my sense are the kinds of situations that make us ask the question "why." But all Aristotle did was note that in fact sometimes we ask this question, and the "cause" is the answer. Well, of course, this means that every effect ("why-question") has a cause ("answer").

He developed a theory that there were four classes of causes,

based on four situations in which the question "why" was in order; but they don't need to concern us here.

As this theory developed in the Middle Ages, "cause" became defined as "that which influences the existence of something else." Instead of starting with perplexing situations and looking to the explanation of them, the attention had centered on causes which were discovered, and noted that the cause *produced* the effect. Thus, the force of gravity produced the effect of making the coins fall through the hole in your pocket.

In general, when causes "explain" real events, they do it by *making a difference* in the reality in question, either by producing something or making some change in something. Real causes actually do things in the world.

So the tendency then began to be to argue from the cause to the effect; knowing what the cause is, you can predict what it will do, and how it will "influence" the world.

But this is a dangerous procedure, for at least two reasons. First of all, it takes the "cause" as a *thing or object* instead of an abstract fact *about* some thing or object (or maybe even about a set of things or objects); and the "cause" as an "object" has all kinds of properties that have nothing to do with its being the cause.

For instance, we say that the cue ball "caused" the 7-ball to move down the pool table when it hit it. And so we call the cue ball the "cause" of the motion. But the fact that the cue ball is white or round has nothing to do with the motion of the 7-ball; it was merely the *momentum* of the cue ball that did it. A locomotive, touching the 7-ball in the same place with the same momentum, would have produced exactly the same movement.

Secondly, the notion of "influence" (from the Latin in-fluere, "to flow into") was gradually interpreted to mean that the cause "gave"

some of its "reality" to the effect, or "poured" something into it. And this implied that the cause had to have the same *type* of reality that the effect had, and in fact *more* of it than the effect had (or, it was assumed, it would vanish when it produced the effect; but in any case, it couldn't give the effect more than it actually had itself).

In many cases, these supposedly "self-evident" truths (self-evident *if* "effect" and "caused" are defined in this way and you still take the Principle as self-evident) actually occur; and so they "stand to reason."

But silly things follow when you try applying them. This interpretation would mean, for instance, that the beaver which causes a dam "has" more of "damness" in him than the dam itself—because he has to "give" the reality of the dam to the dam, because he is the "cause" of the dam. And there were philosophers who actually said such things.

Then around the time of the American Revolution, David Hume took this notion of causality and showed how it didn't make sense. We don't see the cue ball "pouring" anything into the 7-ball; all we *see* is that the cue ball was moving, it came into contact with the 7-ball, and the 7-ball began to move. We *assume,* Hume said, that, because all the times we have seen a moving ball collide with a stationary one, the stationary one begins to move, there "must have been" some "influence" of the first on the second. But we didn't actually see the influence; it's just a habit we got into by seeing the sequence repeated all the time. So the "self-evident Principle of Causality" isn't true at all; it's just a delusion we got into because of habit.

This brought about the demise of "causality" from modern thought; because, although Immanuel Kant tried to show how we would necessarily have to think this way when we considered an

"event" as beginning to happen, it still said that causality was "all in our minds" and there were no real causes "out there"—which, of course, the Principle proclaims.

Unfortunately, Hume's "destruction" of the Principle only "destroys" the silly interpretation of it; but it itself is a cure that is as silly as the disease, and in fact relies on the Principle to "prove" that it is false.

First, why is the cure as bad as the disease? Because it means that whatever we are in the habit of seeing as coming before something else, we think of as "the cause" of that other thing. Thus, we would think of night as "the cause" of day, the dawn or the light sky in the morning as "the cause" of the sunrise (rather than the other way round, because the sky gets light before the sun rises), robins as the "cause" of Spring, roads as the "cause" of the automobiles that later appear on them, and so on.

In case you think this laughable and wonder how anyone could take Hume's explanation of "causality" seriously, I pointed this out once at a meeting of the Kentucky Philosophical Association, when a lecturer had been using a Humean sense of "cause," and one of the members of the audience raised his hand and said, "But the passing of the night *does* cause the day." It just goes to show that philosophers too can be wedded to their theories so closely that sanity goes out the window.

DEFINITION: POST HOC ERGO PROPTER HOC ("it came after, therefore it was caused by") is the fallacy of saying that what happens after something else was caused by what it follows.

Hume actually made this fallacy into what he thought was the Principle of Causality itself.

3.2.1. History of the Principle

Secondly, Hume used the Principle in its true and fundamental sense, because (a) he was curious as to why we thought that effects *had* to have causes when in fact we don't *see* the cause "pouring" anything into the effect, and (b) he *explained* this curious situation by resorting to "habitual sequence."

His explanation is a bad explanation, however, because it is supposed to explain why we think in terms of cause; but if it were true, then we would think that night causes day and so on.

Hence, the cause of why we think in terms of "cause and effect" is not that we see causes doing things to effects, but that effects, taken by themselves, are contradictions, and there are no contradictions. Whether the "resolution of the contradiction" involves having something *done to* the affected object or not is something that may be true in some cases and not in others; but that the effect cannot stand on its own is absolutely certain, if on its own it is a contradiction.

Thus, the Principle of Causality stands as one of the basic laws of thought, and is therefore absolutely certain.

3.2.2. Causality and evidence

It can now be seen a little more clearly what the definition of "evidence" in chapter 1 (p.20) means.

We said there that evidence is the cause of our knowledge that something is a fact.

If we take what we now know about cause and effect and apply it to evidence and our knowledge of facts, we can say the following things:

- **Our knowledge of self-evident facts is not an effect.** That

is, when the fact is self-evident, then there is no contradiction involved in our knowing that it is true just by knowing what it is; it needs nothing to "explain" why we know that it is true. The only "explanation" in this case is to explain what the words of the statement mean.

- In all other cases, our knowledge of what a statement means does not include a knowledge of its truth; therefore, some other fact must give us a knowledge of its truth. This other fact is our evidence for the statement's truth.

This involves a little subtlety in thinking, so see if you can follow it. Take your knowledge of the existence of Moscow (assuming you've never been there). If there were no Moscow, then all the people who have ever mentioned it to you are lying, and in a conspiracy to deceive you that there actually is such a city. Now while it is *conceivable* that this is the case, it is so fantastic as to be *for practical purposes* a contradiction.

Hence, **the independent testimony of many people talking about Moscow** is an **effect** whose cause is Moscow's existence. **It is this effect** which is the *cause of your **knowing** that Moscow exists.*

Hence, evidence (the *effect* whose cause is the truth of what it is evidence for) is the *cause of our knowledge* of that truth. An effect is a cause? Sure. It's the effect of the *fact* we know and the cause of the *knowledge* of the fact. Think about this a little.

But now it is time to investigate certainty a bit more closely.

3.2.2. Causality and evidence

SUMMARY

The basic law of thought is that there are no real contradictions. A contradiction asserts and denies the same thing (says the same thing is both true and false). The Principle of Contradiction holds that the same thing cannot be both true and false (or cannot be what it is not while it is what it is). This is self-evident, because whenever we know something we know that it is true and not false, which would not be possible if something could be false because it is not false. It is an unprovable principle, because any attempt to prove it would presuppose it by beginning with something accepted as true (and not false).

A second way of stating this law is the Principle of Identity: What is is what it is. Tautologies are statements of identity, where the predicate says no more than what the subject says. Analytic statements are total or partial tautologies.

A definition is a tautologial sentence in which the predicate restates the subject in terms which are more known to the hearer. Nominal definitions use derivations or synonyms; ostensive definitions point to instances of the term to be defined; causal definitions define the term as "the cause of [some observable effect]." The Aristotelian definition gives "genus" (larger class) and "specific difference" the property that separates the defined class from other members of the larger one.

A third formulation of the Principle of Contradiction is the Principle of the Excluded Middle: There is no middle ground between truth and falsity or being and non-being. Any meaningful statement, then, must be either true or false, not both [Principle of Contradiction] and not neither [Principle of Excluded Middle].

The Principle of Causality states that every effect has a cause. It is an application of the Principle of Contradiction because an effect is a set of facts which, taken by themselves, contradict each other, and the cause is the fact which, when added to the effect, makes the total set of facts not a contradiction. Sometimes,

because our knowledge is incomplete, the facts we *know* can contradict each other; in which case, we immediately (because of the Principle of Contradiction) know that we do not know all the facts--and we look for a cause to “make sense” out of the facts we know. An explanation is a *possible* cause for a given effect; the cause is the explanation which in fact is true.

Aristotle formulated the notion of “cause” as the answer to the question “why”; later, since causes in the real world “explain” by doing something to effects, it became understood as that which “gives some of its reality” to the effect--which had many absurd consequences. David Hume debunked this view of cause, but was nonetheless *explaining* why we think in terms of causes; but his explanation was faulty, in that he thought that habitual sequences of events led us to think of the first as causing the second, which falls into the fallacy of “post hoc ergo propter hoc” which has its own absurd consequences. Hence, the definition above is more accurate.

Our knowledge of self-evident facts is not an effect, because our knowledge of them needs no explanation (it is self-explanatory, since we know our knowledge). Our knowledge of any other fact is due to the fact that some self-evident fact is an *effect* of this fact for which it is evidence. (That is, if the fact indirectly known were not true, the immediately evident fact could not be true either.) The fact that the immediately evident fact is an effect of the other fact causes us to *know* the truth of the other fact.

3.2.2. Causality and evidence

CHAPTER 4

Certainty, Probability, and Induction

4.1. The kinds of certainty

I mentioned in Chapter 1 that there were various kinds of certainty, and said that we would discuss them.

Now that we have the basic principles of thought, that discussion can be somewhat more intelligent than otherwise.

- **First note that certainty is *not* opposed to probability, but to *doubt*.**

It is true that, when we say that something "probably" will happen, we mean that we are not certain that it will happen. But when we speak of "probability," we are not using the word in this sense, exactly. "Probability" refers to the laws of probability (the "laws of chance"), and these laws are known with certainty.

We will discuss probability later. The point here is that the fact that something has a finite probability *causes a doubt* as to the occurrence of that something; and therefore there is a connection between probability and doubt. But the certainty is what is opposed to the *doubt,* not the *probability.*

Since certainty, like doubt, is a state of mind, then there are

basically the two kinds of certainty we mentioned earlier.

Subjective certainty, you recall, is "pig-headedness." It is not real certainty, but pseudo-certainty: an emotional state of mind masquerading as knowledge. It is, as I said, "feeling confident" of being correct, and not "worrying" about being mistaken. But just as doubt is not an emotion, so the emotion of "conviction" is not any indication that in fact you are not mistaken.

- **So subjective certainty is not real certainty, because it lacks evidence; so we should ignore it.**

Depending on the kind of evidence a person has, there are various *levels* of objective certainty.

DEFINITION: A person is ABSOLUTELY CERTAIN when his evidence establishes that *it is impossible* for him to be mistaken.

DEFINITION: A person is PHYSICALLY CERTAIN when he *has evidence supporting* what he thinks is true *and NO evidence* to think that it is false.

DEFINITION: A person is MORALLY CERTAIN when he *merely has NO EVIDENCE* that indicates that he might be mistaken.

These are all levels of *certainty,* because *in fact* the person does not think he is mistaken; but he has stronger or less strong reasons for thinking that he is not mistaken (and in every case, no *reason* for thinking that in fact he might be).

We already saw absolute certainty. In cases of absolute certainty, you can show that it would be a contradiction if the statement you

think is true were to turn out to be false. In that case, you know you can't be wrong.

My definition of "physical certainty" is somewhat different from the traditional one. Traditionally, one is "physically certain" that a prediction based on the laws of nature will take place: for instance, that this sample of hydrogen I have will in fact combine with this sample of oxygen to form water. (The law itself is supposed, according to the tradition, to be absolutely certain.)

What was behind this traditional view is that God could "suspend" the laws of nature by a miracle if he wanted; and so it is possible that this sample *might* not in fact do what you expect. But you have no reason to think a miracle *is going to* happen in this case, and so you are certain of the outcome.

But that means, basically, that you are "physically" certain, according to the tradition, when, though *theoretically* you could be mistaken (because of the miracle), you know that in fact you aren't. The people of the Middle Ages were rather more confident than I (or almost any modern) that once you discovered a Law of Nature, it was impossible for you to be mistaken about it.

In any case, I chose to take the "theoretically you could be wrong but in practice you know you aren't" aspect of the medieval notion to update. In physical certainty, then, you have evidence to support what you think is true (so that you don't just have subjective certainty); and you have no evidence which would indicate that you are mistaken. In fact, then, you have no doubt; you know what is the case. Why would you doubt if (a) you had no reason to doubt and also (b) you had a reason for not doubting?

Now of course, there *might* be evidence that you are mistaken, and your evidence to support your knowledge might be faulty; so physical certainty *admits the theoretical possibility that you* ***could*** *be wrong*; but this does not establish any reason for thinking that you

are wrong; and hence there is no doubt as to what *the fact* is.

So, for instance, we do not doubt that we are awake when we are awake, even though we realize that when we are sleeping, we sometimes dream that we are awake. So there is the theoretical possibility that you might now be dreaming that you are awake. But in fact, waking knowledge is a different sort of experience from a dream, and when you are awake, it is self-evident that you are not dreaming. So the theoretical possibility does not actually cause a doubt as to *the fact that* you are now awake.

When a defendant in a criminal trial has to be proved "guilty beyond a reasonable doubt," the certainty the jury is to have of his guilt is physical certainty. That is, there has to be (a) no evidence (no "reasonable" doubt) that he is innocent; but (b) more than that, there has to be positive evidence that he is guilty.

Moral certainty is the weakest of the three types. Again, you do not doubt what you think is the case; but here, your lack of doubt does not have anything in particular *positive* to support it; it is simply that you have no evidence that would indicate that you are wrong.

There might well be such evidence, and so once again you might be wrong; and it is easier for you to be mistaken in this case than in the case of physical certainty, because you have no evidence that would establish that you are *not* mistaken. Thus, you could have a doubt as to whether you were mistaken or not, but *it would not be a reasonable* doubt.

4.1.1. Certainty and evidence

But there is evidence and evidence, isn't there? Suppose a defendant's brother gets on the stand and testifies that the defendant is a man of good moral character, and that he wouldn't have embezzled all that money. He has "given evidence," and so isn't that evidence that the defendant is innocent—and therefore, how could he be proven guilty "beyond a

reasonable doubt"?

But no reasonable juror would accept this testimony as evidence, because (a) even if the defendant had the moral character his brother said he had, temptations can make even moral people sometimes act against their character, (b) the brother might not know all about his brother, and is simply basing his testimony on the part of his brother's life he knows, and (c) the brother might love his brother and so think he was nobler than in fact he was, or (d) he might lie to save his brother from a prison sentence.

Hence, what the brother said is not *evidence* for the juror, because it itself would not *cause* knowledge, as opposed to opinion. That is, there are reasons why this testimony would be given *and still* the defendant would be guilty; and hence, there is no contradiction between the testimony and guilt of the defendant.

Now it might be that this testimony, coupled with other testimony, might make a string of facts which *taken together* would in practice be impossible unless the defendant was innocent; in which case, the testimony is *part* of the evidence in his favor, even though in itself it is not evidence.

But if, for example, the Prosecutor could establish that what was in the books was in the defendant's handwriting and (from expert testimony) that no forging was involved, and that the particular entries would be impossible to perform mistakenly, then however great the indications of the person's moral character and so on, it would in practice be impossible for anyone else to have done the falsifying, and for him to have done it unwittingly.

Then there is evidence that proves him guilty; and since anything on the other side would still run up against a contradiction, there is no "reasonable doubt" that he did it.

- Evidence, then, as we said, always involves there being some kind

of contradiction involved if the fact for which there is evidence is not indeed a fact.

The reason why evidence does not always establish absolute certainty is that there is the possibility that additional facts could change the nature of the effect (the fact known with its evidence), and so change the evidence needed.

Even in the case we mentioned earlier of finding coins missing from your pocket, the evidence for your saying that they fell out is the fact that you found a hole in your pocket. It could have been the case, however, that before they had a chance to fall out the hole, your pocket had been picked.

You would have no doubt that the coins had fallen out the hole, provided that you didn't have any evidence to indicate that your pocket *had* been picked; but you would have been mistaken. Insofar as such a mistake is possible, your certainty is physical certainty and not absolute certainty.

Since this is the case,

- **Objective doubt always involves facts that would seem to indicate opposite conclusions.**

That is, doubt does not come from a *lack* of evidence. When you don't have evidence, then you are morally certain, not in doubt. You would only doubt if you had *reason to believe* you were mistaken (i.e. some fact which could be evidence of the opposite).

Again, doubt is not "worry" about whether you are mistaken or not; that emotion is not a *fact,* but a *mental condition*. It has nothing to do with evidence.

- **It cannot be stressed too much that certainty is *not***

"feeling convinced," and doubt is not "feeling unconvinced." Feelings have nothing to do with certainty and doubt (except the subjective kind, which is pseudo-certainty or pseudo-doubt)**; certainty and doubt are a question of the *facts available* to the person.**

- Another point to keep in mind is that **it is possible to be objectively certain** with physical or moral certainty **and be mistaken.**

The point here is that certainty is not to be equated only with absolute certainty; you can be objectively certain and still be wrong; but you have no reason to believe you *are* wrong—and this is *certainty*, not "probability," or "opinion" (except with moral certainty), still less doubt.

So a person has a doubt when he has facts in conflict. When he resolves the doubt (finds the cause), he becomes certain.

4.1.2. Opinions and certainty Is a person who holds opinions ever objectively certain of them, and if so, at what level?

This can, I think, rather easily be answered. Remember, an opinion is something for which a person does not have sufficient evidence.

Obviously, then, a person can never be absolutely certain of an opinion. Absolute certainty is always knowledge.

Nor, really, can a person be physically certain; because, while it is theoretically possible to be mistaken with physical certainty, you have evidence that in fact you are not mistaken, and no evidence on the other side. So physical certainty also involves knowledge.

Notice that, as I said, with physical certainty, it can still turn out that new evidence comes to light and proves that you were mistaken.

But this does not mean that you had an opinion and not knowledge; all it means is that knowledge is not always infallible. For instance, scientific theories (like Newton's Theory of Universal Gravitation) are knowledge. It turns out that Newton's theory is false; there is no force of gravity as Newton described it. But those who held the theory were physically certain of it, and they had knowledge, not opinion; because at the time they held it, there was no evidence against it. It was only at the beginning of this century that evidence came along to prove that the theory could not be true.

But since moral certainty simply involves a lack of evidence to the contrary, a person can be morally certain of an opinion. (Of course, a person who holds an opinion can be subjectively certain no matter how much evidence there might be against his opinion. You can be subjectively certain of anything. But, as I stressed, subjective certainty is not really certainty.)

But it is also the case that a person can hold an opinion and not be certain at all. Very often we do have facts that indicate that we might be wrong; but the weight of the evidence tends in the direction of the opinion we hold. In this case, we can't be certain that we are right, but there are more facts on our side, and no fact that would make it *impossible* that we are right.

Here, depending on how strong the facts are on our side and how weak the case is on the other side, it becomes increasingly unreasonable not to hold the opinion as "tentatively true," recognizing that one is not certain of it, but that, absent new evidence, it is more reasonable to hold it to be true than hold it to be false.

Notice, then, that it is not always the case that "there are two sides to every story," meaning that there is *always* evidence to the contrary, no matter what you think is true.

4.1.2. Opinions and certainty

This is another of those relativistic absolutes. If there are *always* two sides to every story, then the statement "there are two sides to every story" has "another side" to it, proving that there is evidence against it. So if it's true, it's false.

Remember the secret at the beginning of the first chapter. Don't be led down the garden path of doubt by silly generalizations like "there are two sides to every story." There are not "two sides to the story" of the fact that there is something, for instance, or that what is true is not false in the sense in which it is true.

Nevertheless, it is many, many times the case that the best we can get is a well-informed opinion. There's nothing wrong with opinions when knowledge is not available, and the evidence is not conclusive. It may be even that *most* of what we "know" is actually opinion with more evidence for it than against it. *But this is not always the case; sometimes we can reach knowledge and certainty beyond mere moral certainty.*

4.2. Probability Now then, just what is probability, and why are there "laws" of probability, and so on?

What is a "law" anyway?

DEFINITION: A LAW OF NATURE is a constant way some object behaves, so that its future behavior is predictable.

- **The effect connected with the laws of probability is that probability deals with what is random, and laws are statements of non-randomness.**

That is, "chance" or probability has to do precisely with those events which are *not* constant, but vary randomly. When you flip a

coin or throw a pair of dice, the idea is that there is no connection between what happens on the first throw and the second. If the dice are "loaded" or you flip the coin skillfully so that it does three and a half turnovers every time, then the laws of probability are thrown off; because they suppose that there is *no system* in the throwing or flipping.

But then how is it that you can make predictions? Can randomness be constant? This seems to be a contradiction; and given that the laws of probability work, we have evidence that the "contradiction" actually occurs, and so we have an effect.

But notice that with the coin, the laws say that heads will come up one-half the time; and with the pair of dice, twelve will come up one-thirty-sixth of the time; and with one die, any given face will come up one-sixth of the time. How do you know? Because there are six faces on the die, and twelve on the two of them; and there are two sides to the coin.

That seems to indicate that the predictability doesn't deal with the randomness itself, but with the fact that the dice and the coin *have a constant feature in all the throws.*

We can test this by making a "die" of soft clay, putting a spot on one side, and rolling it in such a way that as it bounces and rolls on the table, it gets flattened, and so has a number of "faces" that *varies at random* with each throw. On the first thrown, for instance, it becomes a cylinder (with 3 "faces"), on the second, we count seven, on the third it is a perfect sphere (and has either one or an infinity, depending on your point of view), and so on. What now is the probability that the spot will appear on the topmost "face"?

You can't put a number on it; which indicates that the laws of probability are destroyed when everything becomes random.

Therefore,

- **The laws of probability state that when something that operates randomly has a *constant structure underlying* the operations, the *constant structure will show up* through the random operations.**

Thus, the laws predict that with a coin, which has (for practical purposes) two sides, the *ratio between the number of throws and the number of times heads appears on top will not diverge systematically from two to one*. With a die, the ratio between the number of throws and the number of times a given face appears on top is six to one, because the die always has six sides; and so on. That is the technical meaning of "heads will come up half the time 'in the long run'"; or that "the one-spot will be on top a sixth of the time 'in the long run.'" The "long run" here means that there won't be any *systematic* deviation from this number (though there may—and in fact will—be plenty of unsystematic ones); and since the divergences are unsystematic, they will tend to cancel each other out—but again not in a systematic way.

Thus, in flipping a coin, you may get fifteen heads in a row; but as you keep flipping it, you begin to get tails more than heads—perhaps a run of two or three tails to one heads, perhaps five tails to three heads, and so on, so that as the number of flips becomes very large, the "runs" in one direction tend to balance those in the other, and the ratio *converges* on one-half (meaning it gets closer and closer to it the higher the number of flips).

Notice that this is a *prediction of what will actually happen in the real world,* and is not merely a mathematical game. All that the mathematics says is that, for instance, there are six sides to the die,

so that *at any given throw* there is one chance in six that the one-spot will be on top; and this goes for *any* throw (given non-loaded dice); and so *there is no reason* for expecting the one-spot on top any more than one-sixth of the time.

