FOR EVERYONE

THE MIND-BODY PROBLEM (AND FREE WILL VS DETERMINISM)

THE MOST IMPORTANT PHILOSOPHICAL PROBLEM

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TABLE OF CONTENTS

Note to reader:

Much attention has been devoted to using terms in this book in highly consistent ways. I request that the reader read this book in the order written, to prevent the misunderstandings that so frequently arise by virtue of the use of the same words with different meanings. Doing so will assure that the value of this book will be preserved.

William V. Van Fleet, M.D.

PREFACE

I wish to clarify something important about how this book is written.

It is customary, I know, for presentations about issues such as the one this book is about to refer plentifully to "sources," so that the reader can explore further the specific issues being discussed. However, I have not done that in this book, for two main reasons.

First, the concepts being referred to in this book have been written about by many, many people, and there is no way to refer to one, or a few, of these people who would stand out as being unusually important.

Second, it is my belief that the very existence of this problem (the "mind-body problem"), and its related problems, is due to a great extent to linguistic confusion, produced by the inherent ambiguity of language. Therefore, in this book I have attempted to develop a specific, highly consistent lexicon, the purpose of which is to obtain as great clarity as possible in communication and understanding. As soon as I would refer to some other individual's work, I would have to be taking into account how that individual was using his or her words in what he or she was presenting. This would immediately make this extremely difficult task dramatically more complex and difficult.

I also would like to clarify why I consider this problem, or set of problems, probably regarded by many as rather obscure and therefore unimportant, to be the most important philosophical problem that our species faces. This is because of my belief that it is extremely important, and increasingly so, that our species be able to come to agreement about certain basic things, and that what those basic beliefs are be as accurate as possible. Our species has become more and more able to do extremely influential things, and so while we have been able to do increasingly useful and wonderful things, potentially ultimately beneficial to us all, we have simultaneously become able to make extremely influential, and even tragic, mistakes, that will impact the whole future of our development as a species on this planet. Inaccuracy of our beliefs leads to the making of mistakes, and inability to agree tends to promote paralysis of decision-making.

We have to have a way of coming to agreement, and a way to optimize the chances of that which we are agreeing to being accurate. That would mean, I believe, that we should develop a relatively easily understood and agreed-upon lexicon for understanding and communicating about our most basic, fundamental ways of viewing everything. I do know that the vast majority of people will immediately say that what I am trying to accomplish is impossible, and therefore many people will simply not have any interest in pursuing the effort. I am hoping, however, that (1) I am correct, and (2) that there will be a few people who will make the effort to understand what I am offering, and will then advocate to others that such effort be undertaken.

Lest it be thought otherwise, I wish to assure the reader that I am fully aware of the possibility of a person being absolutely convinced that he or she has arrived at some "truth" that seems obvious and "undeniable," only to be shown later (if willing to be shown) that there are fundamental flaws in his or her way of thinking. I wish to assure the reader that I do not have the kind of feeling of certainty and confidence that I was just referring to. So I will be among those who will be interested in whether or not what I have presented here stands the test of conscientious scrutiny

by others. I truly hope that it will, because I currently maintain the tentative belief that I am making a significant contribution.

I do wish, also, that the reader will read what I have written conscientiously, with an effort to understand everything that is written within the context in which it is written. I am well aware that it is possible for someone who is reading something to have a strong wish to demonstrate that there are flaws, and therefore to be prone to read superficially and thereby allow the words and sentences being read to mean something different than what they are actually meaning in the context in which they are written. Most of the words that I use in this book can have more than one meaning, and if a meaning other than what I am using is assigned to my words, I can be made to appear to be saying things that I am not saying and would not say. I have already had this experience in other things that I have written. The reader should indeed look for flaws in what he or she is reading, but the flaws should be with regard to the actual meanings of what is being written, rather than substituted meanings produced by using the words differently.

I do hope that I am making a contribution, but I fully acknowledge that I could be mistaken. Only time will tell, so to speak, and, of course, I may never know. Nevertheless, what follows is the result of many, many hours of work that has been not only quite difficult but also quite solitary, since it has not been possible to have any kind of prolonged, in-depth, meaningful conversation about these issues. If you, the reader, fully understand what I am trying to convey in this book, I believe you will understand what I have just said. This remains to be seen.

INTRODUCTION

Throughout much of Western philosophical thought there has been an overt and/or underlying set of problems that have produced polarities of thinking, such as idealism vs. realism, but never to my knowledge any satisfactory conclusion. These problems have long been called "the "mind-body problem" and the "free will vs. determinism problem," or referred to in some similar manner. They are actually problems associated with some of our species' most difficult issues (involving major decision-making). I wish to solve these problems, and believe I have. See if you think I have.

The "mind-body problem" has to do with what the connection is between the two, including the issue as to how it can be that one may influence the other, especially when the physical sciences (physics, chemistry, biology, etc.), that have made great strides in understanding how the body (including the brain) works, use formulas that contain no variables having to do with the mind. And the "free will vs. determinism problem" has to do with how, if everything in the universe occurs according to causal laws, we are able to make decisions, when what we do was already bound to occur anyway.

I wish, however, to be somewhat more specific about the nature of these problems before giving you my solutions. And it will be crucial that, in order to have adequate understanding, we will need to use words with specific, agreed-upon meanings for the purpose of this discussion. (There is much misunderstanding related simply to individuals using the same words with different meanings.)

By "**world**" we will mean everything that exists, consisting of **entities** and their tendencies to **interact**. "Entity" will mean anything to which we can or could assign a name, or noun, such entities often being referred to as "things." The concept of "entity" will be discussed in greater detail later in this presentation.

(By "imaginary world" we can mean everything that exists only in imagination, referred to as "imaginary entities" or "imaginary things," and contrasted with what is often called the "real world." And we will recognize that there will be at times disagreement as to whether a certain particular entity is in the "world" (or "real world") or in the "imaginary world," that is, "exists" or "does not exist." Thus, we can say that some entities "exist" and some do not. This issue will become clearer as the presentation proceeds.)

Almost everyone agrees that the world (real world) exists, and that it contains entities we can **sense**, including stars, planets, gravity, light, dirt, water, air, plants, and animals, including humans, and also entities we **can't sense**, including molecules, atoms, electromagnetic force fields, electrons, neutrinos, quarks, gluons, etc. These entities are generally considered part of the "**physical world**," studied by the **physical sciences**.

But almost everyone also agrees that the world contains **minds** (especially, or maybe only, of humans), which in turn contain sensations, perceptions, concepts, thoughts, feelings, wishes, memories, fantasies, motivations, drives, aspirations, ideals, intentions, decisions, etc. These entities are generally considered part of the "**mental world**," studied by the **psychological and social sciences**. Three terms related to (but not necessarily identical with) "mind" are

"**consciousness**" (or "conscious awareness"), "**soul**," and "**spirit**." All three are associated with some controversy, which I believe this presentation may resolve.

So the **world**, that which exists, is considered to be made up of "**physical**" entities and "**mental**" entities. We generally consider that there is a certain amount of **interaction** among some of these entities, in that some seem to **influence** others, such that we have developed the concept of "**causation**." Almost everyone considers that physical entities have causative influences on each other (heat causes chemical reactions to occur faster), and that mental entities also have causative influences on each other (certain thoughts or perceptions cause fear or anger), but the problem I am addressing has to do with whether physical and mental entities have any causative interaction **with each other**. Can something **in the mind** cause something **in the physical world** to happen, and/or vice versa, and, if so, how?