But that in itself doesn't establish a reason why the one-spot *should* appear on top one-sixth of the time rather than one-third (or one-twelfth)—*unless it is the case that random operations with constant underlying structures reveal those constant underlying structures.*

That is, if you said, "The one-spot will appear on top one-third of the time," you have no reason at all for this prediction. And the same is true for any other ratio except one-sixth. But then you only have the "reason" that after all there are six sides to the die.

But why couldn't the operations of the die be totally random, like the operation of the die we made of clay, so that nothing at all would be predictable, even in "the long run"? There's no reason why this *couldn't* be the case.

But in fact it isn't; and therefore

- **The laws of probability actually express a law of nature: that random operations of something constant reveal the constant underlying structure.**

4.2.1. The "Law of Averages"

A footnote is in order here on the "Law of Averages."

The assumption in the ordinary person's mind when he sees a "run" of some divergence from the prediction of probability is that the coin or the dice will "even themselves out," and therefore he formulates the fallacious "law of averages," which goes something like this, as applied to flips of a coin. "If there have been twenty heads in a row, the probability of the next flip's being tails will be better than one-half."

4.2.1. The "Law of Averages"

This sort of "stands to reason." You can predict from the laws of probability that the probability of getting twenty heads in a row is very small, and the probability of getting twenty-one heads in a row is even smaller. Hence it would seem that when you bet on the twenty-first flip, you would be a fool to bet on heads; it's almost certainly going to be tails.

But that isn't so. The coin doesn't know that it's come up heads twenty times in a row; and the probability *given twenty heads in a row* that heads will come up the twenty-first time is—one-half. It's one-half for *any* flip. The probability of twenty-one heads in a row is very small; but most of the improbability, so to speak, was used up in those twenty flips; and so the improbability left for the twenty-first one is just one-half.

And as a matter of fact, that's what actually happens with real coins, as many a man can attest to his sorrow. The fact that things like this obey the laws of probability and *not* the "law of averages" and that gamblers believe in the "law of averages" is, among other things, what keeps Las Vegas making a profit.

There's no reason why things *couldn't* follow the "law of averages"; but they don't, and so don't bet on it.

The reason I say this is that, though mathematicians tend to say the law of averages couldn't work because of the mathematics of probability, they don't see the "hidden parameter" that connects the logic of the mathematics with the operations of physical objects—which in fact "obey" the logic of the mathematics, but wouldn't necessarily have to.

4.2.2. Statistics Now statistics are just probability worked backwards.

This means that some statistics are valid and tell us something, and others are just nonsense. Can we distinguish, based on probability, when we should listen to statistical correlations and when we shouldn't?

- **Probability-like ratios showing up in what seem to be random events can be due to a constant structure underlying those events.**

That is, suppose you find the ratio between the number of highway accidents and the number of drivers. Then you notice that the ratio of accidents involving teenage drivers to the number of teenage drivers is significantly higher.

There are two possibilities here. Either this is just a chance correlation (like a run of heads in flipping a coin, or better, having the spot on our clay die come up on top two-thirds of the time in a given set of rolls); or it is an actual probability ratio, *and therefore there is something about teenage drivers that makes them more prone to accidents.*

You then investigate to see if there is something about being a teenager that would allow you to predict that teenagers should have more accidents than married middle-agers. And the answer is that there are several things. Teenagers have been protected from the consequences of their actions, and so have not as great a concrete realization that even with the best of intentions, horrible things can happen. They tend to be over-confident of their reflexes. They don't have dependents, so that they have to be careful for others' sakes. And so on. All of these are reasons why teenagers would be less likely to be careful than middle-aged people. Hence, they should have

more accidents.

When you put these two together, you find that that underlying "recklessness" of teen age shows up in such-and-such a greater ratio of accidents per driver.

- **Hence, statistics, when valid, reveal something of the nature of what behaves in other respects randomly.**

You can't predict how likely it is that any given teenager will have an accident; but you can predict within a certain margin of error how many accidents in a given year will be due to teenagers.

But when the ratio can't be found to have anything "underneath" it which would make it predictable that there ought to be some ratio, then the statistics are probably just a chance correlation.

Thus, there may be a high ratio between the number of houses with green window-shades and the number of murders that occur in such houses as opposed to houses with tan window-shades. But there is nothing in the color of the window-shades which would lead a person to predict that the color would lead to killing people.

The tobacco companies are claiming that this is what is the case with smoking and lung cancer and heart disease; that this is just a chance correlation. Unfortunately, nicotine can be shown to make your heart do funny things, and "tar" damages animal tissue in laboratory tests; and so taking that stuff into your lungs or mouth would be likely to do you some harm—and therefore, the statistics are valid. Smoking is a cause of lung cancer and heart disease and the rest of it; the smoking *explains* why there is a higher ratio of these diseases among smokers than among the general population.

4.3. Induction Some philosophers claim that the logical operation called "induction" is based on probability.

In one sense they're right and in another they're not.

DEFINITION: INDUCTION is the leap from knowing that a fact is true of certain instances of an object to knowing that it is true for all instances of that object.

The effect here is that induction seems to violate a cardinal rule of logic (which we will see later); that you can't move from "some" to "all." If some people like baseball, it doesn't follow that everyone does.

But induction, on the other hand, works. It is how we get the laws of nature. We observe some cases of hydrogen combining with oxygen to form water, and we conclude that this is always what you get with these two chemicals (under the proper conditions—we want to admit the possibility of hydrogen peroxide, and so on; but let's not complicate things unnecessarily. You see the point.)

Some people, like David Hume (the one who didn't like causality), say that the only thing you *know* in cases like this is "The hydrogen I have tested combines with oxygen to form water," and you say that the next instance will do this just because you got into the habit of expecting it.

But this makes hydrogen like observing baseball fans and concluding that all human beings are baseball fans "just because you got into the habit of expecting it."

Besides, if Hume says this is what accounts for *all* our instances of making inductive generalizations, hasn't he made an induction, which according to him is invalid? Doesn't he have to say, "The instances I've tested worked out to be due to habit, but I couldn't

say whether this will be the case in the future."? So he really should have shut up and not published his "findings."

In fact, it's silly to say that we don't *know* whether hydrogen will combine with oxygen to form water. In fact, if a scientist takes something from a bottle labeled "hydrogen" and combines it with something labeled "oxygen," and what he gets is a gold powder, he will say, "Who switched the labels?" before he will say, "Oh, there are some instances of hydrogen that combine with oxygen to make iron pyrite."

Some have said that what we do is see a few instances of the combination happening and then *define* "hydrogen" to be "what combines with this other stuff to form water." And of course the word "hydrogen" is Greek for "water-generator."

The trouble with that explanation is that it would work for what hydrogen did with oxygen, but how could you know that hydrogen *also* has a certain spectrum if you burn it. You've already "defined" it in terms of its operation, and it doesn't follow *from this definition* that *every* instance of what combines with oxygen to form water will *also* have this particular spectrum when burned. For that, you need to make an induction, not an arbitrary definition.

What seems to explain induction is a kind of version of what we said dealing with statistics.

We first see some instances of something operating in a constant way (not in a random way, now). We observe enough cases of this to assure ourselves that this is because of some "underlying structure."

We examine the thing to see if there is a structure which would make the operation in question predictable. If there is, then we conclude,

"Because the thing has this structure, it behaves in this way; therefore anything with this structure will behave in this way."

Hence, we see that because hydrogen has one electron and oxygen lacks two in its outer "shell," then you could predict that to atoms of hydrogen would combine with one atom of oxygen; and you would get some compound. What you get is water; and so you can say that all instances of hydrogen (what has this structure) combine with oxygen to form water. Similarly, what has one electron could have a certain number of excited states, which would give it a certain spectrum. Therefore, all cases of hydrogen have this spectrum. Voilà.

DEFINITION: The NATURE of something is its constant structure which reveals itself in its operations.

Thus, it is "the nature of hydrogen" to have a certain spectrum and to combine with oxygen to form water and with chlorine to form hydrochloric acid, and so on. It is "the nature" of teenagers to be reckless and have more auto accidents than adults. It is "the nature" of things that operate randomly to have their constant underlying structure show up through the operations.

Does this mean that it is *probable* that hydrogen combines with oxygen to form water? No, because probability deals with *random* operations, not *constant* ones; and this behavior of hydrogen is constant. It is probable that the one-spot will appear on the top of a die on some throw, because the throw is random.

So those philosophers who say that induction gives a person a "probability" that something will happen have not understood what probability really is. In fact, the laws of probability themselves, as I tried to show, are laws of nature, and the result of an induction.

4.3. Induction

Then are we *certain* of the results of induction? Yes, with physical certainty. We have evidence that hydrogen, just because it is what it is, behaves as it behaves; and so all cases of it will behave this way.

Can we be wrong? Yes, in two ways.

First of all, we may have missed some evidence, and so made a faulty induction. The induction, based on chemistry, that you can't turn lead into gold, turns out not to be true now that we know that you can fool around with the nucleus of the atom, adding protons and neutrons.

Secondly, there can be defective cases of the thing in question. "All human beings can see" is a valid induction; but some human beings have detached retinas in their eyes and so can't see. But it is still "of the nature" of even these human beings to see, as can be shown by the fact that their retinas can be reattached and then they can see.

So inductive generalizations remain true even in the face of instances to the contrary; because the induction says, "the structure is such that it results in this behavior" and if the structure is complex (as it always is, even in the atom), then the structure can be "almost such" but not quite—which results in a defective instance.

Hence, we are certain of the results of induction; but our certainty is not absolute; it is physical certainty.

SUMMARY

Certainty is the opposite of doubt, not probability. Subjective certainty, emotional conviction, is not real certainty, and can be ignored. A person is absolutely certain when his evidence establishes that it is impossible for him to be mistaken; physically certain when he has evidence supporting what he thinks is true

and no evidence opposing it; and morally certain merely if there is no evidence indicating that he is mistaken.

You can be physically or morally certain and be mistaken; the point is that you have no reason to think you are mistaken, so you are certain.

Not all evidence establishes the impossibility of being mistaken, because not all evidence excludes the possibility of further evidence; but it is always some fact which itself would be impossible if the fact it is evidence for were not a fact. When you have evidence, then, for something and no evidence against it, you are certain.

Objective doubt always involves facts that would seem to indicate opposite conclusions (evidence on both sides).

A person can be certain of an opinion with moral certainty, but not with physical or absolute certainty (in the latter cases, he has knowledge, not opinion). Many times all we can have is well-informed opinions (where the weight of the evidence favors one side, but there is evidence on both); but sometimes we can have knowledge.

Probability involves laws of nature, which are constant ways in which objects behave, so that their future behavior is predictable. Probability, however, deals with the random, and so it seems it cannot have laws governing it.

But objects operate according to the laws of probability when not everything about them is random; the law states that when something that operates randomly has a constant structure underlying the operations, this structure will make the operations not totally random. There will be no systematic divergence from a predictable mathematical ratio dealing with the operations. This is verified in the actual operations of such objects, and so it is a law of nature.

But the “Law of Averages” (which says that deviations from probability make prediction of the next event different from the probability ratio--things “even themselves out”) does not work. The

reason is that the unlikelihood of the events preceding uses up most of the unlikelihood of the next event continuing the “string,” and so the next event is just as probable as the one preceding it.

Statistics are probability backwards. If events seem to be exhibiting a probability-like ratio, then this might be due to some underlying structure. If you can find some structure which would make it reasonable to predict the event in question, then the statistics are valid; if not, the correlation is as likely as not just coincidence. The nature of something is the constant structure it has which reveals itself in its operations. Induction is the leap from knowing that a fact is true of certain instances of an object to knowing that it is true for all instances.

Induction seems to violate a rule of logic that you can’t move from some instances to all instances; but it is still valid. How?

First, it does really move from events seen to events not seen, because it is silly to say we can’t know that hydrogen will combine with oxygen to form water except in the cases we have observed.

Secondly, it is not based on simply defining the object as “whatever does X” because by induction we discover that all cases of “What can do X” can also do Y; which could not be got at by definition, but must be due to both properties’ actually being in all cases of both objects.

We make inductions by observing enough cases of constant operations to convince ourselves that there is a constancy in the object’s structure; when we find what it is about the structure, we then conclude that all cases of this object will do X (because all cases have the structure which causes X). We have found the nature. This is not probability, but certainty, because it deals with what is constant, not random.

Inductions can be mistaken if we have missed some evidence which would falsify our generalization, or because there are defective cases of objects which have almost all of the structure, but lack some crucial part dealing with the operation.

CHAPTER 5

Subjectivity and Objectivity

5.1. The Kantian problem In one sense, it's a good thing that this book isn't a history of epistemology, because then this chapter would have to be enormously long.

The heart of the modern epistemological question was formulated best (if not most clearly) by Immanuel Kant, who proceeded to give a brilliant but erroneous explanation of knowledge, in which it appeared that the "objects" we think are "out there" are actually creations of our own mind; we don't and can't know anything about a world "outside" our consciousness.

I am not going to give a detailed description of Kant's theory, because it is very complex, but, as I said, erroneous. He did, however, see the problem; and as I show what it is and show what I think is its solution, I will point out what I think he overlooked. Those who want a detailed critique of Kant and idealism in general will have to look elsewhere; I am trying here to give a brief theory of how we know what the world really is like.

In any case, the problem of "objective" knowledge is this:

- **If our knowledge of the world "outside" our minds is based solely on our subjective reaction to it, then how can we ever say anything about reality as it is independently of our reaction?**

It would seem that we can't; all we can talk about is our reactions, classifying them and arranging them, and so on. But if we can't get outside our heads to find out what the world is "really like" instead of merely how we react to it, then we can never know how faithful these reactions are (if at all); and so we can't say anything about the world itself, but only about our reaction to it.

This, carried to an extreme, you will recall, was what led to the position of absolute relativism. Who are you to say that your reactions are "more faithful" than mine; and so if something is true for you, it's true just for you.

But we can still avoid absolute relativism and keep this "not knowing the world as it is" if we say that absolute knowledge can deal with the necessary characteristics of consciousness itself, independently of what it is supposed to be "reporting" about some world "out there." So Kant and those who agree with him are not exactly relativists.

DEFINITION: IDEALISM is a position which holds that the object of knowledge is always inside the mind, not outside of it. This position asserts that we just *think* that there are things "out there" which we know; actually, the "things" are mental constructs of one sort or another (depending on the particular idealistic explanation).

DEFINITION: SOLIPSISM is the position which holds that there is nothing except myself and my own consciousness. It is

the extreme of idealism, where all the other people you see are just, as it were, figments of your own imagination, and aren't "out there" at all. Jean-Paul Sartre, the existentialist, could be called a solipsist (or perhaps a disappointed solipsist, because he sort of admits that there are other people, but, as he says, "hell is other people.")

But you don't have to be a solipsist to be an idealist. For instance, we may all (as Kant says) "construct" objects in the same way because our minds are all alike; or we may all do so (as Hegel says) because we are all "aspects" of One Great Mind—and so there are, in a sense, many of us, and we have absolute and not relative knowledge. But the knowledge isn't "about" any "world" other than itself.

Kant supposed that there was something "out there," but we couldn't know anything about it; those who came after him said if you couldn't know anything about it, how could you even know that there was something? They assumed that Kant had let ordinary thinking fool him into admitting a "totally unknown" something—which if *totally* unknown can't be admitted even to exist (especially since for Kant our minds stamp certain "pictures" with the property "existing".

5.2. Minds Let's first of all try to settle whether Kant is right in one of his assumptions.

Are there a lot of us, each with his own mind, or are we all parts of One Great Mind? One of the things that Kant didn't have that we do is a clear version of the Principle of Causality (he used it, but he called it "the conditions for the possibility of experience," and didn't realize that this was true causality).

First, note the following:

5.1. Minds

- **We know that we sometimes lose consciousness, because when we wake up, the sudden discrepancies in our experience are an effect whose cause is our loss of consciousness.**

That is, you go to sleep and the clock says 11 p.m.; an instant later (as far as your "stream of consciousness" is concerned), the sky is light and the clock is ringing and says 7 a.m. The radio is telling you that things happened during these eight hours that, subjectively, didn't exist at all for you.

The effect has two possible explanations. (a) Either your subjective experience is correct, and the radio announcer, the clock, the sky, and the world in general are in a conspiracy to fool you that those hours actually went by, or (b) you lost consciousness and the world turned on its axis in a normal fashion.

Clearly, explanation (a) is madness; and so (b) must be the cause. This effect in our waking lives, then, is the cause that explains how we can be conscious of being unconscious; we are conscious, not of *being* unconscious, but of *having been* unconscious, because it is the only reasonable explanation of the discrepancy in time after we wake up.

To tie this in with the preceding chapters, we are *physically certain* that we have lost consciousness, because explanation (a) is *possible,* (i.e. not self-contradictory), even though it would be insanity to accept it as true. @ Note that once you leave the realm of consciousness of your own consciousness, you leave the realm of *absolute* certainty. From here on in, we *could* be wrong. ***But one of the things to keep in mind from now on is that we mustn't let theories get in the way of sanity.***

Once having accepted as a fact that we do indeed lose consciousness every now and then, the following fact emerges:

- **Each person's consciousness is actually many *separated* states of consciousness. The same consciousness goes out of existence and comes back into existence.**

That is, you can remember what went on in yesterday's consciousness about as well as you can remember what happened this morning after you woke up; but you can't "remember" what is going on or went on in *my* consciousness at all. As far as your "stream of consciousness" is concerned, there was no (subjective) break between yesterday's consciousness and today's. How could there be? If you were *subjectively* aware of the discontinuity, then you would be conscious of being unconscious. So as far as your subjective awareness is concerned, the last moment before you fall asleep flows right into the first waking moment. You are *objectively* aware of the discontinuity by the effect I mentioned above.

Hence, *one and the same* consciousness **goes into and out of existence**; that is, it stops, and the same consciousness starts up again hours later from where it left off. But if the consciousness has stopped being consciousness, how can it come into existence again?

- **There must be something which exists throughout the unconscious periods and unifies all the periods of consciousness into one single "stream of consciousness."**

DEFINITION: The MIND is what accounts for the unity of a single consciousness.

5.2.1. Subjectivity So Descartes was right when he said, "I think, therefore I am."

At least he was right in this sense: there has to be a mind *in addition* to the consciousness itself, or it is impossible to account for

how the consciousness can stop and *the same* consciousness can start up again. So David Hume, who denied that there is a mind "behind" consciousness, didn't notice this characteristic of stopping and starting, and so he was wrong again; and so was John Dewey, who followed Hume in this. Consciousness as nothing but a "stream of consciousness" is a contradiction.

But it must also be the case that

- **Each of us has his own mind, different from others'.**

The reason for this is that if we were all parts of One Great Mind, as Hegel thought, then all our consciousnesses would be merged into the One Consciousness—in which case, the experiences you have would be available to me, just as my experiences yesterday are available to me. But this is not the case. Our minds, perhaps, are *similar,* as Kant thought; but this similarity does not make them *the same one,* or even "parts" or "aspects" of the same one.

- **Hence, the mind has two functions: it unifies my consciousness into one single consciousness; and it separates my consciousness from anyone else's.**

DEFINITION: SUBJECTIVITY is the uniqueness in a person's experience that is due to the fact that his mind is different from anyone else's.

Note that Descartes made a mistake, however, when he said that "I" am the same as "my mind." He confused the cause as a fact with what I call the "causer," or the concrete object that contains the cause. Remember when I was talking about the cue ball hitting the

other one and making it move, I said that it was only the momentum of the cue ball that was relevant to the effect; the other properties could be anything at all.

Descartes thought that because the mind explains how my consciousness is "mine," then the mind is all there really is to "me"; and so he concluded that "I" *have* a body which is another thing (sort of like clothes) that I *possess*, but isn't the same as "me." For various reasons, this makes a mess of human experience. I am not something inside my body which "has" a body; I am the whole thing—and one *aspect* of myself is my mind. In other words, I do all sorts of things besides unify my consciousness; and so I am more than *just* a mind; I am in fact a body, which body (among other things) is also a mind.

But to pursue this (and to give the evidence establishing it) would lead us far afield into the philosophy of man. Suffice it to say that it doesn't follow that if the mind is the source of subjectivity, the "subject" is *merely* a mind.

5.3. Objects So now already we know that there is something besides consciousness itself.

We each of us have a mind; and the mind explains why your consciousness is "private" to you and mine private to me.

[The fact that my mind is something *different* from consciousness has to be true even on the solipsistic assumption that there aren't any other people around with minds; and the fact that I know that there has to be something other than just my consciousness (my mind) knocks the props out from under solipsism (which would make sense only on the assumption that you couldn't ever know anything other than your consciousness itself). So we might as well assume that there are other minds provisionally and see if we can prove it.]

Still, granted that there are other people with their own minds,

each of our experiences is "locked up" inside us. The way we let people know what is going on in our minds is not by "projecting" our thoughts into others, but by producing some *visible or audible symbol* of our thoughts, which the other person can then interpret. This is language, which we will take up in the not-too-distant future. The point here is that language exists because our minds make our consciousness private and exclusively our own.

Having found subjectivity and its source, let us approach objectivity. First, is consciousness and the mind all there is, and is idealism true, or is there a real world "out there" which our consciousness reacts to?

- If there was not a "real world" *different* from our consciousness and our mind, it would be impossible to account for our classifying our experiences into two categories: imaginary and perceptive.

Ordinarily, when we say that we are dealing with "something imaginary," we realize that we "made it up." That is, since consciousness is aware of itself, imaginary-type consciousness is aware that this particular act of consciousness was *spontaneously produced by the mind*; that is, that it was not the result of the mind's *reacting to* anything, but was just the mind playing games by itself.

Thus, when you imagine a unicorn, you know in that very act that you are not reacting to something "outside" you, but are just putting together stored images into a new combination (the image of a horse with the image of a horn). And so you say that as far as you know, unicorns don't exist.

On the other hand, when you are looking at this page, the type of consciousness you are having is different. (a) It tends to be more vivid. (b) It is not under your control (you can't make the words

appear different, the way you can give the unicorn white or brown or purple fur). (c) You recognize that your mind is not the *sole* cause of the experience; because your mind recognizes itself as *reacting-to* something.

Now if everything were in fact due solely to the mind, then everything would in fact be imaginary; but then (a) why wouldn't every experience recognize itself as spontaneously produced, and (b) why would we have this ineradicable conviction that at times we are *not* making things up but are reacting to something "outside" us?

So if you are an idealist, you have to deny two very important aspects of our experience. First, you have to deny that there are in fact two distinct classes of experience, when it is impossible to escape the conviction that we have two. Secondly, you would have to say that the *immediate experience* of perceptive-consciousness is a delusion. But in this case, what is immediately present to itself is mistaken about itself—and how could it be? There's nothing "between" it and itself to cause the mistake.

- **Therefore, our perceptive consciousness in fact is a reaction to something other than either the consciousness or our minds.**

There is a real world.

"Big deal!" you say. You would be surprised to hear how many brilliant people have seriously held that there isn't one, because they didn't see the simple argument we gave above.

(Actually, I should point out that the argument is not perfectly rigorous, and there are one or two "loopholes" in it that might possibly—but don't—allow for there to be only minds. The strictly

rigorous argument is very complex and takes a long time, and in the end gets you back to where you are now. So let's rest with this for our purposes, after having made this disclaimer. If you want to go through the whole process, see my *Modes of the Finite.)*

DEFINITION: EXISTENCE or REALITY is whatever causes a mind to react.

DEFINITION: The OBJECT of an act of consciousness is what that act is reacting to. That is, the object of consciousness is some reality or some existence.

(Once again, strictly speaking, the object is some *being*: something that "has" existence. But on deeper analysis, this "something" is not something *in addition* to existence, which "has" it as a kind of property, but the fact that the particular case of existence (the being) is a *limited* example of existence and differs from other existences in the way or to the degree in which it is limited. But this refinement is again not necessary for our purposes.)

Let us merely note that

- **Not all acts of consciousness have objects.** Imaginary-type consciousness has no object. The unicorn which you imagine is not "something"; it is simply *the form of the act of imagining*. In imagining a unicorn, you don't "produce" a little "unicorn-picture" inside your head, which you then mentally "look at." For various complicated reasons, this theory does not make sense.

No, the "unicorn" appears as a little "picture" because the act of imagining is aware of itself, and hence knows itself; and so the act *as known by* itself is the "pseudo-object" or "image." But the image is *not* different from the act of imagining; it is the *way you are imagining*. That is why you know that the unicorn doesn't exist, and why you say that "there is no unicorn." There isn't even a unicorn "in

your mind"; there is only the particular act of consciousness called "this type of imagining." The "unicorn," if you will, is not really a noun; it is a verb.

5.4. Objective knowledge

So there is something-or-other "out there"; and once again Kant was on the right track.

But it's one thing to say that there's *something-or-other* that we're reacting to, and another (as I said at the beginning of this chapter) to say that we can say anything *about it as it exists "out there."* Kant, you will recall, denied this possibility.

The clue that he was mistaken is this: If we can't really know anything about the world "out there," and all our knowledge is an arrangement of our reactions to it, then how could we say that things aren't always what they seem? That is, when we see the sun as red at sunset, how can we say that it only *looks* red, but hasn't *really* changed color, and is still yellowish white? If "what it is" means "how I react to it," then it's really red at sunset.

Again, science is constantly telling us that things aren't the way we perceive them, and making experiments that confirm this. Put one hand in ice water and then both hands in lukewarm water; it will feel hotter with one hand than the other. Taste sugar after you have just sucked on a lemon and see how sweet it tastes. Smell something for six hours and then see if you can smell it. See how solid the page in front of you is; put water on top of it and watch the water leak through the holes you can't see—and so on. But science bases itself on observation, and so, based on observation, it must be possible to get at the way things are as opposed to our reactions to (or observations of) them.

It took a long time for people to get themselves loose from the idea that the way we perceive things is somehow the way they "really" are. Galileo (around 1500) held that colors, sounds, tastes,

odors, and what we touch are not as we perceive them; but he thought that size, shape, motion and what in general can be measured was perceived as it actually was. That was why he thought that true science ("knowledge") involved measurement. There are still plenty of scientists who keep to this naive view.

But our old friend David Hume (who didn't like either causality, induction, or minds) showed that our perception of sizes and shapes and so on was no more a "copy" of what was "out there" than our perception of color. It is now known that there are, if anything, more optical illusions dealing with this type of perception than there are with those of the five senses themselves.

But how could you know that the perception is not "like" the reality unless you know what the reality is? This is the other half of the effect.

5.4.1. Toward a solution

Let me first set up the effect in a graphic way. Then, with a little "thought experiment" I can show how a solution is possible.

You go into a room and turn on the light. The energy from the bulb hits the paint on the walls, exciting some of the electrons. Let us represent this excited state of the molecules by **[!]**. The electrons fall back to normal, and radiate out electromagnetic radiation of a certain wave length. Call this transformed radiation **[@]**. This hits the eye, and focuses on the retina, where a chemical change takes place in the cones (certain visual cells). Call this new state **[#]**. This in turn produces nerve-impulses (electro-chemical discharges) which travel up the nerve-cells to the visual centers of the brain. Represent the nerve-energy by **[$]**. Finally, in the visual centers, this nerve-energy gets translated into the consciousness we have of

"seeing green." Call this [%].

Now I don't know about you, but my consciousness of "seeing green" doesn't have the form of electro-chemical discharges, still less of electromagnetic radiation, let alone of electrons falling back into "ground-states" (which is what the color actually is). So the [%], which is the "message received" is nothing at all like the [@], which was the "message sent" by the wall.

And this is sight, supposedly the "most objective" of the senses.

So it seems that Kant was right; there doesn't seem to be any hope that we can say anything at all about [@], because the only way we can be in contact with it is through that long chain of transformations [! -> @ -> # -> $ -> %].

On the other hand, you go into another room, and turn on the light. This time, the pink paint-molecules get excited [^], radiate pink light[&], which causes a different change in the cones [*], and this gets transformed into a new nerve-pattern [+], which results in "seeing pink" [=]. Now we have the causal chain [^ -> & -> * -> + -> =]; and again we can say nothing at all about [&], which was the color of the wall (its reaction to the light).

We can't?

Yes we can too. If I go into one room and turn on the light, and what happens in me is [%], and I go into another and turn on the light and what happens is [=], then *since I have the same mind both times, what causes the difference must be a difference in the colors.*

And this can be confirmed by going into the first room again and turning on the light. Again I get [%]; and in fact every time I go into that room, I get the same reaction; and every time I go into the other one, I get the [=] reaction—until one of them gets painted blue, in which case, a different causal chain is set up, and now I

consistently get [#] as a reaction.

And further confirmation can be got from looking at, say, a wall that is partly green and partly pink. With the same eyes at the same time, I get the reactions [%] and [=]. Now this difference *cannot* be due to my visual apparatus, because it is the same one, used at the same time.

- **Hence, even though our reactions are different from the energy that causes them, relations between the reactions are the same relations as the relations between the energies.**

That is, when the colors are the same as *each other,* my reactions (which are not the same as *the colors*) will be the same as *each other;* when the colors are different from each other, my reactions will be different from each other, and so on.

5.4.2. Why we can agree

Well yes, we can know relations among things based on relations among our reactions to them.

But who is to say that your reactions are the same as mine, and so how can we agree on how things "really are"?

First of all, let's say that what "really are" must mean is "really related." Kant was right in that we can't know what the "thing-in-itself" "really is" in the sense of what the "outside" energy is. But we can know what it is *like,* for instance. The green wall *really is* like grass, because that's the only way you can account for my getting the same reaction to both of them (other things being equal, but let's keep complications out of it for the moment).

With that understood, let's tackle the question of how we can agree on what's "really out there." You might argue that since we appear to have the same types of sense organs, our reactions are

probably pretty much the same; but let's take the worst possible case. Let us say that what green looks like to you is totally different from the way it looks to me, and the same goes for pink and so on.

When I see the green wall, you will remember, the causal chain went like this **[! -> @ -> # -> $ -> %]**. Now the first two parts of this are before the light does anything to my eyes, so they will be the same for both of us. But let us say there is a difference in the chemistry of our retinas, so that the causal sequence for you goes this way **[! -> @ -> * -> + -> =]**.

Let us put them together:

! -> @ -> # -> $ -> %
! -> @ -> * -> + -> =

Your reaction **[=]** is actually the way I react to pink; but neither you nor I can know this, because you can't get into my head to see how the wall looks to me, and I can't get into yours either.

Now then, when we go into the pink room, my causal chain is **[^&*+=]**, and let us say yours is **[^&#$%]**. Our retinas have reversed chemistry, so that your reaction now is the same as mine to green; but again neither of us can know this.

Putting them together again:

^ -> & -> * -> + -> =
^ -> & -> # -> $ -> %

Now if we go back into the green room, what will happen? You will get **[=]** *once again*, and I will get **[%]** *again*. And in the pink room, you will get **[%]**, which is different from the green-room-reaction, and I will get **[=]**, which is also different from my green-room-reaction.

5.4.1. Why we can agree

Hence, we will both say that *the rooms are different colors;* and based on other experiences, we will say that the first color is *like* that of grass and emeralds and "go" lights, because whenever I see something like that, my reaction is a **[%]**, and whenever you see this sort of thing, your reaction is always a **[=]**. Similarly, we will agree that the other color is *like* that of healthy complexions in Caucasians, girls' baby-blankets, and so on; because again, though my reaction to that color is not like your reaction to it, my reaction is the same every time this energy occurs (and is different from the reaction to grass), and so is yours.

There is a case where we would not be able to agree, and it actually happens. Suppose your retina were that of a colorblind person, so that you reacted in the same way to green and red. Then the causal chains would look like this:

GREEN

! -> @ -> # -> $ -> %
! -> @ -> # -> $ -> %

PINK

^ -> & -> * -> + -> =
^ -> & -> # -> $ -> %

In this case, the green room and the pink room would not appear different to you, but they would to me. Hence, you would tend to say that they are "really" the same color, and I would say that they are different colors.

Clearly, one or both of us must be wrong. But which one?

5.4.2. Why we can agree

There are two ways of finding the cause of this particular effect. The usual and simplest way is to ask a number of other people. If just about everyone sees the two as different, then the most reasonable explanation of the discrepancy is that the colorblind person has something wrong with his eyes that *prevents* him from reacting differently to two different wave lengths of energy; and therefore, the majority must be correct and he is mistaken.

5.4.2.1. Science to the rescue

The other way is to set up an *instrument* which can react to the whatever-it-is that our eyes react to.

This would be something like a spectrometer that reacts differently to different wave lengths of that something called "electromagnetic radiation." Now a spectrometer instrument is not *like* an eye, so that we can use it as a check to see if our eyes *all* have some *common* discrepancy connected with them.

The instrument does indeed react differently to red and green light; and so it must be the case that there is a real difference between them, and the colorblind person has defective vision.

Interestingly enough, however, the instrument reacts to heat as if it were light of a very low frequency. But light seems to us to be a totally different kind of thing from heat; our reaction to heat is qualitatively different from our reaction to light. Are we right or is the instrument?

The instrument is. Why? Because we use our eyes to react to light (and our eyes are insensitive to infrared or ultraviolet); and we use the heat-receptors in our skin to feel heat. So the difference in the *reactions* must be due to the difference in the *receptors* and not to the fact that the energy *causing* the reaction is a different *kind* of energy in the two cases.

5.4.2.1. Science to the rescue

This is why science and its instruments are useful in objective knowledge. It is not that there is something "magical" or "more objective" about measurement. It is that an instrument, precisely because it is *not* like the human body, but can react to the same sorts of energy that we react to, can be a *different relating-mechanism* and therefore can give us another check on how the objects "out there" are in fact related.

In any case, objective knowledge is possible for us. We may not know the "thing-in-itself," but we can know (based on reactions) how it is related to other "things-in-themselves" or how parts of it relate to each other. The way our reactions are related, however, are not always infallible guides to the way the external causes are related; because the external object causes the reaction, generally, through a complicated causal chain; and if there is a discrepancy anywhere along the line, the relation among our reactions may turn out to be different from the relation among what we thought was the cause of them.

Let us, then, examine this more closely, and find out what truth and error are.

SUMMARY

Immanuel Kant saw most clearly the problem of objective knowledge, although his solution was faulty. The problem is that, if our only contact with the world outside consciousness is consciousness, and consciousness is only a reaction to the thing we know and not a copy of it, how can we ever know what the thing "out there" really is? Idealism says we can't, and that what we call "objects of knowledge" are actually inside our minds, and there is no "real world out there." Solipsism even holds that I am the only thing that exists.

The first thing we can know of that is not the same as our consciousness itself is our mind. We know this because (a) we know that we occasionally lose consciousness (or sudden shifts from night to day would occur), and the same consciousness comes back into existence when we wake up; and (b) because this means that there has to be something that exists while we are unconscious to "tie together" the two conscious periods into one "stream of consciousness."

The mind is what accounts for the unity of a single consciousness. Each of us has his own mind, because each has his own past consciousness available to him, but is closed off from others' consciousness. Subjectivity is the uniqueness in a person's experience because each person's mind is unique.

But we can also know that there are object outside our minds because if not, we would not be able to account for the fact that we have two different types of experience: (a) imaginary, which is recognized as spontaneous and not a reaction-to anything, and (b) perceptive, which is recognized as a reaction to something other than itself. Existence or reality is whatever causes a mind to react, and the object of consciousness is what the mind is reacting to. Imagining has no object; the image is not an object, but the act itself as conscious of its own form.

We certainly must be able to go beyond this and know something about objects, or we would never be able to know that they are not the way they appear--which we do know.

The way we can do this is due to the fact that our senses as receiving instruments are basically consistent. Therefore, when a given energy acts on a sense, a definite response occurs in consciousness; and so even though the response is not the same as the energy, Energy A will always produce Response X and Energy B will always produce Response Y; so that the relations between the responses will parallel relations between the energies.

Even if different people do not have the same subjective

responses, as long as each “receiver” is consistent the relations will be the same; and so we do not need to know “how things look” to other people to agree on how things are related. Our objective knowledge, therefore, is a knowledge of the relations between things, not the things-in-themselves.

If a person’s senses are defective, he can discover this by finding out that most other people’s responses relate differently among themselves from the way his responses relate (he reacts in the same way to what they react differently to). This difference in relations then must be due to a difference in the receivers, not the energy.

Scientific instruments also react to many of the energies our senses react to, and the way their reactions interrelate allow us to check on what aspects of our reactions are due to our senses as receivers as opposed to the energy we are reacting to. Scientific instruments are mainly useful for this reason, not because “measurement” has any special magic connected with it.

CHAPTER 6

Concepts, Truth, and Goodness

6.1. Sensations and concepts

There are some complications coming; but our basic problem is solved.

What basically remains to us in our study of the acquisition of knowledge is to dig out the implications of the solution, and define and clarify some familiar, but vague, terms.

Evidently, then, our mind has two distinct sorts of "operations" it performs: (a) that by which it reacts to the energy outside it (and so gets the subjective reactions which it compares); and (b) that by which it compares these reactions in order to learn about the relations between their causes outside it.

DEFINITION: SENSATION refers to the acts by which the mind reacts to objects, and unifies, stores, and recalls these reactions.

DEFINITION: UNDERSTANDING is the act by which the mind becomes aware of relations among sensations, and therefore among the objects that caused them.

Sensation actually involves many, many different acts. First, there

are the acts of the "five senses" (of which there are more than five), which react to different forms of energy: seeing (electromagnetic energy), hearing (air vibrations), smelling (particles in the air), tasting (chemical changes), touching (heat, cold, pressure, pain, position of body and several others).

Then there is the unification of all this into a single *perception,* so that we hear the sound as coming from this colored shape that we are looking at and touching. We don't understand the relations, here; we merely have a unified whole of sensations.

These perceptions are stored and all or parts of them can be called back from storage. This is called "imagination."

The images are "filed" basically in level of vividness, which is a kind of time-sequence.

Sensation also has a "program" called "instinct," which monitors the bodily state and directs energy from the perception-centers to the motor-nerves and causes automatic behavior-patterns. The operation of this "program" shows up as *emotions.*

All of these are sensations. They are the data we use to understand.

DEFINITION: The CONCEPT is the form of the act of understanding; it is the *relationship understood and the foundation of that relationship.*

A relationship involves three "phases or aspects": the *relationship itself* (e.g. similarity, difference, position, causality), the *relata* or the *terms* of the relationship (in understanding, these would be the sensations which are related by the relationship—but they would refer to the *objects related* outside of us), and the *foundation* of the relationship *in* the relata (that is, the particular aspect of each *by which* it is related to the other relata (in other words, the *aspect* of the

object which relates it to the others).

In understanding the room to be green, for instance, the relata are the causes of the various sensations you have that have this aspect, (the painted walls) the foundation is the aspect itself (the color, greenness), and the relationship is similarity. In understanding that the pink wall is a different color from the green one, the relata are the two walls, the relationship is one of difference, and the foundation is again the color.

Notice that the concept "leaves out" the relata, though the act of understanding includes them. Notice also that the concept includes *both the relationship and its foundation,* even though the words we use to express concepts refer to one or the other (and only imply the one they leave out). Thus, the word "greenness" refers to the foundation (the characteristic that is in each green thing) and implies sameness. But "fatherhood" refers to the relationship (causing a child) and implies the foundation (what the father has that makes him a father). But when you *understand* what is meant by fatherhood you understand the relationship and its foundation together; this is because understanding is a conscious act, and knows what it is doing when it does it; but words are basically forms of energy, and they can't "double back" on themselves to include themselves within themselves.

- **Hence, the concept is an aspect of an act of understanding, and is not a "something."** We use the term because it is convenient to have a single word instead of continually saying, "the aspect of understanding that is not sensations and is proper to understanding itself.

If "concepts" are abstract aspects of understanding, then it might be convenient to have a single term for the complete act, instead of talking of "the act of understanding" or "the actual, concrete act of

understanding," or "the complete act of understanding."

DEFINITION: The JUDGMENT is the concrete act of understanding; it contains within it the sensations as relata of the concept, together with the consciousness of whether these sensations are imaginings or are perceptions, and hence whether they refer to objects or not.

6.1.1. Abstraction

There is a good deal about understanding that is interesting, but belongs, really, in the philosophy of man.

There, understanding is treated as a property of human beings, and isn't exactly related to understanding as knowing things about objects. However, there are some things we must say about it for purposes of our investigation here.

- **Since a given judgment understands only one relationship, with its foundation (concept) in the sensations that are in consciousness, each judgment leaves out of consciousness all other relationships (with their foundations) that could be understood among the same sensations.**

Thus, when you understand that the wall is the same color as the grass, you do not understand *in that act* that the wall is the same as the grass in, say, visibility in general, in materiality, in hardness, in distance from your eyes; and you do not understand any of the ways in which the wall is different from the grass, or any other relation there might be between this wall and the particular grass you are perceiving or imagining.

You do, however, understand in that act of understanding that it is a real wall that is really the color of the real grass, because you recognize that both of these sensations are perceptions, and you

didn't make them up. (Of course, I am pretending that you are actually looking at them; I, as I sit in my white-walled study and write this, realize that the wall and the grass are really imaginary.)

DEFINITION: ABSTRACTION is the name for the fact that understanding, in being conscious of one relationship (with its foundation) leaves out all other relationships and foundations from its consideration.

Hence, understanding is always abstract. But this does not mean that it is false. The wall really is the same in color as the grass. The fact that this act of understanding does not include the difference in size between the wall and a blade of grass does not make what it understands false. It merely means that any given act of understanding is never *complete* knowledge about the object.

Complete knowledge about the object would mean all the possible relationships it would have within itself and with every other possible thing. For any human being to manage this would be impossible; there are obviously an infinity of such possible relationships.

- **Therefore, human knowledge is by its nature always incomplete.**

Even if we did understand all the possible relationships dealing with a given object, our understanding would still leave out ("abstract from") the "thing-in-itself": that is, the thing as it is independently of our knowing it.

Remember, we only know indirectly, by being subjectively affected by objects, and then using relationships to bypass the subjectivity and get at relationships among the objects. But that still

leaves the "object-itself" an "unknown-except-as-related-to..." Hence, there is no hope that human knowledge will ever be total knowledge of anything.

6.2. Facts The concept is the relation as derived from the sensations.

When these sensations are perceptions, then they are causes by objects; and the idea is that the concept then expresses the relation, not only between the sensations, but between the objects that caused the sensations. Thus, when my "green-reactions" (perceptions) are recognized as the same, I also recognize that the wall and the grass (the objects) are also the same as each other (in color; that is, as causes of these reactions).

DEFINITION: A FACT is a relation among objects.

Hence, what we know objectively (what we understand) are not objects, but *facts about* objects. We *react to* objects; but our reaction is subjective. When we understand, however, we circumvent the subjectivity by being conscious of relations; and so by knowing the relations among the subjective effects of the objects, we understand facts about them.

Thus, it is a fact that grass is green; it is a fact that you are reading this page (that's a relationship between you and it); it is a fact that the page is an object (that is, that it is causing you to react). We don't understand anything but facts about anything.

And, of course, facts are always abstract. Since they are relationships, a fact about some object always leaves out other relationships (facts) dealing with that object.

Further, you can't replace the object with a set of facts about it; it is the term of the relationship, the relatum; the fact is the relation-

ship it has. Our factual knowledge will never be all-inclusive.

Nevertheless, our factual knowledge is the only objective knowledge we have. Sensations, if they can be called "knowledge," are subjective knowledge; sensations are not like the causes of them.

But I said earlier that the relationships we understand can be thrown off by some discrepancy in the chain of causes that goes from the object to our reaction; and thus the concept we get might not turn out to be the same relation that the fact is.

This is the next topic.

6.3. Truth Suppose, like the colorblind man, you see the green wall and the pink wall as the same color.

Notice that the *concept* "sameness in color" is a perfectly valid or worthwhile concept. That is, colors are related by sameness, and even this particular type of sameness; it is just that in this case, the two walls aren't related this way.

But the colorblind man *makes the judgment* that "this wall is the same color as that wall" (that is, when his complete act of understanding includes these two sensations and their objects as related in the way the concept says), *then* he has made a mistake.

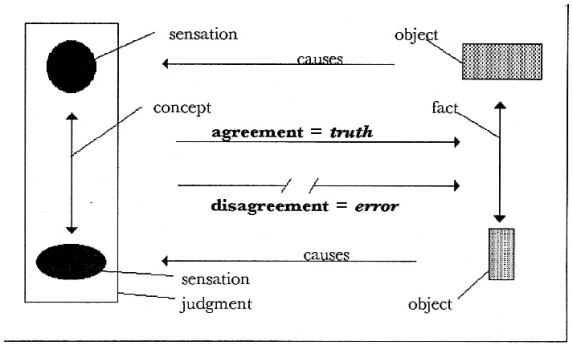
If, however, he realizes that he is colorblind and asks someone, and the other person says that they're different colors, and he accepts that, then the judgment he makes is a correct one, because he understands the walls to be related in the way that they are in fact related. His judgment agrees with what the fact is.

DEFINITION: TRUTH is the fact that the judgment of what the fact is agrees with what the fact is.

DEFINITION: ERROR is the fact that the judgment of what the fact is fails to agree with what the fact is. "Agrees with" of

course, means "involves the same relation as"; but the point here is that the fact is the standard to which the judgment must conform, or the judgment is in error.

Notice that truth is a fact (when it occurs), and so is error. That is, truth is *a relation between relations:* the relation understood (the judgment) and the relation among the objects (the fact). Error, of course, is the fact (relation) of discrepancy between these two relations.



6.3.1. Goodness/badness and humor But why does the judgment have to agree with the fact?

Why couldn't you take the judgment as the standard and demand that the fact agree with it (and perhaps change the fact until it did come to be what you thought it "really is").

In fact, there's no law that says you can't do just that. The catch is that we don't call the relationship "truth/error" then, but "goodness/badness."

That is, when we understand something as "really" being a

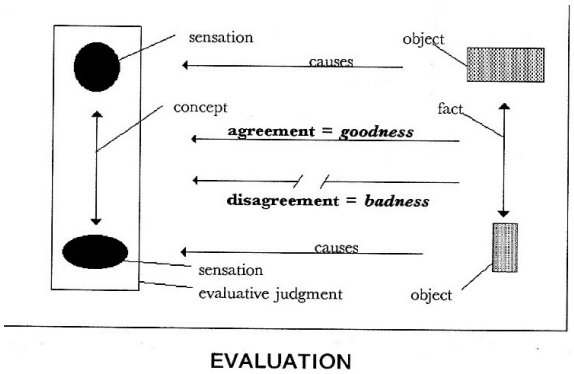
certain way, and yet it isn't in fact the way we understand it, there are times when we don't change our minds, but say, "There's something wrong with that thing; it *ought* to be like this"; and then we try to change the object until *the fact* about it agrees with our understanding of the way it "ought" to be.

- **Whenever we use the term *ought* we are taking our understanding of things as the standard to which the facts are expected to conform.**

DEFINITION: EVALUATION is thinking which uses the *judgment* as the standard to which the *facts about the object* are to conform.