And there are additional aspects to the problem, having to do with the **origins** of the physical and mental world. From within science, the idea has arisen, with much evidence supporting it, that the physical world that we see around us came into being about 13.8 billion years ago, perhaps in something like a "big bang," and it has been operating since then according to a set of rules, or "natural laws." Somewhere along the line, however, this "lifeless" physical universe began to develop within it **additional** entities, opaque, invisible "minds," at least some of which have been attached in an unclear manner to entities within the physical world, these minds seeming to have some additional effect on the physical entities that goes beyond the rules according to which the physical entities had been interacting with each other. There have been other scenarios imagined, also, such as that the physical entities and the minds came into existence at about the same time. How, when, and why these minds came into existence has been a question that has never been answered to the satisfaction of everyone, or even the majority of people.

Of course, other scenarios have been imagined also. But again, no scenario has been imagined that seems believable by almost everyone, despite the fact that probably almost everyone, from ancient times until the present, has given it some thought.

So all of these issues are what this presentation is about. I hope to provide answers that anyone, who gives adequate consideration to the presentation, can accept. However, I know from what I went through in writing this that reading it superficially, so as to get a "general impression," will not accomplish any sense of confidence in what is written or feeling of good understanding of it. It will probably have to be read more than once, with some rereading of paragraphs during any one reading. Understanding of these issues will involve the development of new networks of enhanced neuronal connections in the brain, such development always being a gradual process that is accomplished through substantial repetition. That is what had to happen for me.

CAUSATION AND EXPLANATION

We first should be clear as to what we mean by "**cause**."

We know that just because event B immediately follows event A does not mean that event A "causes" event B, as we use the word. The occurrence of these two events close together in time (or even simultaneously) and perhaps space may just be "coincidence," two incidents, or events, co-occurring at about the same time. Even if this coinciding seemed to occur fairly frequently, one event would not necessarily be considered to be caused by the other. For instance, they could both be caused by something else. So "cause" refers to something more than just co-occurrence.

So we generally say that event A **causes** event B if that sequence of events "has to" occur according to the "**rules of the universe**" ("natural laws"). But what are these rules? They are of course what science seeks. If we know the rules of the universe, then we can **predict**, at least somewhat, what is going to happen, and we can **make things happen**, at least to a certain extent, by setting up **situations** such that the **rules of the universe** make it **predictable** that what we are trying to make happen will indeed happen. So these **rules of the universe** are simply **descriptions of what always tends to happen given certain kinds of situations**.

(Please note that we are **not** using "rule" to refer to "that which **should** be done," an ethical proposition.)

But they are very **basic** descriptions. They are supposed to **always** be followed. If there are situations in which a presumed rule does not seem to be being followed, then the assumption is usually made that that rule is only a "**special case,**" applicable to certain kinds of situations, of a more **basic** rule that indeed **always is** followed, in **all** situations. Or the assumption is made that there were also **other** causative processes occurring that we did not or could not take into consideration.

Scientists are seeking a "theory of everything," which would be a set of rules that would be found always to be followed, in every situation, and such that everything that indeed does happen is simply an example of the operation of those rules. At the time of this writing, relativity theory and quantum mechanics, both highly reliable and valid in certain, different, kinds of situations, are found not to be compatible with each other, in that in situations where one set of rules is followed the other set of rules is not. The "theory of everything" would explain this difference as being the result of a more basic set of rules (superstring theory or M-theory being considered examples) that were indeed always being followed, but differently in different kinds of situations and thus leading to different results, consistent in this example either with relativity theory or with quantum mechanics, depending on the situation. Relativity theory and quantum mechanics would just be special cases of the theory of everything, just as Newton's laws have been found to be a special case of relativity, valid enough in certain situations in which the unusual effects of relativity are so small they are not easily measurable, resulting in Newton's laws being sufficient for certain usual purposes.

(Now when I use the word "rule," I am not implying that the rule came into existence by virtue of the decision of a deity or other entity that that's the way things were going to be. How these rules came into existence I do not presume to know or to have any valuable ideas about. We are used

to the idea of things being "made," and of those things therefore having a "maker," but this way of thinking is just something that we are used to doing. The fact that things have a tendency always to happen in a certain way does not logically imply necessarily that someone or something has caused that tendency to exist. And even if someone or something, a maker, did indeed make it that way, we would want to know why, and why there was a maker, etc., so we would still be without a final explanation. So I am sticking **only** to talking about **what we actually find that tends predictably to happen under given circumstances, i.e., certain kinds of situations**.)

There is another thing to be clear about regarding the concept of "**cause**." Even though we have been talking about the very most basic rules of the universe with regard to what will happen in situations, with those rules perhaps or even probably having a great amount of simplicity, it seems most likely that any particular example of a situation causing a particular outcome (resulting situation) is one in which many different parts of that situation contribute to the outcome, making it unlikely that we could accurately say that one component of the situation was the only cause of the outcome. Instead, we would say that the outcome was brought about by all the components of the situation, even though we might also be able to say that, in the situation under consideration, one component was the most important of all, and that just that one component alone was enough to make the outcome that we are thinking about come about. But, in general, any one outcome would be the result of many different causes. When we do "controlled" experiments, we are doing things that allow us to disregard other possible causes of an outcome than the one, or ones, we have an interest in.

(And in fact one component of a situation, a component that we were calling a cause of something, might easily be contributing to other outcomes that we were not even considering, and might even be unaware of. Furthermore, a component of a situation might cause something else to happen, which in turn could have a causative effect (within a particular time period) on the first component, called "feedback." This complexity of causal interaction has led to the concepts of "systems theory" and causative "fields.")

A final point to recognize is that what may be predictable is sometimes **unpredictability**. This appears to be true in quantum mechanics. But the unpredictability nevertheless is **lawful**, such that results are indeed consistent with **statistical** predictions. **Repeated** experiments may demonstrate that the outcome measurements **predictably** form a bell-shaped probability distribution curve, or, instead, some other **predictable** probability distribution curve.

It should be noted that the above-mentioned **predictions** are not expected to be one hundred percent **accurate** with one hundred percent **certainty**. This is because situations are generally fairly complex, containing components beyond what we can measure accurately (or even be sufficiently aware of) that contribute to the outcomes (participate in "causing" the outcomes) that we are predicting. We can predict the weather to a certain extent and we can predict what a person may say or do to a certain extent, but we cannot expect our predictions to be completely accurate or certain. We refer to such inaccuracy and uncertainty as, among other things, "experimental error" or "measurement error." (This has nothing to do with the concept of indeterminacy in quantum mechanics.)

So the bottom line of all of this is that usually when we are saying that something is the cause of something else, we are not referring to a 100% precise and predictable relationship between a causative situation and the caused outcome (resulting new situation). Instead, we are generally

referring to "tendencies," so that we say that some considered particular situation was caused by its antecedent situation because situations like that antecedent situation have been found to have a tendency to be followed by situations like the one we are considering.

But even though we cannot expect complete accuracy and certainty, our **ability to predict,** at least to some extent, is **absolutely essential** to **everything** we do. If we were completely unable to predict anything, we would have no reason to do anything, because the reason(s) for doing something is/are at least one or more of the **predicted** outcomes of doing that something. We do what we do **in order to** bring about certain **predicted outcomes**. (And if an outcome is different than what was predicted, we often say we have made a **mistake**. Such **mistakes** are the result of **inaccurate predictions**.)

So we need to summarize what we mean by "**cause**." To say that a particular **situation causes** a particular **outcome** is to say that we believe that the rules (or "laws") of the universe are such that, at least theoretically, we could have **predicted** that **outcome** by knowing the (relevant) details of that **situation** and those (relevant) **rules**. Note again that the concept of "**prediction**" is absolutely essential to our concept of "**causation**."

Similarly, we should also be clear as to what we mean by the related concept, "**explanation**." We first consider the situation or event that we are trying to "explain" as an **outcome**. Then by "explanation" we usually mean the description of the **causative situation** and the (at least implied) statement of the relevant **rules of the universe**, showing that the outcome we are trying to explain is just an **example** of outcomes made necessary by the relevant rules of the universe operating in certain **kinds** of situations, of which our causative situation is **one**.

To use an oversimplified example, we want to explain an apple dropping from a tree to the ground. We say that (of course) the apple dropped to the ground, because the force of gravity pulled hard enough to break the weakened stem, and that this is an **example** of the fact that all masses attract each other with a force, which, if it is stronger than the forces of attachment holding one of those objects at a distance from another object, will cause that object to break that attachment and "fall" toward the other object. Our explanation is that the falling of this apple was simply **an example of this more general fact**, involving how the **rules of the universe** act in certain kinds of **situations** to produce certain kinds of (predictable) **outcomes**.

When we explain our **behavior**, we describe it as an **outcome** of the **situation** we were in, including things about our body, personality, and current beliefs and motivations, so that the listener can "understand" (accurately believe) that we behaved that way because people with that body, personality, and beliefs and motivations in that kind of situation **predictably** do **tend** to do as we did. Our behavior is just an **example** of how people like us tend to behave in situations like that. And we acknowledge that we usually have to make these judgments with some degree of uncertainty and lack of precision.

So let us recognize that when we, in our daily lives, "explain" something that happens, we are not generally using the most basic rules of the universe. Instead, we are saying that what we are trying to explain is an example of what generally tends to happen in such situations. And, of course, what seems like a satisfactory explanation to one person may seem like an unsatisfactory explanation to another, in that the other person may believe that the first person has focused on the wrong tendencies for certain things to happen in situations like the one being considered (or

has not "taken some other things into consideration"). It is only in the natural sciences (physics, chemistry, astronomy, biology, etc.) that we would strive to understand these tendencies for certain things to happen in certain kinds of situations using more precise and more basic, underlying rules of the universe.

Let's also recognize that there is **another** use of the word "cause" (and related words), related to a different meaning of "explanation." When I explain why I decided to do something, I may say that the cause of my doing such-and-such was **in order to** obtain a particular outcome. ("Explain why he did it." "To make himself popular.") The outcome itself, however, really is not a **cause** of the behavior in the meaning I have used so far. My **prediction** of the desired outcome might indeed be one of the causes of my behavior, but the outcome itself would not be the cause. This kind of meaning for "explanation" involves the concept of "intention," a concept that is connected to the concept of "free will," a part of the mental world, and will therefore be discussed in greater detail later. But an extension of this line of thinking into the physical world is involved in the idea of "final cause," in which, for instance, the cause of the acorn is the resulting oak tree. This use of the word "cause," when referring to events in the physical world, is somewhat atypical, probably is not very useful, and does not concern us here. But its use when referring to events in the mental world is indeed quite important to this presentation.

Related to this line of thinking, however, is a very frequent alternative use of the word "cause." So far, we have been dealing with situations in which the question being asked was, "**What** caused X to happen?" But the alternative question that is sometimes asked is, "**Who** caused X to happen?" The context is usually one in which we are trying to assign praise or blame to an individual or group, but we can also just be trying to understand a sequence of events. If we imagine a person pushing on a door and the door opening, we would very likely say that the person caused the door to open. A statement such as this, if analyzed further for meaning, might be that the person pushed the door, meaning that he or she exerted a force on the door that overcame the resistance of the friction of the hinges, and thus drift back to the kind of question that asks **what** caused the door to open. Thus, in a sense, the question as to **who** caused something to happen is "shorthand" for **what** caused something to happen, that highlights the identity of one component of the causative situation (the "agent") rather than the rules of the universe that were operative in a particular event.

This line of thinking is obviously related somewhat to the "free will vs. determinism problem." To say that I caused the door to open tends to convey the impression of a "prime cause," because there is somewhat of an implication that there is no need to ask the further question as to what caused me to cause the door to open. "I just made the decision to do it." But of course we really know that I could be asked, "Yes, but why did you make that decision?" Then of course two different kinds of answers can be given. I can say, "In order to accomplish X." Or, I can say, "In retrospect, I was experiencing Y and believed Z, and this combination of circumstances therefore produced my behavior, as would be expected (predicted) by virtue of our knowledge of what usually happens under such circumstances." So we still are just looking at areas of thinking that have embodied somewhere in them the "free will vs. determinism problem," very much associated with the "mind-body problem," as will be clarified.

I now wish to get back to this problem of the **presumed causal interaction between the physical and the mental worlds**.

Many of us presume that something in the physical world may cause something in the mental world to happen, and vice versa. Presumably we can demonstrate that we sometimes can **predict** that something will happen in the mental world if we know that something has just happened in the physical world (e.g., brain stimulation **causing** alterations of conscious experience), or vice versa (e.g., one's decision or intention to move one's hand **causing** one's hand to move).

But if entities in the mental world cause things to happen in the physical world, why are those mental entities not represented by variables in the equations that are used to model the interactions in the physical world? Why do we not find, for instance, that the events observed in particle accelerators are influenced by the thoughts, feelings, and wishes of those standing around watching the results of such experiments? Why do we not find that the emotions of the chemist affect the chemical reactions being brought about? If they do, why would we not find equations such as hydrogen + chlorine + anger $\rightarrow$ hydrogen chloride + nostalgia?

Now I realize that many people believe that such influences do occur. Phenomena such as levitation and other kinds of magic involve the mind directly influencing the physical world, in ways not predictable by the known rules of the universe ("natural laws"), but only by the wish and/or intention of the individual engaged in the magic, perhaps accompanied by some sort of ritual behavior (e.g., waving of a wand). But I wish to call attention to the lack of verification of such interactions by scientists who are respected by peers who review their fellow scientists' work and attempt to replicate and/or challenge their findings.

It is, of course, widely recognized that mental phenomena in the experimenter, such as wishes for specific outcomes, may affect the outcome of observations and experiments. However, the usual explanations for that kind of influence (experimental bias) have to do with erroneous setups of experimental situations, or errors in observation or statistical analysis. They do not have to do with a presumed direct effect of the mental state (e.g., "wish") of the experimenter on the studied operation of the rules of the universe. The experimenter's (mental) wish indeed does affect his or her (physical) behavior, how he or she performs the experiment. But this experimental bias is not an example of the mental world directly affecting the functioning of the physical world **beyond** the **behavior** of the experimenter. Thus, the feelings of the experimenter do not end up as variables in the equations describing the functioning of the part of the physical world **that is being studied**.