DEFINITION: Something is called GOOD when the facts about it agree with our understanding of the way it ought to be.

DEFINITION: Something is called BAD when the fact about it disagrees with our understanding of the way it ought to be.



EVALUATION

6.3.1. Goodness/badness and humor

Hence, goodness and badness are just truth and error looked at backwards. We say that it is bad for a man to be blind, because we expect him (because he has eyes, whose nature it is to see) to be able to see; and he can't. Rather than say, "Oh, I made a mistake; not all human beings can see," we say, "This is a bad example of a human being; he has something wrong with him; let's correct it." The generalization overrides the instance to the contrary and gives us a motive for making the instance agree with our understanding.

When we can't do this, we *suffer*, or are *frustrated*. The reason is that the world appears now to us as contradicting our understanding of it; it isn't the way it "really is," because we won't give up our understanding and simply say we made a mistake. We insist on expecting the facts to agree with our understanding of what they "really are."

A whole book could be written about this: why we think this way, whether and under what conditions it is legitimate to think this way, what moral badness is, and so on and so forth. But since in this book we are interested in truth rather than goodness, we will just note a few important points.

- **1. The evaluative judgment is "made up"; there are *no objective standards* for making an evaluation.**

This is necessarily true, since the "standard" used for evaluation is an *ideal*, which is created by using the *imagination*, and which you are using to see whether what is "out there" agrees with it or not. How then could you have got this standard from what is objective? Ideals never exist as such.

- **2. The subjectivity of "good" and "bad" and values in general does *not* mean that *morals* are subjective.**

This area of morals (Ethics) is a whole field or series of fields in itself. Basically, it deals with (a) which acts we perform are inconsistent with our reality (i.e. when are we acting hypocritically, as if we weren't what we really are), and (b) why should we act consistently (honestly) if we can gain by inconsistency.

"Morally right" and "morally wrong" are defined by whether the act is consistent or not (e.g. it is morally wrong for a person to steal from others if he claims the right not to have others steal from him). *Such consistencies or inconsistencies are simple facts, and do not depend on anyone's knowing them*. Hence, they are not *values;* they have nothing in themselves to do with your *expectations* of people's moral behavior (your *moral ideals,* which would make you say a person is a "good person" or an "evil person").

That is, you may *expect* a person never to be a hypocrite and always behave consistently, and thus have *moral standards*. But these standards and expectations are *not* the same as *the morals themselves*.

Since morals are facts, morals belong more to the realm of *truth* than the realm of values. And this leads to the third point:

- **3. Truth and values are *opposites*: truth is not a kind of goodness, and goodness is not a kind of truth.**

One of the mistakes today is to regard truth as a "value" and to consider whether some truths are not "better" than others.

One source of contemporary relativism is the realization that values are subjective (which is true), and to conclude that if they are, so are morals and so is truth (both of which conclusions are false).

Thus, a good deal of what used to be education in morals (where you were taught that stealing, lying, murder, adultery, and so on were objectively wrong and given the objective reasons why they were inconsistent) has become in the present day "values clarification," where you are given situations of, say, cheating or sexual

intimacy and asked, "what kind of person do you want to be? Which of these acts do you feel 'comfortable with'?"

A person who is "comfortable with" getting his sexual satisfaction by whipping another till blood flows is assumed to be following a "different lifestyle," which is "objectively no better or worse" than any other sexual "lifestyle."

—And this is true, if the issue is framed *purely* on the level of *values,* which are subjective. But there is also the question of whether we can be consistent as human beings if we inflict pain and physical injury on others.

But to pursue this further would lead us deep into ethics and its relation to *axiology* (the study of values), and we must press on. Suffice it that "value clarification" is **not** the same as moral education.

To return to the relation between our judgment and the fact, there is one other way of considering the *disagreement* between understanding and the fact. This disagreement, we said, is error if you take it that the understanding doesn't agree with the fact; it is badness if you take it that the fact doesn't agree with your understanding. But suppose you don't take sides, and just notice *the fact of* the disagreement.

DEFINITION: HUMOR or THE COMIC is a disagreement between the fact and our understanding of the fact, when the person notes the simple fact of this disagreement as a fact, and does not "expect" either one to agree with the other.

Thus, when the coyote blows himself up trying to bomb the roadrunner, we laugh; because even though he has destroyed himself, we don't really sympathize with a cartoon coyote (then it would be

horrible), and we see in a detached sort of way the discrepancy between what he expected to happen and what actually happened. The coyote and his plans backfiring becomes a kind of symbol for the way the world is; this sort of thing happens; and so we notice the discrepancy itself as a kind of fact and a truth; and it pleases us.

Again, we could make a great deal of this and go into the various kinds of humor; but, not to mention that it is extremely unfunny to analyze the funniness of the funny, it is not really to our purpose. It is enough here to say that humor involves a peculiar kind of understanding: the understanding that it is a fact that the world isn't always understandable. Things don't always make sense.

Look at that statement from one point of view (as an evaluation), and it's horrible; look at it from another (as an effect or error), and all it means is that we make mistakes; look at it as the humorist does, and it's funny. This is why, by the way, so many humorists have really horrible childhoods.

- **Note that humor does not evaluate**; when it passes over into evaluation, it becomes *satire,* and isn't funny any more.

Finally, let me just mention one other thing that I am not going to talk about here.

There are times when, instead of using our five senses as the "receiving instruments," we use our *emotions* as the sensation as caused by the external object. Thus, you look at a lion, and you feel a certain type of fright. Two days later John yells at you, and you feel the same kind of fright. You notice the sameness in the emotional effects, and realize that the objects produced these effects, and so in telling about it you say, "John roared at me like a lion."

Or you look out at the sunny field and it makes you feel good;

and you notice that the feeling that the field causes in you is the same sort of feeling you get when someone smiles at you. And so you talk about "the smiling field"; and people understand what you mean.

Notice that there are no teeth in the field, no lips, nothing by which it looks like a smiling face. Nor does John's yelling actually sound like the lion's roar, or his face look like the lion's. The only connection between the two is the emotion they produced.

DEFINITION: An ESTHETIC CONCEPT is a relation based on the emotions caused by the objects.

Esthetic understanding does understand facts about the world; real, objective facts. But to show how this is the case, and why esthetic concepts are tricky, would take a whole book in itself (in fact I wrote one, called *Esthetics*). So I will drop the subject at this point.

6.3.2. Pragmatism's criterion of truth

William James was an important philosopher in the only "school" of philosophy in America that has gained any international recognition ("Pragmatism").

He define truth as "what works," or "what has a cash value." Sounds very American, doesn't it? By this, however, what the pragmatists mean, basically, is that something is true, not if it "agrees" with some putative "reality out there" (they hadn't solved the Kantian problem), but if it fits together into the rest of what you know so that the whole thing makes sense. If all your knowledge goes together, then intellectual life is at least possible; and if some "knowledge" contradicts other things you think true, then you can't practically live out your "knowledge."

Since Kant had for practical purposes destroyed the "agreement"

definition of truth, this "definition" that you can throw out as false something that isn't useful for life seems, practically speaking, to be as good as any.

But of course, it is a definition based on despair, in one sense. James tried to prove, for instance, that the existence of God was "true" based on the fact that those who believed in God's existence as a fact had happier and better integrated lives than those who didn't. But there are plenty of people who seem to do better believing that there is no God and no heaven and hell—which means that God's non-existence is true for them.

So we're back to relativism, which contradicts itself, as you will recall, and so certainly must be false even by James's definition. But then James's definition, which leads into this position, must itself be false—it certainly isn't useful to say that a fact is a fact for me and a non-fact for you, just because I get more out of admitting it and you get less.

Note, by the way, that this business of something's being "true" if it "works" or is useful to fitting your life's pieces together makes truth a *value* among other values. It is pragmatism which is partially responsible for the confusion in our country I mentioned above between truth and values.

Now I think James's definition can be a useful *criterion* for judging *whether* something is true or not. It's not too good at finding when something is true; but if "facts" contradict each other, then something has to be false.

That is, test what you think to be true. Does it fit with the other facts you know? If it doesn't, then there must be something wrong somewhere. Reality doesn't contradict itself, and if your knowledge does, then your knowledge can't be in agreement with reality.

6.3.2. Pragmatism's criterion of truth

As to a critique of the definition as a definition, I think our analysis above has shown a way the "agreement" definition of truth "works" better than James's. Hence, by his definition of "truth" our definition of it is "truer" than his.

SUMMARY

Our minds have two kinds of activity: (1) the reactions (including the storage and retrieval) to energy from outside: sensation, and (2) knowing the relationships among these reactions, and thus the relationships among their objects: understanding.

A concept is the form of the act of understanding; it is the relationship and its foundation (the aspect in the relata, or things related); it is not something, but just an abstract aspect of the judgment, which is the concrete act of understanding, and includes the sensations and their objects. Concepts are abstract, in that they ignore all other aspects and relations except the one in question, and hence human knowledge, which is understanding, is always incomplete. The incompleteness, however, does not imply that it is false.

A fact is a relation among objects; hence, what we understand is not objects, but facts about objects. Factual knowledge is the only kind of objective knowledge we have, since sensations (the reactions to the objects) are subjective.

Truth is the fact that the judgment of what the fact is agrees with what the fact is; if there is disagreement, this is error. The fact is the standard to which the judgment must conform.

If we expect the facts to agree with our judgment (ideal) of what they "ought" to be, we are not understanding, but evaluating; and our judgment is not said to be true or mistaken, but the objects are said to be good or bad. Goodness is the agreement of the facts with our evaluative judgment; badness is the disagreement.

Evaluative judgments are created by using the imagination, and

so are subjective; there are no objective standards for evaluating. But this does not mean that morals are subjective, because morally right means the fact that our acts are consistent with our natures; our acts are morally wrong when in fact they are inconsistent. Hence morality deals with truth, not values. Truth and values are opposites; truth is not a value.

Humor is the recognition of the fact that there is a disagreement between our judgment and the fact "out there," with no expectation that one side "must conform" to the other. Humor does not evaluate.

When we use our emotions as "receiving instruments" instead of our "five senses," then concepts formed are esthetic concepts, and judgments of facts based on these concepts are esthetic judgments.

William James's pragmatic "definition" of truth as "what works" (in the sense of what makes information fit together consistently) does not "work" as a definition of truth, since then the same thing could be true for one person and not true for another if it fit or did not fit his lifestyle, which makes truth a value; and the pragmatic criterion itself would turn out to be false for anyone for whom it "worked" less well than some other definition of truth. Used negatively, it can be used as a criterion of whether something is false, since there are no real contradictions, and therefore, some apparent "fact" that contradicts what is already known could not really be a fact.

6.3.2. Pragmatism's criterion of truth

CHAPTER 7

Language

7.1. Language That, then, is a brief sketch of how we can get at the truth.

But having acquired a true judgment of the way things are, how do we go about letting other people know of what we discovered, so that they don't have to go through the whole painful process for themselves? For that matter, how do we go about storing these concepts and judgments so that we don't have to "rediscover" each time that grass is green or that two and two are four?

Understanding, as I tried to show in *Living Bodies,* is a spiritual act, and as such can't be "stored." But since we are bodies organized with an act which is *both* spiritual *and* a form of energy, we store concepts and judgments *by creating special sensations* (using our imagination) whose function is precisely to "reactivate" the spiritual act in question.

And this is also how we communicate with others. Since no one can get into anyone else's mind or consciousness directly, then we have to produce something that can be perceived by the senses in such a way that the one who sees or hears it can understand the relationship that we understood when we produced it.

DEFINITION: LANGUAGE is the expression of mental acts in perceptible form.

So we don't exactly "think in a language"; the thought itself is independent of language. But as soon as we want to *save* that thought or *communicate it with others*, we make up something visible that will stand for it, and we are using language. Thought *expresses itself* in language.

Of course, there are many different mental acts besides the act of understanding: (a) Sensations (including perceptions, images, and emotions), (b) choices, and (c) acts of puzzlement (non-understanding). Each of these sorts of things have their expression in language. "Ah!" expresses an emotion; "Shut the door," a command (involving an "act of the will"; "How do you express ideas?" an act of puzzlement. The different sorts of mental activities correspond to the different "moods" that are talked about in grammar. The "declarative" mood is the way acts of understanding are expressed; the "interrogative" mood expresses questions; the "imperative," commands; and the "exclamatory," emotions.

Interestingly, though all but the declarative mood express acts other than understanding, *they must all be expressed in such a way that they can be understood*. That is, the hearer or reader must be able to take the expression and *understand* that it stands for the way the speaker feels, or what the speaker wants the hearer to do, or what the speaker wants to know.

- **Hence, understanding is always involved in language, because the one who hears it must be able to know the relationship between the expression and the mental state that the speaker**

wants to convey to him.

7.1.1. Its social arbitrariness

What can be used as language? Anything that people agree on.

It seems that in general human beings use vocal sounds as the primary language, because these leave your hands free (as, for example, the deaf-mute language does not), and the person you are communicating with does not have to be looking directly at you. But we also use visual languages, like the deaf-mute language and the language you are now responding to. Certain handicapped people have a language involving touch—which, however, is very inconvenient.

Those of us accustomed to English perhaps thing of written language as a copy of vocal language; but this is not true in all cultures. The Chinese written language is, I understand, a completely different language from the spoken languages of China, with its own grammar and words. You can translate from written to spoken Chinese; but it is really a foreign language. That is, if two people who speak entirely different dialects read the same text, the words that they use to express the written text will be different words, and the grammar of the translations will be different grammar. This is handy for the Chinese, because all the different dialects can then communicate by the written language, without anyone's having to learn a whole list of what are in fact different languages.

Ludwig Wittgenstein has made a great deal of language as a "game," with its own rules, which apply only within the game. He got to this from the opposite view of thinking of language as "pictures of facts" (He considered "facts" as what I called "sensations," which I would think is rather wide of the mark), and the story goes that he was riding on a train and explaining his theory of language to a companion, who shrugged his shoulders, and then

said, "And what fact is that a picture of?" He couldn't answer, and so scrapped his "picture" theory and gradually developed the "game" theory.

Noam Chomsky, however, thinks that language is not really arbitrary. His idea seems to be that there is a kind of "built-in grammar" in our brains, which makes a kind of "core-grammar" that every language is a variant on.

I think both of these people are, in a certain sense, completely wrong, but in another sense right. Chomsky and the linguists are wrong in looking at the brain or some kind of "instinct" for the common core of language; but they are right in thinking that there is a common core, because any language must be understood by those who use it. Hence, they must be able to know the relationships between the expressions and the mental acts to be conveyed by them—and relationships need, as we saw, relata, relationship, and foundation. This will form a common core. It is also the case that there are the four types of mental conditions that need expressing, no matter what your language is.

But Wittgenstein was right, I think, in saying that how you present these three elements—in what order, whether some elements are implied and not expressed, and so on—makes no difference, as long as people can figure out how it is done. Further, it doesn't matter whether you express the different moods in basically the same way, or by vastly different types of expressions.

For instance, we can express a question by an inversion of subject and verb: "Is this a question?" or simply by a difference in tone of voice or punctuation "This is a question?" Conceivably, there could be a language in which "This is a question" would be the statement and something like "Ques*&" would be the equivalent of the English "Is this a question?" We can express the question, "What do

7.1.1. Its social arbitrariness

you mean?" by a shrug of the shoulders and a certain facial expression, and the shrug with a different facial expression means, "What you are saying makes no difference to me." We can express a command in words, "Take that outside," or simply by pointing.

These arbitrary relationships can be very different from culture to culture, and are often the subject of intercultural "incidents." The story goes that there was an American seated in an Italian restaurant, who looked at a pretty girl across the room. She said something to her escort, who came over and tried to punch the man. When the dust settled, his companion told him that what he had been doing with his hands as he looked at the girl was an obscene solicitation in Italian.

I myself once brought back from Washington a set of notepaper with a picture of an owl on it as a gift to an Argentine lady who was staying with us; and the expression on her face when she opened the package made me ask my wife (who is Argentine) what was wrong. It seems that in Argentina, to say "You're an owl," is the equivalent of our "You're an ass." It took a while to straighten that out. (In Latin America, incidentally, "She's monkey" means "She's cute.")

In spite of the fact that language is arbitrary, however,

- **Language is *socially* arbitrary. That is, the people as a whole in the culture determine what the language is to mean. The individual is not free to "make it mean" what he chooses.**

This should be obvious, because language involves communication with others, and so there has to be an agreement on what is communicated in order for others to be able to understand what is meant; especially since the symbols language uses have no real "natural" relationship to what is expressed.

In this respect, I think that some of the things the feminists have tried to do with language miss the point.

First, they have imputed meanings to words that didn't actually have these meanings (such as a derogatory meaning to the respectful term "lady," a "sexist" connotation to the term "chairman" because of the "man" in it, but a non-sexist connotation to "woman" even though it contains "man."

The result of the declaration that these words "actually, secretly" mean what the feminists claim they meant, plus the inconsistency in which words had the secret meanings and which ones didn't has had two effects: (1) it has *created* invidious connotations to terms that didn't have them before, and (2) has caused resentment among those who now have to consult the feminists to find out whether innocently intended expressions will be taken innocently or not.

But more important, it has made language a political tool expressing *social values* more than a device by which we can express as clearly as possible *what we understand to be true*.

This shift from "language as vehicle to share understanding of truth" to "language as expression of values" is a severe disservice to language, I think. It is hard enough, God knows, to express your ideas clearly; but when grammatical awkwardness and linguistic vagaries are decreed, it makes what you are saying doubly difficult; because it is first run through the processor of whether it is "acceptable" before it can even begin to be understood.

As an example of what I mean, consider that there is now no acceptable way to speak of "brotherhood." We can talk of "siblings" meaning "children of the same parents" without being "sexist"; but there is no English word "siblinghood," expressing the abstract idea of "being a sibling." The only English word for this concept is "brotherhood"; and it is forbidden. And since, as a Christian, I happen to think that brotherhood is the most important relation

human beings have with each other, the fact that this relationship can now not be expressed in English eliminates something very, very important.

Again, the decree that "person" should replace "man" used in the generic sense where it includes women now means that God (who is, according to my faith three persons) no longer can be called a "person," and Jesus, who is a human being but not a human person (he is a divine person), can't be spoken of accurately.

These sorts of unintended consequences are very apt to follow when you start saying that words are now to have new meanings because you don't like some of the ways they are used. I personally think that "sexually neutral" language as imposed by the feminists is profoundly anti-Christian—whether it was intended to be so or not.

7.1.2. Meaning in language

Language, in any case, expresses a mental state; and one of the most important mental states is that of understanding facts.

It therefore follows that language has a relationship with both the mental state expressed, and when that mental state is understanding, it has an indirect relationship with the fact understood by the speaker.

DEFINITION: The MEANING of a linguistic expression is the mental act expressed by it.

- **Meaning is the expression *insofar as the hearer is calculated to understand what the mental act of the speaker was.***

Meaning, then, is almost what you "intend to express," but not quite. For instance, if you go outside and say, "What a beautiful day!" intending to speak ironically, but your tone of voice does not

in fact express the intention of meaning the opposite of what the words say, then you *expressed* satisfaction with the weather, when you *wanted to express* dissatisfaction.

So the meaning of an expression is what (according to the conventions—the arbitrary rules—of the language) is what is *actually expressed,* whatever the intention of the speaker.

The speaker knows what his mental act is; he is trying to convey it to the hearer. Thus, it is *his* (the speaker's) task to make it possible (and easy) for the hearer to understand what his mental act is; so the speaker has to produce an expression which objectively conveys what he "intends." The expression "You know what I mean" when you didn't express what you meant is a copout. The only way anyone else can read your mind is through your use of language, and if you abuse the language, don't be surprised if you are misunderstood.

Notice also that the meaning refers (in its primary sense) to *the whole expression*. That is, it is *sentences* that have meaning, really, not *words*.

- **Words in isolation have *potential* meaning, depending on what they *can* mean when used in sentences; words used in sentences have *actual* meanings *when they express relationships.***

DEFINITION: The MEANING OF A WORD is the RELATIONSHIP actually or potentially expressed by it.

That is, though strictly speaking the whole sentence is what actually "means" something, certain words in the sentence do the job of expressing the actual relationship. What relationship (or relationships) a word expresses is one of the things that is dependent on what the culture wants the word to do.

7.1.2. Meaning in language

The potential meaning of words is the kind of thing you find in dictionaries (refer back to our definition of "definition" in earlier chapters: these will be nominal definitions). For instance, the word "green," we are told, has the meaning, "of a certain color, a mixture of yellow and blue," and also "young, naive, inexperienced." If you use "green" to mean "well-versed in computer science," you aren't speaking English.

- **Not all words have meanings.**

Many words (in fact most words) used in a sentence do not do the job of expressing the relationship which the sentence itself expresses. Some words as used in a sentence merely point; others have functions which allow us to combine words into word-groups which either point better or express the relationship more clearly than a single word, and so on. Some words have *only* this pointing or combinational function and have no meaning at all: "this, John, and, in, with" would be examples.

Most words that have meanings can also be used to point: In "Dogs have fur," "dogs" merely points to the class of dogs; what they have in common (how they are related) is expressed in "have fur." But in "Golden retrievers are dogs," you are pointing to the class of golden retrievers, and you are saying that they are similar in doggiess—and so you are using "dog" in its meaning-function.

In the next chapter, we will see a bit how this works, and what you can do once you know how it works.

7.2. Truth in language

But here, let me remark that sentences have a special sort of truth.

They express mental acts, and are supposed to be expressing the mental act of the speaker. But, as I pointed out above, they may fail to do this.

Now there are several ways in which this can occur. But first of all, let us lay a little groundwork and say what we mean by calling statements "true" and "false."

DEFINITION: A *linguistic expression* is TRUE when it expresses what is actually a fact.

DEFINITION: A *linguistic expression* is FALSE when it expresses as a fact what is not a fact.

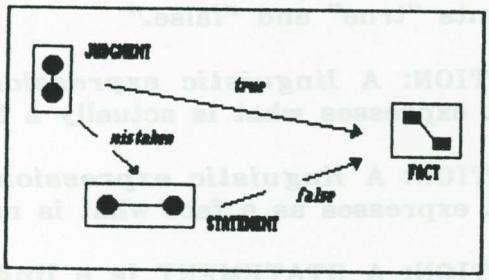
DEFINITION: A STATEMENT is a linguistic expression of a judgment, and hence of a fact.

Note first that statements are the linguistic expressions which can be called "true" and "false"; other expressions, such as commands, questions, or exclamations, aren't either true or false, because they don't express judgments. They may or may not express what the speaker *intends,* but they aren't "false" when they don't. That is, "Go shut the door" is not *false* when what you intended to command is "Go open the door"; it's just mistaken.

Note secondly that statements' truth or falsity depends on whether the *statement matches the **fact***, not on whether it matches the *judgment.*

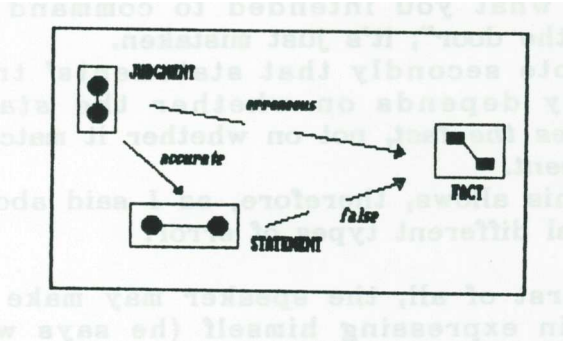
This allows, therefore, as I said above, for several different types of error.