But of course this situation indeed **is** an example of the **mental** state (e.g., wish) of the experimenter presumably affecting the **physical** activity of the experimenter, that is, his or her **behavior** in the **physical** world.

So there **still** remains the observation that feelings, beliefs, motivations, etc., namely, mental phenomena, seem to **cause** things to happen in the physical world, as, for example, when a decision in my mind to move my hand is predictably followed by movement of my hand, or when my becoming afraid of what I am seeing is predictably followed by an increase of adrenalin in my

bloodstream. Are these indeed clear examples as to how the mind can affect the body, i.e., how mental entities and processes can cause things within the physical world to happen? And, again, if this is so, why do these mental entities never show up in the explanatory formulae or equations describing how things work in the physical world? Why are these things absent in what is studied by the physicist, the chemist, the biologist, the neurologist, the astronomer, etc.?

Another related dilemma is created if we ask the question as to **where** the interaction between the mental world and physical world takes place. People are used to the idea that it is not possible to find **mental** entities somewhere in the physical world, but if there is indeed an **effect** of mental entities on some part of the **physical** world, then the **location** of that effect, the place in the physical world where it is presumably happening, surely could be identified. At one time, some people apparently thought that this location was in the pineal gland in the center of the brain, but no one believes that now, as far as I know. The question just remains unanswered. And we may ask why it remains unanswered. If we were to determine **where** the physical world is influenced by a mental entity, then we should be able to see an example of something happening at that **place** in the physical world that seemed contrary to what would be predicted by the rules of the universe ("natural laws") that describe only interactions among physical entities. Something "strange" should be observable at that location.

So on the one hand most people believe there is a causative interaction between the mental world and the physical world, but on the other hand no one has ever been able to locate, much less explain, that interaction. This fact raises the possibility (or probability) that the question itself may be flawed, that the question itself may contain assumptions that should not be made because of not being possible or because of not being clear and unambiguous. But of course we can't just assume that.

So now we come to a solution to the "mind-body problem" that is sometimes offered, which feels like it is on the right track, but still has some puzzling aspects to it. That solution is that when a mental event and a physical event always take place at the same time, it may be that neither is **causing** the other, but that those are just two different "**aspects**" of reality, or of what is happening in reality. If this is true, then it would not be appropriate to speak of a "physical world" as distinct from a "mental world." It would not be appropriate to speak of "physical entities" and "mental entities," but instead perhaps to speak of physical "aspects" and mental "aspects" of entities. But if that is what is happening, how come there are these two "aspects" of reality, or of the world? What is the **reason** for there being two aspects of reality rather than just one? And what does it **mean** to say that reality has two (or more) "aspects." And why do some things (e.g., people) have two aspects and others (e.g., rocks) just one? Indeed, I think that we are getting on the right track with this explanation, but that there needs to be quite a bit of additional explanation, and when we are finished, I think some important and influential conclusions can be drawn. But this remains to be seen.

My solution to the "mind-body problem" is to see it as a **pseudo-problem based upon an inadequate understanding of modeling and of linguistics**. And this pseudo-problem is also involved in the "free will vs. determinism problem" (that very-much-related problem).

So first we will now need to be clear about what I am meaning by the concept, "modeling," or "model." What I mean by "modeling" should become increasingly clear in what follows, but a "model" (as used in this presentation) is anything that is constructed or formed that allows for **predictions** about that which is being "modeled" (that which it is a "model of").

Please note that I did **not** say that a model was something constructed for the **purpose** of making predictions. I said that a model **allows for** such predictions. If a stone rests on mud that subsequently dries up, the impression left in the mud would be a model of the surface of the stone, as the term "model" is being used in this presentation. The impression in the mud could indeed be used to predict what the surface of the stone would be found to be like, but the formation of that model simply happened, it did not take place because of some "purposeful act." So "model," as I am using the term in this presentation, is **anything** that **could be used** to predict something about something else. And that "something else" would be what was "modeled" by the model, according to our terminology.

So, please note that, also, the stone (or one surface of it) could be considered a model of the impression in the dried mud.

Also, please note that we are labeling as a "model" an entity that already exists (or could exist, or could not exist, etc.). Taking an entity that exists and labeling it as a "model" does not bring something new into the world; doing so is simply stating the existence of a relationship that exists between two or more things. So whenever we are using the word, "model," we are talking about a relationship between two or more things. Whatever a model is made out of, calling it a model does not change what it is made out of. "Model" is a noun, so a model is an entity, but the entity is brought into existence by definition only, and the bringing into existence of a "model" does not change the world other than how we think about it.

But to understand better, it will be helpful to think of examples of what we would call "**purposeful**" modeling, or the **creation** of a "model."

(And remember that when we talk about creating a model, we are talking about creating a **thing** in such a way that we can also **call** it a model because of certain characteristics of the thing, characteristics that enable us to do something, namely, predict something about something else.)

For us humans, a model car, would be an example. With that model car, if it is accurate, we can **predict** certain things about the car that the model is of, even if we have never seen the actual car. Architects may construct models of what they intend to build, those models enabling **predictions** to be made about the future, when the project has been completed. But, as other examples, science uses mathematical and statistical models, allowing for very precise **predictions**. And maps, pictures, and graphs can also be considered models. They allow us to **predict** where things will be found, what they will look like, and what some measurements of them will turn out to be.

And we can think of examples of **purposeful** modeling that is done somewhat **automatically**.

A sentence (or set of sentences) or a verbal description can be considered a (linguistic) model of that which one is talking about, essentially being a **prediction** of what we would find if we

ourselves checked out what was being said or written. And our imagination of something is a model of that something, a **prediction** of what it will or would be "like" (look like, sound like, etc.), just as our memory of something is a model of something that presumably existed or happened in the past, meaning that we can or could **predict** now what we would find if we looked at all the evidence we have of what happened in the past (or even, if such were possible, we magically went back in time and watched it happening).

Note that, within mathematics, a graph of an equation is a model of that equation, just as an equation can be a model of a graph. Given one, things about the other can be predicted.

Any model is **constructed** by (consists of) the **arrangement** of **something or some things**. A model car is constructed, perhaps, with plastic and metal and various paints, arranged in a specific way. A graph is constructed with ink on paper or pixels on a screen, arranged as lines, etc. A picture is constructed with some sort of media, arranged in a particular way. Mathematical equations are constructed with mathematical symbols arranged according to certain rules. Sentences are constructed with words (symbols) arranged in a certain way according to the rules of syntax. Memory is constructed with parts of memories of experience, arranged to be consistent with what actually happened. And imagination (or fantasy) is constructed with parts of memories of experiences, arranged to represent something new or something not present.