First of all, the speaker may make a mistake in expressing himself (he says what he thought expressed his act, but which doesn't, possibly because he thought a word meant something which it didn't).



For example, a person who says, "I'm infinitesimally grateful to you" thinking "infinitesimal" meant "very infinitely" would make a false statement, because what the statement means is, "I'm insignificantly grateful to you."

Secondly, he may have an erroneous judgment and express it accurately, in which case his statement will fail to express what the fact actually is.



7.2. Truth in language

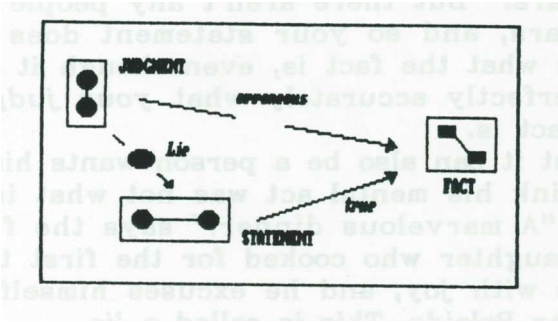
For example, you think that there are people on Mars and you say, "There are people on Mars." But there aren't any people actually on Mars, and so your statement does not express what the fact is, even though it expresses perfectly accurately what *your judgment of* the fact is.

But it can also be a person wants his hearer to think his mental act was not what in fact it was: "A marvelous dinner!" says the father to his daughter who cooked for the first time. She glows with joy, and he excuses himself to look for the Rolaids. This is called a *lie*.

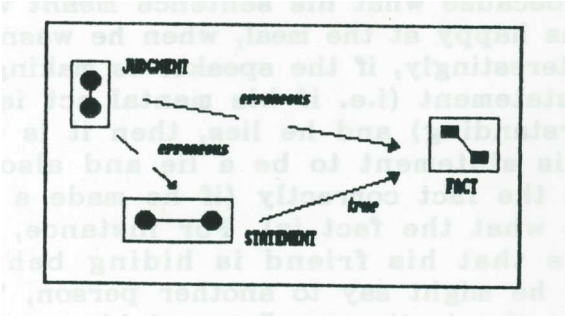
DEFINITION: A LIE is a sentence that intends to express the opposite of the speaker's mental act.

In the example above, the father didn't try to state a fact (he simply expressed a satisfaction which he didn't feel); but he lied nonetheless; because what his sentence *meant* was that he was happy at the meal, when he wasn't.

Interestingly, if the speaker *is* making a factual statement (i.e. if his mental act is one of understanding) and he lies, then it is possible for his statement to be a lie and also to express the fact correctly (if he made a mistake about what the fact is). For instance, if John thinks that his friend is hiding behind the chair, he might say to another person, "There's no one else in the room" to get him to talk. But if his friend had got up and left, he would be lying (because he thought he was there), and yet what he said would be true (because there wasn't anyone else in the room in fact).



Of course, a person without lying can make a mistakenly true statement, if his judgment is erroneous and he inaccurately expresses it, and the two errors happen to cancel each other out. Suppose John thinks you are infinitely grateful to Henry, when in fact you are very little grateful; He then says, "You are infinitesimally grateful," which is true.



But to return to deliberate misstatements, the lie about the people in the room is a true statement, even though it is a lie; because it in fact states what the fact is. If John had happened to say, "There's someone hiding behind that chair," he would have been "telling the truth," but his statement still would not have been true.

Lies like "What a wonderful dinner!" are not, strictly speaking false, because they aren't statements of fact. They can by analogy be called false, because they *imply* a statement of fact; since they have meaning, they are the equivalent of "I think that the dinner was wonderful," which, of course, is not a fact if the person doesn't think it was.

But linguistic expressions can only be true or false insofar as they relate to the fact, whether the fact is the fact of the person's mental state itself (as above), or the fact that the person was trying to express. And they are true or false irrespective of whether the speaker has made a mistake or not or is lying—i.e. irrespective, really, of his mental state. If the statement expresses as a fact what really is a fact, then it is true; if it doesn't then (whether because of a lie or a mistake) it is false.

Lies belong in the study of *ethics*, because they are *deliberate misuses* of the act of communicating facts. But there are all kinds of complications, and statements which are literally false may not be lies, because they are using language in a different mode from factual communication. Let us leave these subtleties to books on ethics.

- **Note that acts of understanding are either true or mistaken; statements are either true or false.** The reason for the distinction in terminology is that understanding can be "not true" only if a mistake is made (you can't lie to yourself, really, because if you know what the truth is, you can't believe the opposite), whereas there are two ways in which a statement can be not true.

Now let us confine ourselves to statements of fact, and see how these are constructed, and what we can do based on the way words are used to express what is true.

7.2. Truth in language

SUMMARY

We store our acts of understanding (so as not to have to relearn them) by using our imaginations to make images that stand for them and reawaken them. Perceptible symbols of mental acts also allow us to communicate our mental states with others. Language is the expression of mental acts in perceptible form.

Judgments are not the only mental acts; there are exclamations, commands, and questions also; but in order to communicate these states to others, they must be in a form which can be understood by the hearer; so understanding is always involved in language.

What symbol is to stand for what act of the mind is arbitrary, though not totally, because relationships need to indicate what is related and the kind of relation. Further, language is socially arbitrary; the culture decides what words and so on are to mean, and if a person goes against this, he will not be understood. Attempts to wrench language into "acceptable" form misunderstand that language's main function is to convey facts, not to express attitudes, and also have unintended consequences which can be serious.

The meaning of a linguistic expression is the mental act it expresses; but the meaning expressed might not be what the speaker intended to express, because he might have misused the language. Isolated words have only potential meaning; actual meaning is conveyed by the sentence. The meaning of a word is the relationship it expresses. Words can either mean or perform other functions, such as point; some words potentially either mean or point, depending on how they are used.

Statements are linguistic expressions of judgments, and hence of facts; they are either true if they match the fact, or false if they don't (judgments which do not match facts are simply mistaken, not false).

Since the truth or falsity of the statement depends only on

whether it matches the fact, statements which match erroneous judgments are false, as well as statements which do not match correct ones. When a person deliberately tries to misstate his judgment, this is called a lie. Sometimes, lies or mistakenly stated judgments can be true, if the judgment is mistaken and the misstatement of the judgment cancels out the mistake of the judgment itself.

7.2. Truth in language

CHAPTER 8

Logic I: Propositions

8.1. Science The object of this chapter is to introduce the science of logic by first analyzing the structure of statements of fact.

We will discover in the next chapter how we can arrange them so as to get other statements which must be true if the original ones were; and then we will deal with logical operations involving multiple statements: the "syllogism."

But before we start, let us briefly pause to look at what a science is, and classify the various types of sciences.

DEFINITION: A SCIENCE is a set of factual statements on some subject together with the evidence for the statements' factuality, and the relation between the evidence and the statements' factuality.

DEFINITION: The SUBJECT-MATTER of the science is a set of objects related together in a certain way.

So every science deals with a definite subject-matter. Two sciences

(like physics and chemistry) might deal with the same set of objects (bodies); but physics considers them as related by whatever produces "physical changes" and chemistry by whatever accounts for "chemical changes." The set of objects themselves are sometimes called the "material object" of the science, and the particular foundation of the relationship in question is called the "formal object" (because it is a kind of "form" that each object has).

This makes a science a definite "body" of knowledge. But in addition, the set of factual statements that constitute the "knowledge" of a science is not just a haphazard set of "known facts"; the facts are interrelated in that they depend on some kind of *theory,* which gives the evidence for their factuality.

Hence, a science is a "systematic" body of knowledge. If you have scientific knowledge, you know that X is true (e.g. that gases expand when heated), you know why you know that it is true (because in the one instance inductions have produces the "laws" of gases, and in the other, the Kinetic-molecular theory of heat explains why these inductions are based on the nature of a gas). Hence, you know what caused you to have this piece of knowledge, and why it is the cause, as well as how it fits into other related pieces of knowledge on the same subject.

Aristotle's definition of science as "knowledge through causes" amounts to the same thing; because the evidence for any factual knowledge is the cause of its being knowledge and not opinion.

8.1.1. Kinds of sciences

An analysis of science and scientific method is a whole science in itself, and it is not our purpose here to go into it. (If you want a more extended discussion on science (and also on logic) see my *Modes of the Finite Volume IV: Modes of Thought*. It also contains a rather extended critique of modern symbolic logic, and why it should not be used to analyze statements.)

8.1.1. Kinds of sciences

I just want to give a brief classification of different types of sciences to show where logic fits in.

Theology differs from all other sciences in that the evidence it uses is the testimony of God. Its task is to understand this testimony, showing that the apparently contradictory statements aren't really contradictory, and that revelation does not contradict what is known from other sources of evidence (like philosophy or empirical science).

There are two sciences whose evidence is internal to the science itself: logic and mathematics. Logic uses nothing but statements, and does not investigate whether any of the statements are true or false; all it is interested in is whether the statement called the "conclusion" is one which cannot be denied without contradicting what was earlier said. (Of course, if what was said earlier is true, then the conclusion will then have to be true also, because you can't deny it without contradicting what is true. So logic has an indirect relation to the facts of the world.)

Mathematics deals with relationships and relata, and is basically the science of manipulating relationships so that new relationships are generated. Like logic, it is not interested in whether these relationships are facts or not, but in the characteristics of the type of relationship as such (e.g. "belonging to" "greater than") and what can be done with them based on these characteristics. Insofar these relationships express facts, then mathematics can be "applied" to the real world.

There are some philosophers who have tried to make logic a branch of mathematics, on the grounds that statements are ways of expressing relationships—and others who have tried to make mathematics a branch of logic, on the grounds that manipulations of relationships is what logic does. But I don't think either of these has been successful, because statements are a peculiar kind of expression

of a relationship (the indirect one which is the expression of the understanding of a fact); and because there are relationships which are not the same as what logic deals with, and whose manipulations are therefore different from those in logic.

- **Note that much of contemporary "symbolic logic" suffers from this mistake of confusing logic and mathematics.**

The result is that, while with a certain forcing of statements, they can be made to fit what symbolic logic does, the logical sequence of contemporary symbolic logic is a *different* sequence from the logical sequences of statements, and it is not an expression of how we actually do logic. It turns language into a kind of mathematics, and is a very interesting, often fascinating, error.

Sciences which use facts learned from our five senses (i.e. from observation) are called *empirical sciences.* The most general of these is philosophy, whose evidence is the effects contained within our experienc*ing*—which shows how we can know facts at all. Hence, philosophy deals with "ultimate causes."

Other empirical sciences suppose that our observation gets us factual knowledge; and the evidence in these sciences is various effects connected with our factual knowledge. The different empirical sciences differ not only in the different objects they deal with but in the different types of effects that form their starting-points.

8.2. Statements Let that sketch suffice for an overview of the different sorts of sciences there are.

Now let us, as we said approach logic by analyzing statements of fact. Every statement of fact expresses a relationship understood among a set of objects; and because of this, every statement of fact

has to have two basic parts.

DEFINITION: The SUBJECT of a statement is the object or object-class about which the relationship is to be understood.

DEFINITION: The PREDICATE of a statement expresses the relationship to be understood about the subject.

In English, the subject of the statement generally comes before the predicate; those statements that have the predicate first sound "poetic" to us: "Blessed are the poor in spirit," where the objects you are talking about are the people that are poor in spirit, and what you are to understand about them is that they are "blessed" (i.e. they are the same as people we call "lucky" or "privileged.").

The idea here is that the word-group that functions as the subject of the statement calls to mind the objects that you are supposed to understand something about; hence, **the subject just points.**

Notice that *the words used* as the subject may do more (in themselves) than point; for example, "poor in spirit" has a meaning as well as pointing to a class of objects. But the statement above is not interested in the *characteristic quality* of "poverty", (i.e. what poverty is or what it is to be poor) but in pointing to the *people that have that quality*. The idea is that if you know what it means to be poor, you will be able to bring to mind a "generalized image" of "a poor person." In that sense, the meaning is used as a **means** for the pointing-function.

The predicate, on the other hand, is the word-group that expresses the *meaning of the statement:* **what is to be understood about the subject**, or what you are trying to say about the subject. Predicates include the *verb* of the sentence, which, according to grammarians, expresses the "action or state of being" of the subject:

in other words, what the subject is doing (because if it just is or is like something, this turns out to be some activity). But what something does relates it to itself or other objects in an intelligible way.

Another way you can look on the predicate is that it is a kind of "adjective" describing the subject. For instance, "John is running" could be expressed in a peculiar but understandable way by "John, runner (now)," where you can see the relationship John has in a little better way than the verbal way of putting it.

Remember, actual statements in a given language can use words any way they please to get across these two basic functions. For instance, in English, we say, "I run" or "I am running," and Latin would express this same statement by the single word "Curro," where the "-o" ending of the word tells you that the speaker is talking about himself (as opposed to "Curris"—"you run"—or "Currit"—"he/she/it runs"[no sexist problem here]).

8.3. Logic That is, I think, enough about statements as they actually appear in language.

Let us now try to move into the science of logic.

DEFINITION: LOGIC is the science which arranges statements in such a way that the final statement cannot be denied without contradicting what was already stated.

The first thing to note here is the following:

- **Logic is not concerned with the truth or falseness of the statements it uses.**

That is, logic is *simply* interested in generating a statement whose

denial involves a contradiction of previously made statements; whether those previously made statements are true or are mistakes or lies is irrelevant. Now of course, as I said earlier, when we use logic (when we reason), we understand the truth of the conclusion based on the fact that it has to be true because we know the previous statements to be true (from extra-logical evidence); but the logic itself is self-contained and is not concerned with this.

In one sense, you could say that logic "assumes" that the original statements are true "for the sake of argument," and then concludes that the statement it generates is true (on the supposition of their truth); but this rigmarole obscures the fact that logic is the pure manipulation of statements and "assumptions of truth" and so on have no real part in it.

There are logicians who don't subscribe to this; for instance, some who say the statement "The present King of France is bald" is a meaningless statement because nothing is referred to by the subject (there is no King of France at the moment, so how could it be true or false that he's bald?). But I think this misses the point. The statement is no more meaningless than, "Frodo Baggins was a very brave hobbit," which refers to an imaginary character. There is no Frodo Baggins.

The logicians would say that I have made a false parallel here, because my present King of France contradicts the fact that France is a real country which has no King. I am aware of this retort, which I think misses the point; but I do not want to argue the matter in a book like this. The difficulty comes, I think, from trying to give some connection with facts to logic, and not leave it just a connection of statements. So let us say that the more reasonable theory of logic is that it doesn't concern itself with the truth of its statements, but simply their form and the fact that the conclusion can't be denied without contradicting the premises (the other statements).

8.3.1. The proposition Now then, it turns out to be confusing to do logic with the actual languages that exist.

The reason is that logic uses its own rules for manipulating statements, and these rules are not quite the way we actually do things as we use real languages. That is, logic manipulates the subject and predicate functions to make new statements out of old ones; and so no matter what the language you use for logic, logic is always doing basically the same thing—and yet it might appear very different because of the different grammatical structures of the different languages.

Hence, logic creates an artificial sort of language which can be "translated" easily into the particular language of the culture; but it is a language which makes it easy to see what the logical operations are.

Some logicians get away from words altogether, replacing them with quasi-mathematical symbols, which then can translate into any language at all. I think the extremes of this generate more confusion than they eliminate, because they make it almost impossible to do the reasoning which is symbolized. As I said at the beginning of the book, reasoning is doing logic and knowing what you are doing; but if all you have is a bunch of p's and q's and squiggles, you can do the logic all right by mechanically following the rules; but it takes a superhuman effort to understand what is being done to the statements you are supposed to be transforming.

We will be doing some symbolizing; but I hope to make it a clarification and simplification rather than an obfuscation.

Then let us begin building our artificial way of making statements.

DEFINITION: A PROPOSITION is a factual statement

expressed in logical form.

Two things to note: First, it is a "factual statement" in the sense that it is that kind of sentence. We are not interested, as I have said so often, in whether it is true or false. It is called a "proposition" and not a statement precisely because it is "proposed" or "put forward" rather than actually asserted as factual or claimed to be factual.

Secondly, whether the proposition looks like a statement in any real language is irrelevant. "Logical form" means that there is a special grammar for the language of logic—though in general, it borrows words from existing languages (except in symbolic logic, where the symbols are the logical words).

To create a proposition, we have to know something about the grammar of ordinary languages:

- **NOUNS in existing languages have in themselves either or both of the functions of factual statements: they can (1) *point to an object* or object-class, and they can (2) *express the relationship among the objects* that they point to (or the foundation of that relationship).**

Thus, the word "horse" points in the statement, "a horse is an animal"; and it means (relates) in the statement, "a maverick is a horse." Depending on whether the noun is the subject or the main part of the predicate of the statement, it is used in its referent (pointing) or its meaning function.

Now then:

DEFINITION: A TERM in logic is a word or word-group that

is used as a noun.

Terms in logic, then, either point to objects or sets of objects, or express relationships among objects (or foundations of a relationship).

A term may be a **single word**, a **phrase**, a **clause**, or even a **set of interconnected clauses**. They may be one or ten or fifty or any number of words long. The point is that the word-group is unified and has one of the two functions above in a proposition.

In the proposition, "Every person who is reading this book during the fall of 1989 is something that is human," the first term is "person who is reading this book during the fall of 1989," and the other term is "something that is human."

Notice that the language called "logic" sounds a lot like English; but it looks a little peculiar.

Two things to note:

- **1. A term always stays the same through logical transformations of propositions.** This is true except for the tag called its "quantity" which we will discuss below (the "every" or "some" prefix that logic *attaches* to it. If you consider the quantity as not part of the term, then the term remains the same.

That is, terms are deliberately constructed in such a way that the term itself does not change when the propositions containing it change; in this way it is clear what the new propositions refers to and means.

- **2. A term is defined by the objects it refers to and the relationship among them.**

8.3.1. The proposition

That is, terms in logic have *one and only one referent* (object or class), and *one and only one meaning*.

- **The same *word*, therefore, can be more than one *term*.**

Thus, "pen" can refer to the things you write with or the things you keep pigs in. But the *term* "pen" has only one of those referents when you use it in a logical process; and if you introduce the other use of the word, you have introduced another term (and often ruined the logic), as in the following fallacy (called the "4-term syllogism") "A Bic is a pen, and every pen is something that can hold animals, and so a Bic is something that can hold animals."

Terms exist in propositions in the following way:

- **Every proposition has two and only two terms: a subject-term and a predicate-term.**

DEFINITION: The SUBJECT-TERM of a proposition is the word-group that is used in its reference-function in the proposition. This is the term that points.

DEFINITION: The PREDICATE-TERM of a proposition is the word-group that is used in its meaning-function in the proposition. This is the term that relates.

- **Every proposition has three and only three parts, arranged in the following order: First, the subject-term; second, the copula; third, the predicate-term.**

DEFINITION: The COPULA of a proposition is the

appropriate form of the PRESENT TENSE of the verb "TO BE."

That is, the copula (the "link") can be nothing other than **"am," "are," or "is,"** depending, of course, on whether the subject-term is singular or plural and first, second, or third person.

Now the idea here is that, since nouns tend to have either of two functions, logical form enables the predicate of one proposition to become the subject of another proposition. In *grammar,* the verb is part of the predicate; in *logic,* the grammatical predicate is *the copula-predicate complex.*

An example of what is going on can be seen from this: Every maverick is a horse; and every horse is an animal; and therefore every maverick is an animal. In the first of these propositions, the term "maverick" is the subject and "horse" is the predicate; but in the second, "horse" is used as the subject—which allows us (for reasons we will see) to attach the predicate "animal" now to the subject "maverick." Or we can say that since every maverick is a horse, then some horses are mavericks. Here the subject and predicate-terms are interchanged.

If you were using ordinary language, you couldn't do this. "Horses run in races" can't use the predicate as the subject of anything. "Horses run in races, and run in races is exciting, and so horses are exciting" is nonsense. But "horses are things that run in races, things that run in races are things that cause excitement, and so horses are things that cause excitement." That isn't profound, but at least it makes sense.

8.3.1. The proposition

8.2.2. The "quantity" of terms

But what about those "every's" and "some's" that appeared and disappeared in the propositions?

These are not part of the term itself, but *logical modifiers* of the term. If they were part of the term itself, they would have to stay the same in the transformations.

DEFINITION: Terms are said to have QUANTITY in their reference-functions; the quantity of a term is of two types:

DEFINITION: The reference is DEFINITE if the exact objects referred to can be known from the use of the term.

DEFINITION: The reference is INDEFINITE if the *exact* objects referred to cannot be known from the use of the term.

Traditionally, "definite" reference is called "universal" (or individual) quantity; and indefinite is called "particular." I have several problems with these designations, however, and they are serious enough to make me abandon them. First of all, when we say "particular" in ordinary language, we mean "definite," and this is exactly opposite to the meaning in logic. Secondly, "universal" seems to refer to the class as a whole, and not to each member of it. I think the designations I have made are less confusing.

Now in both cases, the term itself will refer to an object or class of objects. But it can refer to the whole class or a definite (point-outable) subset of designable members of that set, or it can refer to a part of the set without specifying which individuals make up that part. In the last case, the reference is *indefinite, even though the reference might be to some defined fraction* of the class (e.g. "half

of the students in this class" doesn't tell you *who these are*, in spite of the fact that you may know that there are ten of them).

"Ten students" is an *indefinite* reference; "These ten students" is definite. "Students" is an indefinite reference, while "all students" is definite. "Every student" is definite, as is "each student" or "any student." "Some students" is indefinite, as is "many students" or even "all but one student" (because you don't know which one is left out, and so you don't know exactly which ones are in). "All but this student" is definite.

Let me list some words in English that indicate definite or indefinite references:

DEFINITE

This, that, these, those, the, all, any, every, each. Also "a," when it means "any example of" as in "A horse is an animal."

INDEFINITE

Some, one, ten (or any number without "this"), many, part of. Also "a" when it means some unspecified one of" as in "A man spoke to me."

But since English often uses words capriciously, it isn't a good idea to rely slavishly on the lists above; the criterion is whether the words tell you you could point to every one of the objects referred to.

All those "quantity-words" are used for translating English sentences into Logic, so that the term in Logic will refer to what the word as used in the English sentence does.

8.2.2. The "quantity" of terms

But

- **Blairian logic always uses "every" for *every* definite reference, and "some" for *every* indefinite reference.**

Traditionally, "all" and "some" are the quantity-signals. But the negative "all" becomes "none"; and this causes confusion, for various reasons. "Every horse is not a cow" makes sense and is clear, and it means the same as "no horse is a cow." But "No horse is a cow" doesn't show clearly that the copula is negative, and some other formulations are even more confusing: "Not every horse is a cow" has an indefinite subject (it means that there is at least one horse that is not a cow—but it doesn't tell you which one or ones).

My terminology circumvents this problem—once you have translated your English (or French or whatever) statement into Logic.

Note that even proper names will have a quantifier. Since a proper name refers to a definite person (e.g. George Blair), then the reference will be definite, and in Logic it will read, "Every George Blair," as in "Every George Blair is a teacher of philosophy."

- **Note that, since "every" and "some" are the only allowable quantifiers in Blairian logic, you are going to lose some information (sometimes) in translating from English to Logic.** For instance, "All the students in this room but one wear ties" translates into "Some students in this room are things that wear ties."

It also means that in order to make the sentence in Logic readable, you might have to do some recasting of it: "All our ancestors" would translated into "Every *one* of our ancestors," for

instance, or "Every ancestor of ours."