But now I believe it will be quite helpful to broaden this concept to include modeling that **naturally** (as opposed to "purposefully") happens, as I already have mentioned in the discussion about the rock and the dried mud, and then to include "**modeling**" by **animals in general**, at least some animals, rather than just humans. More specifically, if we watch a rat get to "know" a particular setting, such as a cage or a maze or a natural environment, we will note that the rat seems to become able to **predict** what direction will lead to success in its efforts to get somewhere or accomplish something. For instance, in the maze, it will **learn** where food is, that is, how to get there. So there develops in that rat's brain something, perhaps a network of enhanced synaptic connections, that **corresponds to** things about its environment. If we really understood exactly how the brain works, then by studying that rat's brain, we ourselves should also be able to understand (predict) where the food is. Thus, the rat's brain contains a **model** of its surroundings, constructed probably out of enhanced neuronal connections arranged in some sort of way. With that model, the rat can be **successful** in finding food. "It **knows** where the food is." "It has a **belief** as to where the food is, and that belief, that model, is **accurate**." That belief, or model, enables the rat to **predict successfully** where the food will be found. The belief, or model, **works**. (And if it doesn't work, then by definition it is not accurate, and it leads to "**mistakes**," or outcomes of behavior different than predicted.)

(Note again that the formation of this model in the rat's brain happens just naturally and automatically. It is not something the rat "purposely does." The rat doesn't know anything about neurons, or models, or learning processes.)

So we are saying that **animals** (including humans), as they **learn**, develop **beliefs**, which are **models** in the brain or central nervous system about the way the world is, was, or will be, and that these beliefs or models allow the animals to **predict** what is going to happen, either in general in a given situation or as an outcome of their own potential or actual behavior in that situation. And those predictions are more likely to turn out to be what does indeed happen if the beliefs, or models, are **accurate**. **Inaccuracy** of belief leads to **surprises**, and **behavior** based upon

inaccurate beliefs leads to **unintended outcomes**, or **mistakes**, which often are undesirable (even possibly tragic or fatal), though of course not always.

Please note that I am using the word "**belief**" with dual meanings, at least at first glance. We know that "belief" is usually a term assigned to an entity assumed to exist in the "mental world." But I am also using it to refer to **whatever** it is **in the brain** (a part of the "physical world"), perhaps a **network of enhanced neuronal connections,** that is **arranged** such that it corresponds to (models) something about the world. This dual meaning is an example of how we think of the world as having two "aspects," a "physical" and a "mental" aspect, of what is actually the same thing. But this issue has yet to be discussed. Nevertheless, I believe you will find no problem occurring by virtue of using the term "belief" in this way, for the purposes of this presentation. And the explanation of this dual usage will be discussed below, since it is part of what this whole presentation is about.

We might mention here that we use the word "**understanding**" to refer to our **set of beliefs** about something. The rat understands how to get to the food. We understand what makes people behave a particular way. We understand why the moon circles the earth. And that understanding may be very accurate, very inaccurate, or somewhere in between, because beliefs vary with respect to **accuracy**, that is, their **ability to produce predictions** that turn out to be what actually happens (or would happen under certain circumstances).

Also, let us recognize that the term "**assumption**" means a **belief** that is accepted as accurate without necessarily having been legitimized (demonstrated to be likely to be accurate by meeting a legitimization criterion), and is thus a **model** and probably a basic part of a larger model (larger set of beliefs). We well know that when a belief system is being questioned because of inaccurate predictions (evidence arising against the belief system), one possibility that is often considered is that certain assumptions within that belief system may be inaccurate or incorrect, and should therefore be questioned. Within a mathematical or logical system, an "**assumption**" would be equivalent to an "**axiom**," and thus these two terms would be further examples of terms referring to a "**model**" as used in this presentation.

So we are considering a number of different **words** and **the concepts they stand for** to be simply examples of some **states that parts of the brain may be in**, having to do probably with the enhancement of synaptic connections among neurons (though we may find out differently in the future), and those **states that the brain may be in** we are considering to be **models** of things or situations, for instance, models of the way things are, or have been, or will be (or, for that matter, the way things could be, could have been, or could be in the future, etc.). These **words** (and the concepts they stand for) include "perception," "belief," "assumption," "axiom," "prediction," "understanding," "imagination," "memory," etc. These are all "**models**," as the term is used in this presentation.

The brain contains models of the world. That is why the brain can successfully "figure out" and "decide" what to do. And note that we are using terms that usually refer to **mental entities** and assuming that they refer to some **states of affairs within the brain**. So this equivalence that we are allowing for currently still contains the problem that we are dealing with, the unclear relationship between physical and mental entities.

Now, armed with all this terminology, we need to continue the approach to the problem of what the **difference** is between the **mental** world and the **physical** world, if indeed there are those two worlds. This approach will involve, I believe, the necessity for sustained effort involving the thinking of new thoughts, never an easy undertaking. To be successful, we will need to continue to be as precise as possible in the meanings of words as used in this specific discussion.

First, we need to be clear about the meaning and domain of the term, "**subjective experience**," as used in this presentation.

This phrase, "**subjective experience**" should be regarded as **one two-word term**, because there is **not** going to be a corresponding concept of "objective experience" or "non-subjective experience." The **two words** ("subjective" and "experience") are being used **together** to designate **one thing,** only because the two words used together are most helpful in conveying the **meaning** intended, as will be seen in what follows.

There is a metaphor that I find useful in increasing our understanding of these issues. I ask that you imagine a cartoon that shows two people looking at a house from two different directions. Over the head of each of the people is a "balloon" of the sort used in cartoons to depict either speech or internal thought. In our metaphoric cartoon, there is a house in each of the two balloons, in addition to the house they are both looking at. What is in each balloon represents the **subjective experience** of the house for each person. Each of those three houses (two in the balloons and one not) looks different to us as we look at the cartoon. (This difference is well recognized as the difference in perspective). Each person in the cartoon knows only the house that is in his/her own balloon, and it is not the same as the house we see them both looking at. So each of them understands that what is in his/her balloon is **different** from what is in the other's balloon. **Subjective experience of something by two or more people does not have to be the same**. And this is true for more than one reason. The **reason** given in this example is the **difference in perspective**.

Now, to examine **another reason**, we first must notice that we can say that what is in the balloon, that is, how the person is experiencing the house, has to be **different** from the **actual** house. (After all, the two houses in the balloons are different from each other, so they can't both be the same as something else, the actual house.) In fact, there is nothing about the "**actual house**" that the person can "directly" experience, in that whatever the house consists of has to be **converted**, or **changed** (for example, through light reflected off the house, transformation of that light into electrochemical reactions of the retinal receptor cells, becoming in turn electrochemical processes involved in conduction of nerve impulses along axons, etc.) ultimately into that **subjective experience**.

To make this fact even clearer, let us do a thought experiment that involves our subject looking at a chair. Let us make the assumption that with some sort of very advanced technology we can exactly reproduce in that subject's brain the exact same state of affairs as is occurring at present. So, at present, our subject is looking at the chair. Now, a few moments later, we do one of two things. Either we take the chair away but reproduce in our subject's brain the exact same state of affairs, or we leave the chair but remove the subject's brain (cause it to suddenly die, for instance). Under which set of circumstances would the subjective experience of the chair be reproduced? So what is necessary to produce that subjective experience, the chair or the brain? Upon what does that subjective experience depend, the structure of the chair or the structure and functioning of the brain? What is there, then, of the **actual chair** that is part of the subject's **subjective experience of the chair**? It should be clear that the actual chair, independent of the subjective experiencing of it, is not in any way the same as the subjective experience of the chair,

which is all that someone can "know." (We will later, however, consider the "relationship" between the "actual chair" and the subjective experiencing of it.)