- **NOTE WELL: The Logical quantifier "some" means "AT LEAST ONE"; it does NOT imply "some are and some aren't."** "Some horses are animals" is a true statement. Every horse is an animal, and if every one is, then at least one is. (Oddly enough, there is a controversy here, which I will discuss in a later chapter.)

- **Every *subject* of a proposition will have to have a quantifier in Logic**

That is, every logical proposition will begin with "Every" or "Some."

8.3.3. The pseudo-quantity of the predicate

I said that the predicate-term is the word-group that is used in its meaning-function in the proposition.

If so, of course, it does not refer to a class of objects, but to a relationship they have or to the foundation of that relationship. Hence, the predicate of a proposition does not have a quantity, actually. This is something that some theoreticians of logic have not noticed.

Nevertheless, it is often the case that the logical manipulations of propositions moves a term from the predicate of a proposition to the subject of another one (when it is *now* used in its reference-function). In order to avoid saying more than you have a right to, you have to know what quantity the predicate *would have had if it had one*. This I call the "pseudo-quantity" of the predicate term.

DEFINITION: The PSEUDO-QUANTITY of the predicate

term is the objects the predicate would be referring to if it actually were referring to objects.

Again, this reference might be definite and it might be indefinite. In the proposition, "Every maverick is a horse," you are clearly not referring to the whole set of horses, but only some indefinite part of them (the ones that are mavericks). But in the proposition "Every maverick is not a pig," you know that the way pigs are related does not apply to mavericks—and if this is true of pigs as such, then it applies to every pig; and so the pseudo-quantity is definite. You can see this if you say, "If every maverick is a horse, it does not follow that every horse is a maverick," but "If every maverick is not a pig, then every pig is not a maverick."

Oddly enough, the definiteness or indefiniteness of the predicate's pseudo-quantity does not depend on the definiteness or indefiniteness of the subject, but on the affirmativeness or negativeness of the *copula*.

RULE: If the COPULA is AFFIRMATIVE, the PREDICATE is ALWAYS INDEFINITE.

If the COPULA is NEGATIVE, the PREDICATE is ALWAYS DEFINITE.

This is not actually as arbitrary as it seems. A statement, as I mentioned, in fact expresses a relationship among the members of some class of objects; and the predicate indicates either the relationship itself or (more often) the aspect that all the members have in common.

But this aspect is very often an aspect of what is in fact a larger

class of objects than the one that you picked out to point to for the subject. Hence, *implicitly,* in an affirmative statement, the predicate *brings in* a larger class of objects, of which the subject-class pointed to forms an *indefinite part*.

On the other hand, a negative statement says that the objects referred to by the subject are *not* related in the way mentioned in the predicate, or *do not have* the aspect which is the foundation of that relationship; hence, no one of the subject-things belongs to the class of objects implicitly referred to by the predicate.

This is why many logicians think of logic in terms of the mathematics of class-inclusion. There is a kind of *implied* class-inclusion or class-exclusion in what we do in statements; and for logical purposes this is useful. But it must be remembered that logic is supposed to *reflect* what happens with statements, and so it is not *simply* class inclusion.

That is, the predicate does not *really* refer to a class of objects; but the fact that it does so allows us to exploit the class that it *implicitly brings in* in order for us to be able to use predicate-terms (in our peculiar logical form) as subject-terms of new propositions, and so to draw logical conclusions.

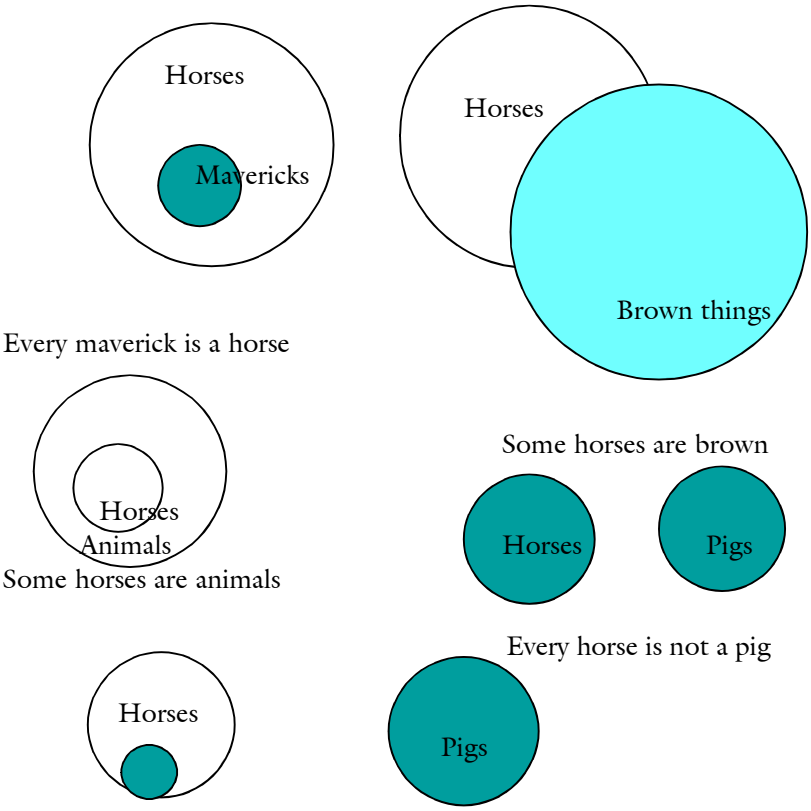
In any case, you must keep in mind that the "quantity" of the predicate-term depends **solely** on the affirmativeness or negativeness of the **copula,** and has *nothing to do with the quantity of the subject*.

Thus: Every maverick is (some) horse. Some horses are (some) brown things. Some horses are (some) animals. Every horse is not (every) pig. Some horses are not (every) pig.

Let us look at this schematically. The diagrams below are a variation on what are called "Venn diagrams," from the person who

8.3.3. The pseudo-quantity of the predicate

first invented them.



8.3.3. The pseudo-quantity of the predicate

8.3.4. Some notes on translation

Once a statement has been transformed into a proposition and is in the language I am calling Logic, things should be simple and clear.

The problem is often getting the English statement into Logic without changing what the statement says.

If you think, you can generally do the translating without too much trouble. Basically, you have to ask yourself two questions: "What is the statement talking *about*?" (Alternatively, What objects is the statement *referring to?*") Put brackets around all of that; it is the subject of the proposition in Logic. "What is it saying about the subject?" This will be all the rest of the sentence; put brackets around it to make it the predicate-term.

Introductory adverbs and adverbial phrases and clauses belong to the predicate. E.g. "In the beginning, God created the heavens and the earth." What is the sentence talking about? "Creation," you say. No. It is talking about God. So the subject is just God and the predicate is "in the beginning created the heavens and the earth." Creation is the general subject-matter the statement is dealing with; but it is talking about what God did, and hence about God.

RULE: The subject of a statement will always be a noun or pronoun with its accompanying adjectives (which may be phrases or clauses).

To translate into Logic, remove any quantifying modifiers in the statement, and put either "every" or "some" in their place, depending on whether the reference in the statement is definite or not.

RULE: Choose the appropriate copula (is or are, is not or are not) depending on the quantity of the subject and the

affirmativeness or negativeness of the statement to be translated.

- **Beware of making negatives in modifying phrases into negative copulas. "Every non-student is ignorant" is an affirmative proposition.**

RULE: Form the predicate in the following way:

- **If the predicate of the statement was "is (are)+a noun" then it can simply be copied.**

- **If the predicate of the statement was complex, then after the copula put "a thing that" or "things that" (depending on what makes sense) and add the rest of the predicate.**

Don't panic.

It's simpler than it sounds, actually. "Fourscore and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal."

In Logic:

"Some of our fathers are things that fourscore and seven years ago brought forth…etc." Or, if you think that Lincoln was referring to all of "our fathers," it would be "every father of ours is a thing that fourscore and seven years ago brought forth…"

"Now we are engaged in a great Civil War, testing whether that nation, or any nation…"

In Logic:

"Every one of us is a thing that is now engaged in a great…"

8.3.4. Some notes on translation

To avoid writing that whole mess every time you transform such enormous propositions, you can resort to symbolization, in the following way:

RULE: Use (e) [parenthesis, lower-case "e", parenthesis] to symbolize "every." Use (s) in the same way to stand for "some".

Reduce the subject-term to a single word that more or less is the same as the whole complex subject (you will be de-symbolizing at the end of the logical operations; this is just to remind you). Add this word to the quantifying symbol.

Symbolize an affirmative copula by - [space, hyphen, space]; symbolize a negative copula by n [space, lower-case "n," space].

Insert the appropriate quantifying symbol for the predicate term [(e) if the copula is n, (s) if the copula is -].

Reduce the predicate-term to a word that means more or less what the statement's predicate means, and put that after the quantifying symbol.

That's it.

In Blairian symbolism, "Fourscore and seven..." becomes "(s)fathers - (s)bringers-forth"; and "Now we are engaged..." becomes "(e)we - (s)engagers."

It's a lot easier to work with these things than with the propositions containing all the words of the statement; and you can always substitute the whole subject and predicate for the words after you get through, and then of course translate back into English so that you get a result that sounds as if you didn't just move here from Afghanistan.

We are now in a position actually to do something with logic—or should I say, "Every one of us is a thing that is now in a position

actually to do something with logic"? [(e)we - (s)eager people].

Let's go. (Can't translate that into Logic, because it's an exhortation, not a statement.)

SUMMARY

A science is a set of factual statements on some subject along with the evidence for the statements' factuality; its subject-matter is the set of objects the science considers.

Theology investigates testimony by God. Logic investigates how statements link to force other statements; mathematics investigates relations as such and what is related. Logic is not really a branch of mathematics, nor is mathematics a branch of logic. Philosophy is an empirical science whose evidence is effects contained within the act of experiencing, and so it deals with ultimate causes. Other empirical sciences differ in the objects they deal with and in the particular types of effects they focus on.

Statements have two parts: a subject, which points to an object or class of objects, and a predicate, which expresses the relationship to be understood. The subject may or may not come first in an actual language.

Logic is the science of arranging statements so that new ones are generated which cannot be denied without contradicting what was already said. Logic is not concerned with the truth or falsity of the statements.

Logic transforms statements into propositions so that the manipulation of them will be easier; a proposition is a statement in logical form. Propositions have terms, which are words or word-groups which function like nouns (point to objects or express relationships); terms are so constructed that they remain the same through logical manipulation. Terms are defined by the objects they point to and the relationship they express, and have one and only one referent. The same word can therefore be more than one

term, depending on how it is used.

Propositions have two and only two terms: a subject-term (which points) and a predicate-term (which expresses meaning). These two terms are linked by a copula, which is the present tense of “to be.”

The quantity of a term is what it refers to. Its quantity is definite if the term is used so that you can point exactly to the objects it refers to; it is indefinite if it points, but does not point out each object it refers to. “Every” is used for definite references; “some” for indefinite ones. “Some” is taken to mean “at least one, but maybe all.” Every subject of a proposition must have its quantity named.

Predicates have a pseudo-quantity, the quantity they would have if they actually referred to objects. The “quantity” of a predicate is indefinite if the copula is affirmative, and definite if it is negative.

To translate statements into propositions, find the objects referred to, bracket the words that do this function, put the appropriate quantifier before it; then find the predicate (the rest of the sentence), make a noun out of it, and separate it from the subject by the appropriate copula.

For convenience, propositions can be symbolized by reducing each term to a single word, using (e) or (s) for the quantifiers and - and n for the affirmative or negative copulas. The pseudo-quantity of the predicate should also have its symbol.

Exercises

A. Translate the following into propositions:

1. In the beginning was the Word.

2. In the beginning, God created the heavens and the earth.

8.3.4. Some notes on translation

3. I saw John running down the street yesterday.

4. Those of us who care about the meanings of words will not misuse the gift of language we have had bestowed on us by society.

5. Three of the basketball players, it is alleged, have shaved points because of drugs and money.

6. All the perfumes of Arabia cannot sweeten this little hand.

7. But in the sleep of death, what dreams may come when we have shuffled off this mortal coil must give us pause.

8. I regret that I have but one life to give for my country.

9. Never have so many owed so much to so few.

10. Even though, my noble Theophilus, there have been many attempts to give a description of the events that have taken place among us--apparently based on what we have been told from the original eye-witnesses who dedicated themselves to the service of what they were affirming--I still thought it would be useful to research the whole matter from the beginning and write you the results of a careful study, so that you would know what would be safe to consider factual in what you have been told.

8.3.4. Some notes on translation

CHAPTER 9

Logic II: The Lesser Operations

9.1. Single-proposition operations

There are a few things you can do with one single proposition once it has been translated into Logic.

In the simplest cases, these operations may sound too obvious to bother with, but there are some fallacies that are apt to crop up, so it's useful to know the rules.

A couple of definitions to begin with:

DEFINITION: The CONCLUSION is the proposition that results from a logical operation. It is the proposition which cannot be denied without contradicting one or another of the premises.

DEFINITION: A PREMISE is a proposition from which a conclusion is drawn.

Some logical operations have only one premise, others have more than one.

DEFINITION: An INFERENCE is a logical operation.

DEFINITION: An ARGUMENT is an inference.

DEFINITION: An IMPLICATION is a potential inference.

DEFINITION: An inference is VALID if the logic is correct.

DEFINITION: The conclusion is said to FOLLOW from the premises if the inference is valid.

That is, a statement *implies* another statement if you can perform some logical operation on it and generate the other statement. When you actually do that operation, you are *making an inference*. If the inference is *valid*, then the conclusion can't be denied without denying one of the premises. (Note that if the inference is invalid, the conclusion can be denied without contradicting any of the premises).

9.1.1. Conversion

The first kind of inference you can make with one single proposition is to interchange the subject-term and the predicate-term.

This is called *converting* the proposition.

DEFINITION: CONVERSION is the logical operation of interchanging the subject and predicate of a single proposition.

DEFINITION: The CONVERSE of a proposition is the conclusion of a conversion.

RULES: 1. Put the predicate-term in the place of the

subject-term, and the subject-term in the place of the predicate-term.

2. The copula's affirmativeness or negativeness remains as it was.

3. The quantities of the terms remain as they were *if possible*.

4. No term may pass from being indefinite to being definite, but it may pass from being definite to being indefinite.

Let me give a couple of simple examples:

Every horse is an animal [(e)horse - (s)animal]
converts into

Some animals are horses [(s)animal - (s)horse]

Notice that "animal" as the second subject had to be indefinite, because, being the predicate of an affirmative proposition, it was indefinite before. "Horse," on the other hand, was definite, but as the predicate of an affirmative proposition, it had to become indefinite.

"No man is an island" is English.
In Logic

Every man is not an island [(e)man n (e)island]
converts into

Every island is not a man [(e)island n (e)man]

- **Note that denying the converse of a proposition contradicts the original proposition.**

If you deny that some animals are horses, it would be impossible for every horse to be an animal; and if you deny that every island is not a man, then obviously some island is a man, and so it is not the case that every man is not an island ("no man is an island").

9.1.1. Conversion

Some cats are trees [(s)cat - (s)tree]
converts into
Some trees are cats [(s)tree - (s)cat]

Notice here that it's false that some trees are cats; but if you deny that some trees are cats, then you contradict the proposition that some cats are trees (which, of course, happens—as we know from extra-logical evidence—to be a false statement).

Remember, logic is not interested in the *truth* of the propositions, but only in whether the conclusion can't be denied without contradicting the original proposition.

Some cats are not trees [(s)cat n (e)tree]
cannot be converted.

Why? Because "cat" would pass from indefinite to definite (as the predicate of a negative proposition); and this is not allowed.

So even though it seems obvious that if some cats are not trees, then some trees are not cats, it doesn't follow. And if you take a different proposition, you can see that it wouldn't. Some animals are not horses; but it doesn't follow that some horses are not animals—and in this case, we know that the inference is invalid, because we can immediately see that the premise is true and the conclusion is false.

COMMON FALLACIES IN CONVERSION:

1. Trying to convert indefinite negative propositions (such as the one above). The subject would have to pass from indefinite to definite.

2. Converting affirmative propositions and making the new subject definite. For example, it is invalid to say that if every human being is a person, every person is a human being. Even if there were no non-human persons (there actually are), it would still not *follow*.

Again, this could be seen from trying out something like "if every

horse is an animal, then every animal is a horse."

9.1.2. Obversion The other thing you can do with a proposition is to change its copula.

That is, create a negative from an affirmative proposition. This is called *obversion*.

DEFINITION: OBVERSION is the inference which generates a proposition with a negative copula from one with an affirmative copula or vice versa.

DEFINITION: The OBVERSE of a proposition is the conclusion of obversion.

RULES: 1. Leave the subject-term alone.

2. Change the copula from affirmative to negative or vice versa.

3. Add a negative to the predicate *term*, making it "refer" to the opposite class of objects from the previous predicate.

4. Pairs of negatives cancel each other (not-not's are affirmative).

4. Put the quantity appropriate to the copula on the new predicate term.

Note that in this case, since the predicate is now a different term, it is legitimate for the new predicate to be definite when the preceding one was indefinite. The *same term* does not pass from indefinite to definite in this case.

Some examples:
Every horse is an animal [(e)horse - (s)animal]

obverts into

Every horse is not a non-animal [(e)horse n (e)non-animal]

"Non-animal" here means anything at all that doesn't have the relationship of similarity-in-animality, or in other words what is "referred to" is the "class" of "everything except animals." So "animal" did not go from indefinite to definite; a new term was introduced.

Every horse is not a cat [(e)horse n (e)cat]
obverts into
Every horse is a non-cat [(e)horse - (s)non-cat]

Some horses are animals [(s)horse - (s)animal]
obverts into
Some horses are not non-animals [(s)horse n (e)non-animal]

And finally

Some horses are not cats [(s)horse n (e)cat)]
obverts into
Some horses are non-cats [(s)horse - (s)non-cat]

To give a more complex example, "Fourscore and seven years ago,...etc" was, in Logic

"Every father of ours is something that fourscore and seven years ago brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal." Symbolically: (e)father - (s)bringer-forth

This obverts into

"Every father of ours is not something that fourscore and seven years ago did not bring forth upon this continent..." [(e)father n (e)non-bringer-forth]

Here what you do is stick a "not" in the relevant clause in the

predicate, making the predicate negative. You have to be careful, in a complex predicate like this, where you put the "not," or you might negative the wrong part of it. For instance, "...something that fourscore and seven years ago brought forth on this continent a new nation, not dedicated..." negatives the modifier of nation, and not the predicate as a whole. It's easy to see what you have to negative if you symbolize; you have to make the predicate "refer to" non-bringer-forths.

COMMON FALLACIES IN OBVERSION

1. Not keeping the negatives straight. If the predicate is already negative, this can cause confusion. If the subject-term contains a negative, this can be confused with a negative copula (even though the proposition itself is affirmative).

2. Not canceling out double negatives. It then looks as if the proposition is negative when it isn't.

3. Changing the quantity of the subject. Leave the subject-term strictly alone.

9.1.3. Multiple conversions and obversions You may have wondered whether you can convert the converse of a proposition or obvert the obverse.

Of course you can; these are new propositions, and they don't know they've been arrived at by conversion or obversion. In fact, you can convert the obverse and obvert the converse, and keep doing this until you get tired or get back something you already had earlier.

Here's a simple case of converting twice:

Every horse is an animal [(e)horse - (s)animal]

converts into

Some animals are horses [(s)animal - (s)horse]

which converts into

Some horses are animals [(s)horse - (s)animal]

Note that you can't get back the original proposition by converting a definite affirmative proposition twice, because the definite subject becomes indefinite when it moves to the affirmative predicate, and then has to stay indefinite.

With double obversion, however,

Every horse is an animal [(e)horse - (s)animal]

obverts into

Every horse is not a non-animal [(e)horse n (e)non-animal]

which obverts back into

Every horse is an animal [(e)horse - (s)[non-non-animal]

and you're back where you started.

Actually, you can get back where you started in converting too, if you convert a definite negative or an indefinite affirmative proposition twice.

Now what happens if you convert and obvert alternately?

Every horse is an animal [(e)horse - (s)animal]

obverts into

Every horse is not a non-animal [(e)horse n (e)non-animal]

which converts into

Every non-animal is not a horse [(e)non-animal n (e)horse]

which obverts into

Every non-animal is a non-horse [(e)non-animal - (s)non-horse]

which converts into

Some non-horses are non-animals [(s)non-horse - (s)non-animal]

which obverts into

Some non-horses are not animals [(s)non-horse n (e)animal] which can't be converted. So you have to stop.

Depending on whether you alternate with the conversion and obversion, or whether you do two conversions in a row and then obvert (two obversions don't get you anywhere), you can generate all the propositions dealing with horses, animals, non-horses and non-animals which follow from "every horse is an animal." Because of the confusions caused by multiple negatives, it isn't always obvious if these follow. For instance, does it follow from "Every horse is an animal" that some non-animals are not non-horses? I leave it to the reader to figure that one out.

9.2. Compounding propositions

There's more, actually, that can be done with horses and animals.

But to show this, you have to know the logic of the way we combine propositions.

Note that, since whole propositions are compounded intact, it is not necessary to translate them from English into Logic to perform these manipulations.

Since we're going to dealing with propositions which are compounds whose parts are whole propositions, there are a couple of things to note. First, some definitions.

DEFINITION: A proposition is AFFIRMED when it is accepted as it stands or "taken as 'true' for the sake of argument."

DEFINITION: A proposition is DENIED when it is not accepted, or is "taken to be 'false.'"

We are not, as I have said so often, interested in whether the propositions are in fact true or false, but in what happens when you accept them as true or refuse to do so.

Notice that a denial of a proposition does not necessarily mean the affirmation of the proposition that has the opposite copula. To deny that "Every horse is a maverick" is not to affirm that "Every horse is not a maverick." (The denial of a proposition—as we will see later—affirms its *contradictory,* not as in this case its *contrary*. The denial of "Every horse is a maverick" affirms that "Some horses are mavericks [i.e. at least one horse is a maverick]"; but we will see this in the next chapter.

- **When working with compound propositions, it is assumed that the *compound is affirmed;* the inference then deals with what happens to one of the constituent propositions when the other or others are affirmed or denied.**

That is, you assume that the compound proposition is "true"; then, depending on how the parts are connected, you try to find out what happens when one part is taken as "true" or affirmed, or "false" or denied. When there are inferences, the affirmation of one part may force (for example) the denial of the other or the compound will be contradicted. For instance, to say "This is a page and you are reading it" is contradicted if you deny "You are reading it." Hence, "You are reading it" must be affirmed (because we are assuming that the *whole* proposition "This is a page and you are reading it" is "true").

9.2.1. "And" The first compound proposition is the "and" combination.

It turns out to be logically trivial.

RULE: 1. A compound proposition formed by putting "and" between two (or more) propositions means that each of the propositions is to be affirmed.

2. "And" is symbolized by + [i.e., space + space]. Parentheses are put around the propositions when symbolizing. For convenience, a complete proposition may be symbolized by p [lower-case "p"] and the letters following [i.e. q, r, etc.]. A lower-case "n" before one of the letters means the denial of that proposition.

Rule 1 is another way of saying that "and" means that both of the propositions are to be taken as "true"; but of course in Logic we aren't dealing with truth, but with affirmation and denial.