This fact, that one's "internal," or subjective, experience is not the same as "reality" (i.e., that which exists **independently** of anyone **experiencing** it), has long been recognized. One way this fact has been verbalized is something like, "You can't really know external reality; all you can know are the ideas in your own mind." Another way of saying it is that you, the reader, will never experience anything other than your own subjective experience. For you, you are "confined within" or "limited to" your own subjective experience.

For you, you "are" your subjective experience, nothing more. This is all you have to work with. Philosophically, if one makes the assumption that you indeed have access to "existence," but that that access is what we have just described, and you can never "know" anything beyond that subjective experience, then one is taking a "solipsistic" position. (People reject that position in various ways, of course.) And the study of that subjective experience without reference to a presumed reality "outside of it" has been termed "phenomenology."

So from your birth till your death, you will have, or deal with, or be, your own subjective experience, **never anything else**. In particular, you will never have someone else's subjective experience. You will never be able to experience someone else's subjective experience. Although you can **imagine** what you believe to be someone else's subjective experience, that imagination, what you are experiencing as you are doing that imagining, is **your own** subjective experience, not that of the other person. Your **belief** that others have subjective experience is just that, a **belief**, or **model**; it is not an observation, not experience.

Therefore, there is no way of being able to say that your subjective experience of something is the same as (or, for that matter, different from) someone else's subjective experience of that same something.

For instance, it is quite possible, and totally unascertainable one way or another, that when you see something purple, another person looking at the same thing sees it as having a color that you would call "green" if you were having that experience. "Purple" is simply what that other person has **learned to call** whatever color you have **learned to call** "green," that has a certain wave length of light. There is no way you or anyone can determine if the **subjective experience** of the color of that thing is the same, even though you and the other person are labeling with the same word whatever color each of you is seeing. So again, **subjective experience of something by two or more people does not have to be the same**, nor is it possible, or perhaps even meaningful, to say that their subjective experience is the same (or, for that matter, different).

In fact, there are actual circumstances under which it seems very likely that one person's subjective experience of something must be basically different from another's. A person with **synesthesia** will have an experience in two sensory modalities when others would have the experience in only one sensory modality. For that individual, specific sounds may be experienced also as specific colors. Such reported difference in experience would be hard (but probably not impossible) to explain as a difference only in labeling. But again, there is no way to ascertain, one way or another, whether your subjective experience of a particular frequency of sound waves or of light waves is the same as or different from someone else's subjective experience of that same frequency of sound or light.

So for you, your subjective experience is "everything" you experience. When you interact with someone else, and you are looking at that person, and you are empathizing with that person, all of that is "in your own mind," meaning that it is simply your subjective experience. In one sense, you are completely alone in your own universe, populated with specific subjective experiences (called "people") that are always appearing, behaving, and disappearing, in response to which you are subjectively experiencing feelings, thoughts, memories, fantasies, intentions, etc.

But that is not the whole story. None of us think that way or feel that way (at least if we are mentally healthy). We **automatically make the assumption** (have the belief) that we are not "alone." In fact, when we see other people and interact with them, we **automatically make the assumption** (have the belief) that what we are seeing is **outside** of us, **different** from us, not a part of us, but instead entities that we must **interact** with (and do so relatively carefully). And when we see what we call inanimate objects, we do not regard them as parts of ourselves, but instead **make the assumption** (have the belief) that they are parts of a larger world that we ourselves also exist **in**. So we **feel** some sort of **boundary** between ourselves and those other things that we do not consider to be ourselves. (This boundary has been called the "ego boundary," and its presumed existence is considered to be very important to mental health. When it is not there, or is deficient, the individual is considered to have serious illness, unless it is purposely and temporarily inhibited, as in meditative practices involving, for example, "becoming one with the universe.") But the experience of this boundary, including what you experience as being within it **and** outside of it, is still only your own **subjective experience**. (This boundary is not "outside of" your subjective experience.)

So your **subjective experience** is **divided** by you (automatically) into **that which is you** and **that which is not**, even though the boundary between what is you and what is not may be hard to define or characterize. And this creation of a boundary is an act of **modeling**, more specifically, the automatic making of an **assumption**.

(Let us note here that I have referred to this "ego boundary" phenomenon as an "assumption" and also as an "experience." An assumption is a "basic belief," a belief accepted without the necessity of meeting any legitimization criterion. It is an example of a model, since we are considering beliefs to be models. But experience itself consists of models, as discussed above. So here is an example of the lack of a clear boundary between what is "experience" and what is "beliefs about that experience." This lack of a clear boundary will be discussed further below.)

There has been speculation that the newborn infant perceives only one set of subjective experiences, a "booming, buzzing confusion," and that only with accumulation of experience and learning does the infant acquire the sense of "me" and "not me" (or "other"). To some extent this differentiation may be based upon recognizing that some subjective experience is "constant" and other subjective experience is "intermittent" (or even non-recurring), and also upon recognizing that some components of subjective experience are much more subject to control by wish or intention (i.e., likely to happen when a certain state of mind, later in the person's life to be called "intention," or "deciding," is experienced), and therefore are identified as parts of the self. For example, the **reliable co-occurrence** (predictability) of the experience of **intending-to-move-my-hand** and the experience of **my-hand-moving-as-intended** has led me (in infancy) to identify that intention as **"my" intention** and that hand as **"my" hand**. None of this is true of "Mother's hand."

We have been talking about some naturally occurring assumptions that we all make. Let us once again call our attention to **an extremely fundamental assumption**, namely, that **there are others that have subjective experience just as we have**. This assumption is so basic that it is even implied in this paragraph by the use of the word "we." But it is important for you to recognize that this basic assumption that you are making is just that, a basic assumption. **It is not an observation**. You cannot ever observe someone else's subjective experience. You just make the assumption that the other person has it. (This whole issue is very much related to the phenomenon referred to as "theory of mind.") And the nature of this basic assumption, and related issues, is part of what this presentation is about.

So we have been talking about how we **naturally** go beyond our solipsistic worldview, and in fact probably cannot remember ever having had it. Nevertheless, we should remember that the **basic material** that we have to work with is indeed our own **subjective experience**, nothing more. This is the "raw material" we have to work with, and it is the only raw material we will **ever** have to work with. The question is: "What do we do with it?"

Continuing with this "insight" (model), we can say that it is possible that many other animals have "subjective experience" just as we ourselves do. This assumption can be made because we have the impression that this subjective experience is **possible by virtue of an intact and functioning brain.** And since other animals have **brains**, we may therefore **assume** that they also have **subjective experience**. (There is no part of the human brain that is totally absent in the brains of all other animals.) We don't have to make that assumption (that other animals have subjective experience), but for our purposes, we will make that assumption and elaborate upon the idea, reserving till later the decision as to whether to retain this way of looking at things, as opposed to doing so in some other way.

So what we are saying is that **all of us, including perhaps much of the animal world, have subjective experience that is dependent upon an intact and functioning brain or central nervous system**. That subjective experience is "with us" (in one sense, is all that we are) from the beginning of our lives till the end. (I realize that many also believe that subjective experience persists beyond death. We will **not** be making that **assumption**, though we will also return to that question later, following better understanding of the issues involved.)