Hence, when you say, "It's raining out and Chicago is in Detroit," you contradict the proposition when you say, "Chicago is not in Detroit," even if it's actually raining out. Now Chicago actually isn't in Detroit, so the compound proposition is actually false. But we aren't interested in its true, but merely in whether it's contradicted if you deny some part of it.

You can symbolize the general "and" proposition by p + q; and the one above by (weather - rainy) + (Chicago - in Detroit), without worrying too much about whether they're in strict Logical form.

The whole inference can be symbolized this way (using * to mean "implies") ((p + q) + nq) * n(p + q); or, using words, (((weather - rainy) + (Chicago - in Detroit)) + (Chicago n in Detroit)) * n((weather - rainy) + (Chicago - in Detroit)) .

9.2.1. "Is incompatible with"

As I say, that's trivial. Things get less trivial, however.

The next way you can combine propositions is a way that some logicians call a kind of "or," where you mean that one or the other

of the parts of the proposition might be "true," or both might be "false," but they both can't simultaneously be affirmed (i.e. "true"). I don't like to use "or," however, because there are various senses of the word, and the ordinary one is "either/or" (one part "true," the other part "false"), so it's confusing. I'm going to stick with an awkward expression that is at least clear: "is incompatible with."

There isn't any simple way to express this compounding in English. The statement "'The cat is outside' is incompatible with 'the weather is rainy'" can only be simply expressed by some sort of statement like, "The cat is never outside when it's raining," or "It's never true that it's raining out and the cat is outside." But notice that this statement is compatible with the cat's being inside when it's not raining out.

This is the black-not-white kind of thing, where you're affirming that something can't be black and white at once, but you're not denying that there are shades of gray that are neither black nor white.

RULE: 1. The compound proposition "is incompatible with" means that at least one of the propositions must be denied, or the compound is contradicted.

2. An affirmation of one part demands a denial of the other.

3. From a denial of one part, nothing follows with respect to the other.

4. The symbolic representation of "is incompatible with" is V [i.e., space capital "V" space]. Parentheses go around the propositions combined.

Take the proposition above as an example. "The cat is outside is incompatible with it is rainy" [p V q, or alternatively (cat - outsider) V (weather - rainy).

Now if you happen to see the cat outside (which affirms the first

proposition), then you have to deny that it is rainy. ((p V q) + p) * nq; or (((cat - outsider) V (weather - rainy)) + (cat - outsider)) * (weather n rainy).

Similarly, if you know (i.e. affirm) that it is raining out, then you have to deny that the cat is outside. In either of these two cases, if you don't deny the other part, you have contradicted the compound proposition. I will skip the symbolism here.

On the other hand, if you see the cat inside (denying the first part), you don't know whether it's rainy or not, because both parts can be denied without contradicting the compound. Symbolically, ((p V q) + np) * ?. The question mark indicates, of course, that nothing follows.

9.2.3. "And/or" There's another kind of combination that exists in Logic and isn't really common in English (though we do use "and/or" every now and then.

This is called the "weak 'or,'" which means that both parts can't simultaneously be "false"—or in other words, that at least one of them must be "true." If it were English to say it, it could be called "not-neither."

RULES: 1. The connective "and/or" means that the compound is contradicted when all parts are denied.

2. From a denial of one part, it follows that the other part must be affirmed, or the compound is contradicted.

3. From an affirmation of one part, nothing follows, since both parts may be affirmed.

4. The symbolic representation of "and/or" is v [i.e., space lower-case "v" space], with parentheses around the propositions.

For example, "Some people are pianists and/or some people are

not pianists." Sometimes we say, "Either some people are pianists or some people are not pianists, or both," which is pretty awkward.

Be that as it may, if you know that it's not true that some people are pianists, then you are denying "Some (i.e. at least one) people are pianists," in which case, you have to affirm that at least one person is not a pianist. Symbolically ((p v q) + np) * q; or ((((s)person - (s)pianist) + ((s)person n (e)pianist)) + n((s)person - (s)pianist)) * ((s)person n (e)pianist). Note that in the symbolization the denial first occurs with the whole proposition, and then there is the affirmation of the negative proposition as what follows.

If you did it the other way, (leaving out the (s)'s and (e)'s for clarity) (((person - pianist) v (person n pianist)) + n(person n pianist)) * (person - pianist)

But if you know that some people *are* pianists, you can't say that it's false that some people are not pianists (as you can see intuitively; because in fact some people are not pianists. But it isn't so obvious if you take "some horses are animals and/or some horses are not animals"—remember, the Logic meaning of "some" is "at least one," and not "some are and some aren't"). That is, symbolically, ((p v q) + p) * ?

By the way:

● **Note that in logic it is assumed that all classes referred to in propositions have members.** That is, in logic, there are no "empty" classes. (E.g. The class of unicorns is in fact empty [there are no unicorns] but "for the sake of argument" it is assumed to have members, so that you can talk about unicorns having four legs, for instance.)

This is denied in modern symbolic logic, which gets it into absurdities when it makes assertions about the truth and falseness of objects (such as unicorns) we know (on extra-logical grounds) are

false. It wants to say that the indefinite proposition *asserts existence* because it says "at least one X *is* a Y," (i.e. "*there is an X* such that it is a Y") while the definite proposition does not (because they assume that "Every X is a Y" means that "in every case, if something has the x-property [is an X] then it also has the Y-property [is a Y]. " Thus, "Every unicorn has four legs" is assumed to be true, while "Some unicorns have four legs" is false," because there aren't any (but *if* there were any, they'd have four legs.

This is silly. When you're doing real logic the assumption is that *in your "world of discourse"* there are unicorns and four-legged things. So it follows that if every unicorn has four legs, at least one of them has four legs. Of course.

The point I'm making is that logic doesn't have anything to do with *real* existence, and to say that the indefinite proposition asserts (real) existence is stupid, because you'd actually have to verify everything you said indefinitely, or you'd be making a *logical* mistake.

So in fact *neither* definite ("universal") propositions *nor* indefinite ones deal with what is really the case; both are *propositions,* dealing with what is "proposed" as the case "for the sake of argument."

At any rate, These are the lesser operations in logic. Either/or, if-then, and the "categorical syllogism" remain to be explored.

SUMMARY

An implication is a potential inference, and an inference or argument is a logical operation; logical operations draw conclusions from the propositions called "premises." The conclusions "follow" from the premises. Premises imply their conclusions.

The first logical operation with a single proposition is

conversion, in which the subject-term and predicate-term are interchanged, leaving the copula as it was, and making sure that no term passes from indefinite to definite.

Obversion changes the quality of the copula, and is done by adding a “not” to the copula and a negative to the predicate (making it “refer” to the class of “all objects but” the original. Double negatives cancel each other out. Conversions and obversions can be repeated with the former conclusions, generating new propositions.

To “affirm” means to “take as it stands” or “accept as ‘true’,” while “to deny” means to “refuse to accept (as ‘true’).” With compound propositions, the whole proposition is affirmed; the inference is what happens to one part when the others are affirmed or denied. If the part must be affirmed (or denied) to avoid contradicting the compound, the inference is valid.

The compound proposition that uses “and” (p + q) is logically trivial, since it says that both sides are to be affirmed. It is contradicted if either constituent is denied.

The compound that is formed with “is incompatible with” (p V q) means that one or the other or both of the constituent propositions must be denied; it is contradicted only if both are affirmed.

The compound that is formed with “and/or” (p v q) means that one or the other or both of the constituent propositions must be affirmed; it is contradicted only if both are denied.

Note that the classes of objects referred to in propositions are all assumed to have members.

EXERCISES

Translate first, when necessary, into logical form.

1. Convert the first four propositions in the exercises of the preceding chapter.

2. Obvert the second four propositions in the exercises of the preceding chapter.

3. Obvert, then convert, etc. the ninth proposition in the exercises of the preceding chapter.

4. Translate into Logic and then convert, obvert, etc. the following proposition: “No one with any sense believes in horoscopes.

5. Is it valid to say, “I know I can’t have my cake and eat it, but I don’t have it; so I must have eaten it.”? If it is, tell what kind of inference it is, and if not, tell what rule is violated.

6. Is it valid to say, “Since I know that coughs are signs of colds and/or coughs are signs of emphysema, and I have a cold as I now cough, then I can’t have emphysema.”? If it is, tell what kind of inference it is, and if not, add what rule is violated.

7. Is it valid to say, “Every cat hates dogs or every cat loves cream, and this cat loves cream, and so it can’t hate dogs.”? If it is, tell what kind of inference it is, and if not, add what rule is violated.

8. Jesus said, “You can’t be the slave of God and property.” Logically, this would be, “You are the slave of God is incompatible with you are the slave of property.” You know you are not the slave of property; therefore, you must be the slave of God, right? If so, show what argument is used, and if not, what rule is violated.

9. Students are in school for love of learning, for the sake of the degree, because their parents expect it, because they have no job, or because they like the company. This person just said she was in school because she liked the company; and so she really doesn’t care about learning. Correct? If so, what argument is used; if not, why not?

9.2.3. “And/or”

10. The sun is shining, it's cloudy, or it's night. It's not night and it's not cloudy; therefore, the sun has to be shining. Correct? If so, what argument is it; if not, why not?

9.2.3. "And/or"

CHAPTER 10

Logic III: The Major Operations

10.1. "Either.or" The first of the "major operations" in logic is called traditionally the "disjunctive syllogism."

Actually, it's only a kind of semi-major operation, and it's the last of the "or" ways of combining statements: "either/ or."

DEFINITION: A SYLLOGISM is an inference involving at least two propositions as premises and a conclusion.

All of the compound propositions in the preceding chapter were actually syllogisms, because to draw a conclusion, you had to affirm the compound proposition and then affirm or deny one or the other of the propositions that made up parts of the combined one; the conclusion you got was an affirmation or denial of the other part.

Either/or is no different from this. The compound proposition means "not both and not-neither."

RULES: 1. The compound "either/or" proposition means that one of the parts must be affirmed and the other one denied.

2. An affirmation of either part of the compound demands a denial of the other part.

3. A denial of either part of the proposition demands an affirmation of the other part.

4. The compound is symbolized by / [space slash space], with parentheses around the propositions.

This compound is the one in which one of the sub-propositions contradicts the other one. You may not know which one of them is "true," but one and only one is "true," and the other one has to be "false."

For example, "Either every Chimera is a lizard or some chimeras are not lizards." [((e)chimera - (s)lizard) / ((s)chimera n lizard)]. You may not know what chimeras are, but intuitively you know that either all of them are lizards or at least one of them isn't a lizard.

Here, if you know that there is a chimera that isn't a lizard (affirming the second part), you have to deny that every chimera is a lizard. If you know that every chimera is a lizard, you have to deny that some aren't lizards. Or if you know that it's false that every chimera is a lizard (denying the first part), then it has to be the case that some chimeras aren't lizards; or if it's false that some chimeras are not lizards (i.e. not even one is not), then every chimera is a lizard. Symbolically, ((p / q) + q) * np; ((p / q) + np) * q; ((p / q) + p) * nq; ((p / q) + nq) * p. I won't trouble you with parentheses involving chimeras and lizards; you can do that for yourself.

The inference is pretty simple. The only time you could get fooled is by multiple negatives. For instance, in English, "It's either raining or it's not raining; but it's not raining, therefore ..." makes you inclined to draw the "conclusion" "Therefore it's raining," which is absurd (How could it be raining if it wasn't raining?). But

if you say, "Either the weather is a rainy-thing or the weather is not a rainy thing" and then you deny the first part (It is false that the weather is a rainy thing) then you have to affirm as true the second part (the weather is not a rainy thing). In other words, if it's false that it's rainy, then it's true that it's not rainy. Of course.

This is one of the cases where knowing logic can help, even though, as I said, in ordinary use of language we do logic that is considerably more complicated than what is taught in logic courses. When in doubt, stop thinking and apply the rules; they always work if you apply them right; and so once you've come up with the correct conclusion, you can think your way through the inference more easily (noticing what the statements mean).

10.2. "If-then" The next compound is the general form of the inference.

Traditionally, it is called the "hypothetical syllogism," because the "if" part is simply put forward for the sake of argument—which is what "hypothesis" means, and the connection means that the person who makes such a statement knows (for whatever reason) that the "then" part follows as a conclusion.

DEFINITION: The ANTECEDENT is the proposition that forms the "if" clause of the "if-then" compound.

DEFINITION: The CONSEQUENT is the proposition that forms the "then" clause of the "if-then" compound.

RULES: 1. "If-then" (read if p then q) affirms that the consequent depends on the antecedent.

2. An affirmation of the antecedent demands an affirmation of the consequent, or the compound is contradicted. (This is

traditionally called "modus ponens.")

3. A denial of the consequent demands a denial of the antecedent, or the compound is contradicted. (This is called "modus tollens.")

4. Nothing follows either from a denial of the antecedent or an affirmation of the consequent.

5. The proposition is represented symbolically by * [space asterisk space], with the appropriate parentheses.

Logicians have a controversy about this, which I will discuss shortly. But first let me give an example.

"If it is raining out, then the cat is in the house." (p * q) or (weather - rainy) * (cat - insider).

Now then, if you happen to know that it is raining out (affirming the antecedent), then the cat has to be inside, or the compound proposition is contradicted. (Cats being what they are, of course, this might happen; but logic doesn't deal with truth, remember.) ((p * q) + p) * q. (((weather - rainy) * (cat - insider)) + (weather - rainy)) * (cat - insider).

Or if you see the cat outside (denying the consequent), then it can't be rainy out, because if it is rainy out, the cat is inside. ((p * q) + nq) * np. (((weather - rainy) * (cat - insider)) + (cat n insider)) * (weather n rainy). [Here I put the "nots" inside the denied propositions. You have to be careful when you do this, because the denial of a negative proposition is, of course, an affirmative one.]

10.2.1. "Material implication"

But the rules above say that a denial of the antecedent doesn't give a conclusion.

The same goes for an affirmation of the consequent. Some logicians don't agree with this. "Anything follows," they say, "from a false premise." What I (and Aristotle, and everyone until the

twentieth century) am saying is that nothing follows from a false premise.

The new interpretation arose because modern symbolic logicians approached logic from mathematics, rather than from a linguistics. Mathematics likes closed systems, and abhors things that end up with question marks. So to allow there to be an answer to "If it's rainy, then the cat is in the house; and it's not rainy" they invented the rule that it's okay to draw the "conclusion" "the cat is not in the house" OR to draw the "conclusion" "the cat is in the house."

As an example of the fact that we speak this way, they use statements like, "If you win this bet, I'll eat my hat." The idea here is that "I'll eat my hat" is supposed to "follow from" your winning the bet.

But they're missing the point of the statement. The consequent is something that the speaker considers, not false but impossible—and the compound is constructed with an impossible consequent "connected" to the antecedent the speaker wants to deny emphatically. Since the consequent is supposed to be seen as manifestly false, (and so must be denied) this "connection" is seen as a graphic way of denying the antecedent.

In other words, "If you win this bet, I'll eat my hat" is another way of saying, "There's no way you'll win this bet!" An unreal "dependence" is alleged for the purpose of making a kind of "modus tollens" inference—a valid one.

So the example alleged does not in fact show that we ever think that anything follows from a false premise.

Contemporary logic (because the philosophers who deal with it don't want to have anything to do with anything "mystical" like thinking, but want to have a direct bridge between statements and facts) has got itself entangled, as I said earlier, with actual truth and falseness of propositions, and is very often interested in "proving" the

truth or falseness of the compound from what you may happen to know about the truth or falseness of the parts. (For instance, you can prove that an either/or compound is false if you know that both parts of it are true—because this contradicts the compound.)

With "if-then," they want to say that the compound is not contradicted by denying the antecedent; and once you say that, you are forced into saying that the compound is "true" (in the factual sense) when the antecedent is false—no matter what the consequent is.

(Actually, "implication" in modern logic is nothing but a complicated negative proposition: "It is not the case that the first proposition is true and the second one is false." There's no implication that anything actually *follows from* [depends on] what was said in the first proposition.)

But this would mean that a statement like, "If Chicago is in Detroit, then George Blair is human" is a factually true statement. I refuse to admit that my humanity depends on Chicago's being in Detroit. We simply do not use language this way.

But the logicians in question don't want to have anything to do with "depends on"—where the person making the "if-then" statement (statement, now, not proposition) would have some evidence that the "then" part actually depends on the "if" part. But I submit that we only use "if-then" when (a) we want to affirm a dependence, or (b) as in the "I'll eat my hat" we create a stupid "dependence" for rhetorical reasons. To take the second case as the paradigm is as silly as taking the "face" of a cliff as the paradigm (the model, primary sense) of what a "face" is.

At any rate, I side with Aristotle in the dispute over "if-then." I think that "material implication" makes a travesty of language, and that it should be dropped from use in logic, however "powerful"

those who like it think it might be. I don't think it reflects in any way either how we use language or how we reason. (You can see what absurdity this leads to in Volume 4 of *Modes of the Finite.)*

Therefore, for purposes of this text, at least, nothing follows from denying the antecedent or affirming the consequent.

For example, "If it is raining, then the cat is inside; and it is not raining; and so ?" Or "If it is raining then the cat is inside; and the cat is inside; and so ?" Symbolically, with words (((weather - rainy) * (cat - insider)) + (weather n rainy)) * ?; or (((weather - rainy) * (cat - insider)) + (cat - insider) * ?

(If you think this through in the real world, you can see that the cat (which hates getting wet) is never outside when it's raining, but when it's not raining the cat is sometimes inside and sometimes outside. So when it's raining, the cat has to be inside; but when it's not raining, you don't know where the cat is. Similarly, when the cat is outside (not inside) then it can't be raining; but when the cat is inside, it might be raining or it might be sunny.)

10.2.2. Some English compounders

There are a couple of words in English that are logical connectors of propositions, but which do not appear in logic.

The reason is probably partly because they're rather complex. The logic we use is actually more complicated than what you have seen here.

"Because" means that the statement which precedes "because" is implied by the statement which follows (reversing "if-then's" order), AND that the statement which follows is true. "John is in the house because his mother won't let him come out" is logically the same thing as "If John's mother won't let him

come out, then John is in the house, and his mother won't let him come out; therefore, John is in the house." It's the whole "modus ponens" inference, then.

That is "q because p" means "((p * q) + p) * q."

"But" means that the statement which follows is true *and* is the opposite of what you would think is implied by the statement which precedes. "The cake is on the table, but I'm not going to eat it" means "The cake is on the table implies that I'm going to eat it, and I'm not going to eat it, and so the inference is invalid."

That is, "p but q" means "((p * nq) + n*) + q."

10. 3. The "Square of Opposition"

Let us go back, now, to our propositions with subjects, copulas, and predicates.

Interestingly enough, the various propositions that can be made using a given subject-term and a given predicate-term (and changing the quantities and the affirmativeness and negativeness of the propositions in every possible combination) turn out to be related in all the ways we have seen of the compounding of propositions—with the exception of the trivial "and."

• **Remember, here,** that unlike contemporary logic, it is assumed **that no class is "empty,"** and that the definite statement refers to every member of the class, while the indefinite statement refers to at least one of the members.

Hence, "Every X is a Y" implies that "at least one X is a Y." If you want an extended discussion of why contemporary logic doesn't work and this does, see *Modes of the Finite, Volume IV*.

10.3.1. Makeup of the square

With that out of the way, then, consider horses and animals.

How many propositions can you make with "horse" as subject and "animal" as predicate? Clearly, four: "Every horse is an animal"; "Every horse is not an animal"; "Some horses are animals"; and "Some horses are not animals."

You notice that, taken as statements, not all of these are true. In fact, the four are related in interesting ways, with these traditional names:

DEFINITION: CONTRARIES are propositions that are related as "not-both."

DEFINITION: SUBCONTRARIES are propositions that are related as "not-neither."

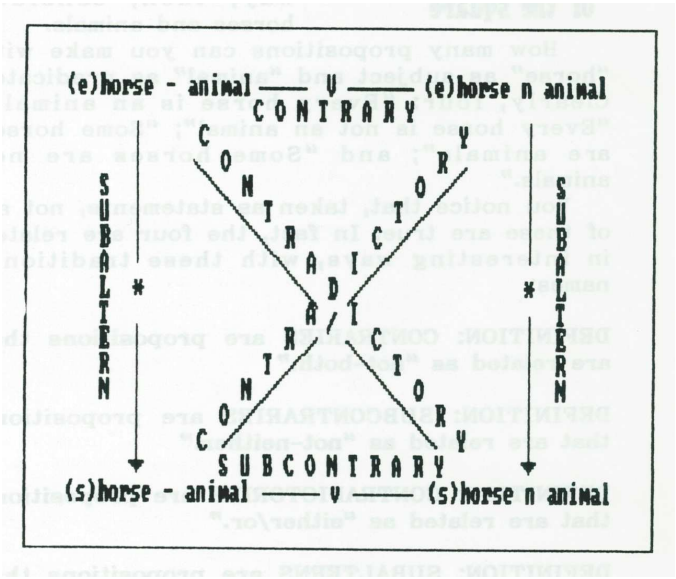
DEFINITION: CONTRADICTORIES are propositions that are related as "either/or."

DEFINITION: SUBALTERNS are propositions that are related as "if-then."

These definitions can also be used to describe relations of terms. For example, black and white are contraries (because there's gray), while black and non-black are contradictories (because anything has to be either black or non-black). The other two definitions don't really apply to terms as such.

Schematically, the square looks like this:

10.3.1. Makeup of the square



The two definite propositions are contraries: “Every horse is an animal is incompatible with every horse is not an animal” That is, one or the other of these must be false; but both might be false. You could see this intuitively if you took “Humans” as subject and “pianists” as predicate. “Every human is a pianist is incompatible with every human is not a pianist.” has both false.

The two indefinite propositions are subcontraries. “Some horses are animals and/or some horses are not animals.” One of these must be true, but both might be. In this case, of course, “some horses are not animals” is false because there isn't even one horse that isn't an animal. But with humans and pianists, both are true.

The definite affirmative and the indefinite negative proposition

contradict each other; and the indefinite affirmative and the definite negative contradict each other. "Either every horse is an animal or some horses are not animals"; and also "Either some horses are animals, or every horse is not an animal." This also works with humans and pianists: "Either every human is a pianist or some humans are not pianists"; and also "Either some humans are pianists or every human is not a pianist."

Finally, the two affirmative propositions are subalterns, and so are the two negative propositions. "If any horse is an animal, then some horses are animals"; and also "If any horse is not an animal, then some horses are not animals." Again this works with humans and pianists.

10.4. The categorical syllogism

There remains one major operation in logic, which was first formalized by Aristotle. It is called the "categorical syllogism" (that is, the syllogism involving predicates). Here, two propositions are combined with "and" to generate a conclusion based on what can be done with subjects and predicates.

The general form of the categorical syllogism is this ((term 1 . term 2) + (term 2 . term 3)) * (term 1 . term 3), where the periods stand either for affirmative or negative copulas.

For example "Every horse is an animal, and every animal is a living thing; and so every horse is a living thing."

There are actually various ways in which the propositions can be arranged. In fact, Aristotle arranged the basic general figure by reversing the two premises (I.e. his arrangement would be (term 2 . term 3) + (term 1 . term 2) * (term 1 . term 3). "Every animal is a living thing and every horse is an animal; therefore every horse is a living thing."

The difference in the Aristotelian arrangement and mine is that Aristotle saw the syllogism in terms of "class-inclusion," and the logic went this way: If a smaller class is included inside a larger class, and another class is included inside the smaller one, then every member of the smallest class is included inside the largest one. That is certainly true.

My own arrangement says that there are times when the function of "predication" (putting a predicate to a subject) is "transitive" (i.e. allows you to attach the last predicate to the first subject). Since predicates do not actually refer to classes of objects, I think this arrangement is closer to the way we use language. My arrangement also has the advantage of putting the "middle term" in the middle, which shows more obviously its function of connecting the extremes.

Some terminology:

DEFINITION: The SUBJECT-TERM of a categorical syllogism is the term that forms the SUBJECT OF THE CONCLUSION, whether it is the subject of the premise it is in or not.

DEFINITION: The PREDICATE-TERM of a categorical syllogism is the term that forms the PREDICATE OF THE CONCLUSION, whether it is the predicate of the premise it is in or not.

DEFINITION: The MIDDLE TERM is the term that DOES NOT APPEAR IN THE CONCLUSION. It "mediates" between the subject-term and the predicate-term.

DEFINITION: The SUBJECT-PREMISE is the premise in which the subject-term appears.

DEFINITION: The PREDICATE-PREMISE is the premise in which the predicate term appears.

Traditionally, the subject-premise was called the "minor premise," because it dealt with the smallest class (the subject); and the predicate-premise was called the "major premise" because it dealt with the largest class (the predicate). Again, that was due to the theory of class-inclusion as an explanation of why the syllogism works.

10.4.1. Rules of the categorical syllogism

The rules of the categorical syllogism are just the statements of the conditions under which predication is transitive.

You can attach, in other words, a new predicate to a subject under the following conditions:

RULES: 1. There must be three and only three propositions (two premises and the conclusion).
2. There must be three and only three terms.
3. The middle term must be definite at least once.
4. If a term is definite in the conclusion, it must be definite in its premise.
5. Both premises may not be negative.
6. If one premise is negative, the conclusion must be negative.
7. If both premises are affirmative, the conclusion must be affirmative.

Traditionally, there are other "rules" that are actually corollaries of the preceding seven. For instance, at least one premise must be definite (or else either both will be negative, the middle term will be indefinite twice, or the predicate would be indefinite in the premise

and definite in the conclusion). Also, if one premise is indefinite, the conclusion will have to be indefinite (or else either the subject-term will pass from indefinite to definite or there will be two indefinite middle terms). If it pleases you, you may learn these other two rules also. (There is also the "rule" that the middle term must not appear in the conclusion; but that would mean either that it was used three times or that it wasn't the middle term.)

Some comments on the rules:

1. There are inferences like the categorical syllogism that contain more propositions (and act like chains of syllogisms); such a chain is called a ***sorites***; it must have the same number of terms as propositions. For example, "Every maverick is a horse, and every horse is an animal, and every animal is a living being, and every living being is an active being; and therefore every maverick is an active being."

There are also hypothetical sorites (the plural is the same as the singular): "If you study hard in this course, then you will pass it, and if you pass it, you will graduate, and if you graduate, you will get a better job; therefore, if you study hard in this course, you will get a better job.

There is also in ordinary usage a kind of informal syllogism that *leaves out* some premise that is so obvious as not to be worth stating (or which does not explicitly draw a conclusion which obviously follows). Such a truncated syllogism is called an ***enthymeme***. For example, "Every human being dies, and so you will die" leaves out "and you are a human being." Most "because" statements are actually enthymemes. Here is a hypothetical enthymeme: "If you study hard, you will get an A, and you *will* study hard." Here, the conclusion ("You will get an A") is left out.

2. This rule of having only three terms is violated by the "four-term syllogism," where the same word is used in two different senses (and hence is two terms). Obviously, then, there can be no mediation between the subject and predicate: "Hercules is a hero and hero is a four-letter word; and therefore Hercules is a four-letter word."

3. Not having the middle term definite at least once (it may be definite twice) results in the "demagogue's fallacy." "Every Republican is an investor of money, and every miser is an investor of money; and therefore every Republican is a miser." If the middle-term is the predicate of two affirmative propositions, it is indefinite twice. The idea here is that the "class" of investors is larger than either Republicans or misers (which form an indefinite part of it), so that you can't guarantee that the two extreme classes overlap.

4. The reason the term that is definite in the conclusion must be definite in the premise is that you can't conclude to more than you started with. The middle term may be indefinite once and definite the other time, because you are drawing no conclusion *from one premise to the other*; but you are doing so from the premise to the conclusion.

5. The reason both premises can't be negative is basically that two exclusions do not force either an exclusion or an inclusion. "No horses are pigs and no pigs are whales; and so no horses are whales" has a true conclusion; but that it doesn't follow can be seen from "No horses are lizards and no lizards are mammals; and therefore no horses are mammals."

6. The rule that a negative premise needs a negative conclusion can be seen from what happens if you obvert the negative premise. I will let the reader do this.

7. The fact that affirmative premises generate affirmative conclusions basically says that you can't argue to a disconnection by

connecting.

10.4.2. Figures There are, as I said, several ways of arranging the terms of the propositions.

Traditionally, these are called "figures," of which there are four. Traditionally also, there are rules for each of the figures; but they are all applications of the above seven rules, and I won't burden you with them.

Here are the four figures, with the propositions arranged above each other:

I	II	III	IV
S . M	S . M	M . S	M . S
M . P	P . M	M . P	P . M
S . P	S . P	S . P	S . P

Notice that the subject-term and the predicate-term appear in different places in their own premises. The first figure is the clearest, because the subject-term is the subject of both the conclusion and its premise, and the predicate-term is the predicate of both; and the middle-term is in the middle. "Every horse is an animal and every animal is a living being; and so every horse is a living being."

In the second figure, the middle-term appears as the predicate of both premises (with the predicate-term appearing as the subject of its premise—though it is the predicate of the conclusion). In this figure, one of the premises must be negative, or the middle term is indefinite twice; and hence this figure can only generate negative conclusions. "Every horse is an animal, and every typewriter is not an animal; and therefore every horse is not a typewriter."

In the third figure, the middle term is the subject both times,

meaning that the subject-term is the predicate of its premise. "Every animal is a living being, and every animal is not a typewriter; therefore some living beings are not typewriters."

The fourth figure, with the middle term on the "outsides" of both premises, is the most confusing of all. "Every horse is an animal, and every maverick is a horse; therefore, some animals are mavericks." [When I wrote the original version of this, I myself became confused and "concluded" "Some horses are mavericks," which uses the middle term three times. Don't use this figure; convert some proposition so that it gets into a clearer form.]

10.4.3. A Blairian addition Symbolic logicians like to say that their logic (which, as you can see, I don't like) is more "powerful" that what is here.

It can, they assert, allow them to make inferences which are "forbidden" in traditional logic. It is true that it obviously follows that if Frank loves Mary and Mary is a woman, then Frank loves a woman. It is equally true that in Aristotelian logic as it stands, there is no way to put this into syllogistic form.

Not one to be daunted by the fact that giants of intellect (which quality I am perfectly willing to concede to the founders of modern logic) disagree with me, let me make the following rule to "save" traditional logic—instead of throwing out the baby with the bath and succumbing to material implication and the idiocy that "every" does not imply "some."

RULE OF SUBSTITUTION: If a term appears as part of a more complex term, then every term predicable of the part can be substituted, in its indefinite form, for the term of which it is a part.

10.4.3. A Blairian addition

What does that mean? In logical form, the "Frank loves Mary" syllogism would go this way:

"Every Frank is something that loves Mary, and every Mary is a woman; therefore every Frank is something that loves some women." Mary might not like that if she doesn't realize that "some" here means "at least one" and is compatible with "only one" even though grammatically it uses the plural form.

Similarly, to put "A horse is an animal, and so the head of a horse is the head of an animal" into logical form, we have to do this:

"Every head of a horse is a head of a horse, and every horse is an animal; and therefore every head of a horse is a head of some animal." Here it doesn't make grammatical sense to say "some animals"; but the meaning is the same. In symbolic logic, it takes twelve steps to reach this conclusion—so I think my rule actually is "more powerful."

There are other variations on this; but this will be enough, I think, to show how logic basically works.

And since this is just a kind of sketch of knowledge from the point of view of how we get it and how we express it, let us end this book here.

SUMMARY

"Either/or" or the "disjunctive syllogism" (p / q) means that one of the constituent propositions must be affirmed and the other denied. An affirmation of one concludes to a denial of the other, and a denial of one concludes to an affirmation of the other.

"If-then," also called the "hypothetical syllogism" (p * q), has two parts: the "if" or "antecedent" and the "then" or "consequent"; it is the general form of inference. It means that the consequent depends (in some way known outside of logic) on the antecedent. Affirmation of the antecedent concludes to affirmation of the

consequent (“modus ponens”), and denial of the consequent concludes to denial of the antecedent (“modus tollens”). Affirmation of the consequent or denial of the antecedent leads to no conclusion.

Contemporary logic uses “material implication,” where the inference is assumed valid if the antecedent is denied, whether the consequent is affirmed or denied. This does not reflect the way we think or use language.

“Because” means that the statement which precedes is the consequent and that which follows is the antecedent, and in addition affirms the antecedent (thus establishing the “truth” of the statement preceding the “because”). “But” means that the statement which follows is true, and is the opposite of what would seem to be implied by what preceded (denying, thus, the inference itself).

Contemporary logic treats definite propositions as if they were “if-then” inferences with a variable (so that they need not be factual), while indefinite ones are assumed to be “false” if the subject does not in fact exist. This position does not reflect how we think or, in fact, how symbolic logic is used in mathematics. We will assume that for logical purposes terms have referents, and that definite propositions refer to every member of the class named, and are not in fact “if-then” propositions.

The “Square of Opposition” includes the four possible combinations of propositions with a given subject-term and predicate-term. The two definite propositions (contraries) are related as “not-both”; the two indefinite ones (subcontraries) as “not-neither”; the two affirmative propositions are related as “if-then,” with the definite implying the indefinite; and this also goes for the negative propositions. The definite affirmative and indefinite negative are contradictories, related as “either/or”; and this also goes for the indefinite affirmative and definite negative.

The categorical syllogism (syllogism involving predicates) consists of two premises and a conclusion. The subject-premise

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contains the subject-term (the subject of the conclusion); the predicate-premise contains the predicate-term (predicate of the conclusion); and both premises also contain a “middle term.” Conclusions are valid when the relation of predication is transitive through the middle term to the conclusion.

Predication is transitive if the following rules hold: Only three terms and three propositions; middle term definite at least once; definite term in conclusion demands that it be definite in its premise; both premises not negative; if one premise negative, negative conclusion; and if both premises affirmative; affirmative conclusion.

The way terms are arranged in the propositions is not relevant, as long as the rules are followed; but there are four possibilities, called the “four figures,” of which the first (S . M, M . P; S . P) is clearest.

To allow for certain operations not permitted by the above, if a term is part of a more complex term, anything predicable of the part may be substituted for the term which is the part.

A sorites is a chain of syllogisms, where from the first premise of the chain, the final conclusion follows. An enthymeme is an informal syllogism, where an obvious premise or conclusion is left unsaid.

EXERCISES

Are the following valid? If so, what kind of syllogism are they, and if not, what rule do they violate?

1. If I were king, I would give you half my kingdom; but I'm no king, so tough luck.

2. It's either not a bargain at all, or it's not something he got legitimately; and I happen to know that he didn't get it illegitimately, so it must be quite a bargain.

3. You're either lying or you're stupid; but if you're stupid, they you wouldn't have been there in the first place. But since I know that you were there, you must be lying.

4. If there is a life after death, then it's either neutral or there is something like a heaven and hell; but the evidence leading to a life after death is contradicted if it's a neutral state, so there's either no life after death at all or there's something like a heaven and a hell.

5. John is a very intelligent student, and practically all very intelligent students can do logic well; therefore, John can do logic well.

6. A dog is not something that can make a free choice; ;and nothing that can make a free choice is something that can morally be tortured; therefore, a dog is not something that can morally be tortured.

7. Every harpist is a musician, and some women are harpists; therefore, some women are musicians.

8. Some musicians are harpists, and no musician has a tin ear; therefore, no harpist has a tin ear.

9. Every person who discriminates is doing something wrong; and John, when engaged in wine-tasting, is a person who discriminates; therefore, John, when engaged in wine-tasting, is doing something wrong.

10. Every hard-drug user started using marijuana; you started using marijuana; therefore, you are a hard-drug user.

10.4.3. A Blairian addition

GLOSSARY OF TECHNICAL TERMS

NOTE: For ease in consultation, cross-references are avoided, and terms are repeated if they belong in several places.

A person is ABSOLUTELY CERTAIN when his evidence establishes that IT IS IMPOSSIBLE for him to be mistaken.

ABSOLUTE CERTAINTY is the realization that it is impossible for you to be mistaken in what you think is true.

ABSTRACTION is the name for the fact that understanding, in being conscious of one relationship (with its foundation) leaves out all other relationships and foundations from its consideration.

An ANALYTIC statement is either a total or partial tautology.

The ANTECEDENT is the proposition that forms the "if" clause of the "if-then" compound.

An ARGUMENT is an inference.

The ARISTOTELIAN DEFINITION defines by "genus and specific difference."

Something is called BAD when the fact about it disagrees with our understanding of the way it ought to be.

BEGGING THE QUESTION is an attempt to prove something by a fact whose truth depends on the truth of what you are trying to prove. It is a fallacy.

FAITH or BELIEF is knowledge based on testimony.

CAUSAL DEFINITIONS (also called OPERATIONAL DEFINITIONS) define something as the cause of some effect which the predicate describes.

The PRINCIPLE OF CAUSALITY states that every effect has a cause.

The CAUSE is the fact which, when added to the effect, makes the whole set of facts not a contradiction.

CERTAINTY is the realization that you are not mistaken in what you think is true.

A person is ABSOLUTELY CERTAIN when his evidence establishes

that IT IS IMPOSSIBLE for him to be mistaken.

ABSOLUTE CERTAINTY is the realization that it is impossible for you to be mistaken in what you think is true.

A person is MORALLY CERTAIN when he merely has NO EVIDENCE that indicates that he might be mistaken.

OBJECTIVE CERTAINTY is a state in which the person does not doubt either because he has evidence to support the truth of what he knows or because he has no evidence to cast doubt on it.

A person is PHYSICALLY CERTAIN when he *has evidence supporting* what he thinks is true *and NO evidence* to think that it is false.

SUBJECTIVE CERTAINTY is "being convinced" emotionally that you are not mistaken. It is *purely subjective* if there are facts known indicating that you might be wrong, and you refuse to consider them.

HUMOR or THE COMIC is a disagreement between the fact and our understanding of the fact, when the person notes the simple fact of this disagreement as a fact, and does not "expect" either one to agree with the other.

The CONCEPT is the form of the act of understanding; it is the relationship understood and the foundation of that relationship.

An ESTHETIC CONCEPT is a relation based on the emotions caused by the objects.

The CONCLUSION is the proposition that results from a logical operation. It is the proposition which cannot be denied without contradicting one or another of the premises.

The CONSEQUENT is the proposition that forms the "then" clause of the "if-then" compound.

A CONTRADICTION is a statement that asserts and denies the same thing. Or it claims that what it says is true is false.

The PRINCIPLE OF CONTRADICTION states that the same thing cannot be both true and false at the same time in the same respect. [Logical formulation] The same thing cannot be what it is not while it is what it is. [Ontological formulation]

CONTRARIES are propositions that are related as "not-both."

The CONVERSE of a proposition is the conclusion of a conversion.

CONVERSION is the logical operation of interchanging the subject and predicate of a single proposition.

The COPULA of a proposition is the appropriate form of the PRESENT TENSE of the verb "TO BE."

The reference is DEFINITE if the exact objects referred to can be known from the use of the term.

A DEFINITION is a statement whose predicate shows the meaning of the subject.

The ARISTOTELIAN DEFINITION defines by “genus and specific difference.”

NOMINAL DEFINITIONS use synonyms or derivations to reveal the meaning of the word.

OSTENSIVE DEFINITIONS name or point to objects which exemplify the subject.

A DILEMMA is an either/or proposition, each branch of which is the antecedent of an if-then proposition; and the conclusion of each if-then proposition is something your opponent does not want to admit.

DOUBT is the realization that what you think is true might actually be false.

SUBJECTIVE DOUBT is the emotional condition of being worried whether what you think is true might be false. It is *purely subjective* when there are no *facts* which would indicate the possibility of error.

OBJECTIVE DOUBT is having some facts which would indicate that what you think is true may be false.

An EFFECT is a set of facts which, taken by themselves, contradict each other.

The name of the science that investigates knowledge from the point of view of its relation to what is known is EPISTEMOLOGY.

ERROR is the fact that the judgment of what the fact is fails to agree with what the fact is.

An ESTHETIC CONCEPT is a relation based on the emotions caused by the objects.

EVALUATION is thinking which uses the *judgment* as the standard to which the *facts about the object* are to conform.

EVIDENCE is the cause of our knowledge that something is a fact.

IMMEDIATELY EVIDENT means that the knowledge itself causes our knowledge of its factuality.

SELF-EVIDENT means immediately evident.

The PRINCIPLE OF THE EXCLUDED MIDDLE states that there is no middle ground between truth and falsity, or being and non-being.

EXISTENCE or REALITY is whatever causes a mind to react.

An EXPLANATION is a statement by which an effect can be shown not to be a contradiction.

A FACT is a relation among objects.

FAITH or BELIEF is knowledge based on testimony.

The conclusion is said to FOLLOW from the premises if the inference

is valid.

The name of the science that gives the rules for manipulating statements to get new statements is FORMAL LOGIC.

Something is called GOOD when the facts about it agree with our understanding of the way it ought to be.

HUMOR or THE COMIC is a disagreement between the fact and our understanding of the fact, when the person notes the simple fact of this disagreement as a fact, and does not "expect" either one to agree with the other.

IDEALISM is a position which holds that the object of knowledge always inside the mind, not outside of it.

The PRINCIPLE OF IDENTITY states that what is is what it is.

An IMPLICATION is a potential inference.

IMMEDIATELY EVIDENT means that the knowledge itself causes our knowledge of its factuality.

The reference is INDEFINITE if the exact objects referred to cannot be known from the use of the term. INDUCTION is the leap from knowing that a fact is true of certain instances of an object to knowing that it is true for all instances of that object.

An INFERENCE is a logical operation.

The JUDGMENT is the concrete act of understanding; it contains within it the sensations as relata of the concept, together with the consciousness of whether these sensations are imaginings or are perceptions, and hence whether they refer to objects or not.

LANGUAGE is the expression of mental acts in perceptible form.

A LAW OF NATURE is a constant way some object behaves, so that its future behavior is predictable.

A LIE is a sentence that intends to express the opposite of the speaker's mental act.

LOGIC is the science which arranges statements in such a way that the final statement cannot be denied without contradicting what was already stated.

The MEANING of a linguistic expression is the mental act expressed by it.

The MEANING OF A WORD is the RELATIONSHIP actually or

potentially expressed by it.

The PRINCIPLE OF THE EXCLUDED MIDDLE states that there is no middle ground between truth and falsity, or being and non-being.

The MIDDLE TERM is the term that DOES NOT APPEAR IN THE CONCLUSION.

The MIND is what accounts for the unity of a single consciousness.

A person is MORALLY CERTAIN when he merely has NO EVIDENCE that indicates that he might be mistaken.

The NATURE of something is its constant structure which reveals itself in its operations.

NOMINAL DEFINITIONS use synonyms or derivations to reveal the meaning of the word.

An OPINION is something that a person thinks is a fact, without having sufficient evidence that it is a fact.

The OBJECT of an act of consciousness is what that act is reacting to.

OBJECTIVE CERTAINTY is a state in which the person does not doubt either because he has evidence to support the truth of what he knows or because he has no evidence to cast doubt on it.

The OBVERSE of a proposition is the conclusion of obversion.

OBVERSION is the inference which generates a proposition with a negative copula from one with an affirmative copula or vice versa.

OSTENSIVE DEFINITIONS name or point to objects which exemplify the subject.

A person is PHYSICALLY CERTAIN when he has EVIDENCE that what he thinks is true AND NO EVIDENCE to think that it is false.

POST HOC ERGO PROPTER HOC (“it came after, therefore it was caused by”) is the fallacy of saying that what happens after something else was caused by what it follows.

The PREDICATE of a statement expresses the relationship to be understood about the subject.

The PREDICATE-PREMISE is the premise in which the predicate term appears.

The PREDICATE-TERM of a proposition is the word-group that is used in its meaning-function in the proposition.

The PREDICATE-TERM of a categorical syllogism is the term that forms the PREDICATE OF THE CONCLUSION, whether it is the predicate of the premise it is in or not.

A PREMISE is a proposition from which a conclusion is drawn.

The PRINCIPLE OF CAUSALITY states that every effect has a cause.

The PRINCIPLE OF CONTRADICTION states that the same thing cannot be both true and false at the same time in the same respect. [Logical formulation] The same thing cannot be what it is not while it is what it is. [Ontological formulation]

The PRINCIPLE OF IDENTITY states that what is is what it is.

The PRINCIPLE OF THE EXCLUDED MIDDLE states that there is no middle ground between truth and falsity, or being and non-being.

A PROPOSITION is a factual statement expressed in logical form.

The PSEUDO-QUANTITY of the predicate term is the objects the predicate would be referring to if it actually were referring to objects.

Terms are said to have QUANTITY in their reference-functions

EXISTENCE or REALITY is whatever causes a mind to react.

A SCIENCE is a set of factual statements on some subject together with the evidence for the statements' factuality, and the relation between the evidence and the statements' factuality.

SELF-EVIDENT means immediately evident.

SENSATION refers to the acts by which the mind reacts to objects, and unifies, stores, and recalls these reactions.

UNIVERSAL SKEPTICISM is the position that absolute certainty is never possible for the human mind.

SOLIPSISM is the position which holds that there is nothing except myself and my own consciousness.

A STATEMENT is a linguistic expression of a judgment, and hence of a fact.

SUBALTERNS are propositions that are related as "if-then."

SUBCONTRARIES are propositions that are related as "not-neither."

The SUBJECT of a statement is the object or object-class about which the relationship is to be understood.

The SUBJECT-MATTER of the science is a set of objects related together in a certain way.

The SUBJECT-PREMISE is the premise in which the subject-term appears.

The SUBJECT-TERM of a proposition is the word-group that is used in its reference-function in the proposition.

The SUBJECT-TERM of a categorical syllogism is the term that forms the SUBJECT OF THE CONCLUSION, whether it is the subject of the

premise it is in or not.

SUBJECTIVE CERTAINTY is a state where the person in fact has no doubt, but his conviction involves a refusal to consider the evidence.

SUBJECTIVITY is the uniqueness in a person's experience that is due to the fact that his mind is different from anyone else's.

A SYLLOGISM is an inference involving at least two propositions as premises and a conclusion.

A TAUTOLOGY is a statement of an identity.

A TERM in logic is a word or word-group that is used as a noun.

The PREDICATE-TERM of a proposition is the word-group that is used in its meaning-function in the proposition.

The PREDICATE-TERM of a categorical syllogism is the term that forms the PREDICATE OF THE CONCLUSION, whether it is the predicate of the premise it is in or not. The SUBJECT-TERM of a proposition is the word-group that is used in its reference-function in the proposition.

The SUBJECT-TERM of a categorical syllogism is the term that forms the SUBJECT OF THE CONCLUSION, whether it is the subject of the premise it is in or not.

TESTIMONY is a statement of fact by another person.

TRUTH is the fact that the judgment of what the fact is agrees with what the fact is.

UNDERSTANDING is the act by which the mind becomes aware of relations among sensations, and therefore among the objects that caused them.

An inference is VALID if the logic is correct.