Of course, to be even more accurate, we must say that subjective experience is dependent upon an intact brain **functioning in a certain way** (so far not fully understood), since when the brain is asleep and not dreaming, or is anesthetized or in coma, whatever functioning is occurring is "apparently" (assumed to be) insufficient for the production of subjective experience.

(We could, of course, come up with an alternative idea, namely, that during these states the person is indeed fully aware, that is, is having unaltered subjective experience, but is unable to demonstrate it by any observable behavior, such as communication or even any kind of movement itself, only to have, also, complete amnesia for that subjective experience, produced by a temporarily induced inability to form memories. We generally do not have this belief, though the question has been raised to some extent with regard to anesthesia and vegetative states.)

(And please note that already we are again talking about the effect of the physical world on the mental world, insofar as we identify "subjective experience" with the mental world and regard the

functioning of the brain to be a phenomenon in the physical world. But although we have clarified what we mean by "subjective experience," such that we can regard it as meaning something close to the "mental world" of an individual, we have not yet clarified what we mean by the "physical world," such that we can have a clear idea as to what the essential difference is.)

Now the next thing to focus on is the fact, previously discussed, that **learning takes place**. Within your subjective experience, you observe certain **regularities**, certain things you can count on, or **predict**. Your ability to do this is built in and occurs naturally and automatically. (Neurologically, as previously mentioned, it probably has to do with the strengthening of networks of synaptic connections between neurons.)

You learn things **about** your subjective experience.

You learn where things are usually found. You learn that under certain circumstances, certain things cast shadows. You learn that cats and dogs walk around on four legs, and people do on two. You learn that leaves almost always fall downward from trees. You learn that if the phone rings once, it will probably ring again.

You also learn things about your **subjective experience** specifically **in response to what you do**.

You learn that when you touch some things that you see they will be observed to be hard or soft, or hot or cold. You learn that some things you are about to eat will taste good or taste bad. You learn that if you put one foot ahead of the other on certain terrains, you will be okay, but on other terrains, you will need to modify your steps. You learn that if you turn on the light switch, light will probably come on. You learn that if you move your fingers and hands in a certain way, holding a shoelace, you will find your shoelace successfully tied. You learn that if you press the guitar strings in a certain way with your left hand and strum with your right hand, you will hear a certain specific sound. You learn that if you say "Hello," the other person will probably respond somewhat similarly. You learn that if you say certain things, other people will laugh.

So you learn all sorts of things about your subjective experience, and about what happens when you do certain things. (And you learn what it feels like to **do** something, as opposed to observing something just **happening**.)

And again, I would like for us to label all of these things that you learn "beliefs." You believe certain things taste good, or are hot or cold. You believe the terrain is level. You believe the light will come on or the phone will ring again or a certain sound will result from what you are about to do. You believe others will usually respond to your greeting. You believe you can make others laugh. You **believe** many, many things, meaning that you are able to make **predictions** as to what is likely to happen, including what is likely to happen if you **do** certain things.

And we have already spoken of **beliefs** as **learned models** of the way the world is, was, or will be. So we are talking about the development of a set of beliefs **about** subjective experience that develops in at least some, if not all, animals that have a brain or something like it. These beliefs, or **models**, of subjective experience are the basis on which action is taken. They produce the more specific **predictions** (expectations) according to which the animal **acts**, in this situation, **in this way** as opposed to some other way. (We are not ruling out there also being in the brain "beliefs" or "models" of the world that may be a part of the inherited structure and functioning of the brain independent of prior experience or of learning, things we would call, for instance, "reflex behavior," or "instinctual behavior," but such "inborn" models are relatively somewhat

unimportant in what this presentation is about, and would not, I believe, be inconsistent with the presentation.)

You are most of the time **doing** things. Most of what you are doing is **automatically** done **correctly**. You walk, reach for things, go get things, tie your shoelaces, get something from the refrigerator, talk to others, etc., and everything usually goes pretty smoothly. You walk into your living room, and most everything seems the same. So you are continually **automatically predicting,** and finding that what you predict is what **actually happens**. Almost everything is happening according to your beliefs (or "predictions" or "expectations").

But then sometimes you do something and are **surprised** by the results, or you go into your living room and are **surprised** to discover that something is out of place or missing. Thus, what you had **predicted** (expected) turned out to be **different** than what actually happened, so you experienced the **failure of prediction** due quite possibly to an **inaccurate belief**.

And note that **you might first become aware of a belief you have only when it turns out to be inaccurate**. To a great extent, your beliefs are acquired automatically with repetitive experience, and they are used automatically outside of your awareness (unless you decide to pay specific attention to what is happening). You come to **expect** things to be a certain way, meaning that you **believe** that that's the way they are, only to become aware that you have such a belief, and that it is inaccurate, when things don't actually turn out to be that way. As new experience occurs, it is matched against a model that exists in the brain that, being activated by the current situation, **predicts** what that experience is to be, this being what is **expected** to be. And when the new experience does not match the **prediction**, that which is **expected**, the result is surprise. **Expectation is automatic prediction of experience to come**.

What I am calling attention to is that a vast amount of what **happens** in your life is indeed according to what you **believe** is going to happen, that is, is not different from what you have **predicted**, or have **come to expect**. Most of your beliefs are **accurate enough**, meaning that everything is pretty much happening "as usual," or "as expected," or "**as predicted**."

And most of this prediction or expectation is **automatic**. So when I speak of "automatic prediction," I am not referring to an intentional act, but instead to an **expectation**. Your prediction is occurring moment-to-moment as perhaps a feeling of familiarity or continuing confidence, or even with no identifiable feeling at all, other than perhaps the feeling that everything is going "smoothly." The fact that you have a belief that things are a certain way may become evident only when you find out you are **wrong** and therefore experience **surprise**.

("Prediction" is, of course, **also** something that **can** be done as an intentional, verbal act, even perhaps as a response to a request to do so. For example, I may say to someone, "Since you asked me, I predict that X will win the election." But that is not the kind of "prediction" I have been referring to. That is a **linguistic act** that is **also** called "making a prediction.")

(And "expectation" is also used to label something like "that which you believe is appropriate or ethically right." For example, "I expect you to do what you said you would do." But obviously that meaning of "expectation" is different from the one I have been using so far in this presentation.)

So we have been talking about the development of **beliefs** about what you **subjectively experience**. We are talking about the development of **models of your subjective experience** that allow you to **predict** (or expect) **subjective experience**. And these beliefs, or models, are the **basis** upon which you act. You act because you expect or **predict**, at least to some extent, a desired outcome, that is, believe that the desired outcome is **likely to follow** your action. And the presence of such a model may first become apparent when you are surprised at something happening that you did not expect, or predict.

But please note that we are **not** yet talking about beliefs that have been **put into words**. We are talking about beliefs that exist in the brain (or central nervous system) of non-human animals as well as humans, independent of anything to do with language. These beliefs, or models, are continuously being activated by ongoing, moment-by-moment subjective experience, and are the basis for almost all that we do moment by moment, whether we are aware of these beliefs or not.

We should also note again that there is really no clear dividing line between subjective experience and subjective models of it, or beliefs about it. Usually we will find it fairly easy to distinguish linguistically between **perceptions** and **beliefs about those perceptions**. However, it is possible that a particular perception may come to be associated, through acquired beliefs about it, with a certain feeling tone, such that the perception of the "entity" seems to **include** the feeling tone. We may come to associate certain things we see with certain feelings, such that the seeing of those things automatically includes the **feeling** that we have **learned** to have upon seeing it. So something may "look" frightening, or disgusting, or gloomy, etc. The feeling seems to be a **part** of the perception, even though that feeling is produced because of acquired beliefs about what is being perceived. This produces the situation that **belief about** a perception causes a modification of the perceptual experience itself.

But this inability to distinguish between **subjective experience** (primarily sensation and perception) and **beliefs about that subjective experience** is even more basic than that. When we see something, for example, that **perception** really **includes the belief** that what is being perceived is indeed "there" (unless we are dealing with a complex phenomenon like a mirage, when we have learned that what we are seeing is indeed not "there"). When we see an obstacle in our path, we step around it. Doing so implies a belief about whether it is possible to proceed ahead without altering our path. When we hear a sound, it seems to be coming from a certain direction, this being a belief that may lead to turning in that direction (with the prediction that one will see the source of the sound).

So we can say that the perception of something is actually a **model** of it, something that exists in the brain at that moment, the structure of that something in the brain presumably being determined **in part** by the structure of the entity or situation in reality that is being perceived (modeled). And that perception **includes** to some extent what we would be inclined to call "beliefs" about what is being perceived, beliefs also being considered in this presentation to be "**models**." So the concept of "perception" merges with the concept of "beliefs about that perception," even though more complex beliefs about a perception may indeed be considered separate from the perception itself.

To clarify further, we can use an example of a chair. There is no clear dividing line between **perception** (experience) of the chair and **beliefs about** the chair. One could **feel** the hardness of the chair and therefore **believe** that the chair is hard to the touch. One could **see** that the chair is

placed in the middle of the room and therefore **believe** that the chair is in the middle of the room. One could sit in the chair and **experience** it as being sturdy, and one could **believe** that the chair is sturdy, based upon one's experience while sitting in it. On the other hand, one could **see** the chair, and not yet have a **belief** as to how sturdy it is, because of not having sat in it yet, and then later **believe** that it is sturdy (based upon having sat on it), though no longer **experiencing** sitting on it (or even seeing it). We are considering "perception of the chair" and "beliefs about the chair" to be ultimately indistinguishable, more like a continuum from direct experience to complex prediction, just as there is an indistinct linguistic difference between the "chair" and the "chair's properties," it probably being impossible to define one of those terms without the use of what is meant by the other term.

So the distinction between subjective experience and models of (beliefs **about)** subjective experience may sometimes be helpful and sometimes not. This is an example of the fact that much of our labeling and defining is the drawing of lines on terrains (like the "boundary" of North Carolina).

(We really are talking about **ambiguity of language** as we try to label things in the world, when there are no clear lines of demarcation among those things in actual reality. In this situation, we are talking about very basic, primitive processes deep in the center of the brain, things that occur so automatically and close together in time that drawing lines of distinction can be very difficult. I believe this ambiguity will not be a problem in our effort to understand what is being presented here. This is an example of linguistically attempting to draw a line on a terrain, or of creating differences in definition that nevertheless leave ambiguity because no such dividing line actually exists in the world being modeled linguistically. It is the same process as that involved in the development of concepts such as "tall" and "short." Such "distinctions" sometimes are useful and sometimes not.)

Therefore, we can say that **subjective experience itself is a model**, and it is **continuous with** the more complex model consisting of **beliefs about that subjective experience**, that consist of the ability to make predictions about subjective experience to come, or subjective experience that would occur under certain conditions (e.g., feeling the heat coming from something resulting in the prediction that getting closer to it or touching it would result in pain). The important point being made is that **subjective experience itself is a model, just as are beliefs about that subjective experience**, and that there is **no clear dividing line** between these two entities. There is probably some capability for prediction inherent in any sensation or perception. Nevertheless, as we discuss most of what is to follow, it will probably frequently be useful to think in terms of **subjective experience** and **beliefs about that subjective experience**.

We should also note that some beliefs tend to be connected to, or be part of, other beliefs. (My belief about the location of my car is connected to the belief that there are such things as cars, that I have one, that cars can do certain things, that there is such a thing as ownership, etc.) So we can have **sets** of beliefs that tend to go together. And to some extent, probably all our beliefs are connected, at least remotely. So we can consider ourselves to have **systems of beliefs**, or even perhaps **one big belief system**. We may wish to single out certain beliefs or belief systems for consideration, but such singling out is somewhat arbitrary. It is like drawing a line around a particular area of a large terrain and considering only what is within that line.

And, as already noted, these beliefs and belief systems can be considered "**models**," presumed to be some **arrangement** of **enhanced synaptic connections** in the brain. So what I would like to do is lump together all of these beliefs that do, or could, automatically become active within our subjective experience from moment to moment, independent of anything having to do with language, as "**the Subjective Model of subjective experience**." Infants and non-humans automatically and progressively develop an increasingly accurate **Subjective Model** of the way the world **seems** to them, which allows them to develop increasing **skills** (**abilities** to do things that result in **expected outcomes**), and that Subjective Model grows in the brain continuously throughout the life of the animal, including the human (except in the case of substantially increasing loss of neuronal function).

(Where we draw the line between animals that do have a Subjective Model of subjective experience and ones that don't will probably be arbitrary. We are talking about the process of **learning**, and we have to go pretty low in the animal world to find animals that do not learn at all.)

(Also, please note that we are arbitrarily assuming that at least some other animals have what we are calling subjective experience that is at least to some extent the same as that of humans, based upon our awareness that subjective experience, so far, seems to be dependent upon brain structure and functioning, and based upon our awareness that, as far as we currently know, there are no brain structures in human brains that are both required for subjective experience and present in no animals other than humans. It seems extremely unlikely that we will discover some structure within the human brain that is required in order to have subjective experience and which we can find in no other animals' brains. I don't believe this issue will have any bearing on this presentation.)

Please note that I have begun talking about "**subjective models of subjective experience,**" and even "**THE Subjective Model of subjective experience.**" I am **capitalizing** the term, **Subjective Model**, to make it apparent that I am referring to the current **total** state of the relevant parts of the brain, and thus the **totality** of **all** beliefs about subjective experience that could become active, depending on the situation. This capitalization will be to help distinguish this **total set** of beliefs from **more specific** beliefs about, or subjective models of, subjective experience. (There is also implied in this capitalization that ideally all of these models would be logically consistent with each other and thus part of one big Model that contained no contradictions, in addition to being maximally accurate compared to any other such Model, though it is quite apparent that this is simply a goal to be aimed toward, not an achievement to be expected.)

And again, since there is no dividing line between subjective experience and beliefs about that subjective experience, we should realize that the term "**Subjective Model**" could be said to refer to **beliefs about subjective experience** or could be said to refer to **subjective experience AND beliefs about that subjective experience**. The Subjective Model starts with subjective experience that includes the belief that what is being subjectively experienced is actually "there," and then grows to include additional beliefs about that subjective experience that allow for an increasing ability to predict subjective experience to come.

It is obviously difficult to develop a consistent, unambiguous linguistic approach to these very basic concepts. You could say that the **Subjective Model** is essentially **your whole personal world as you personally find it to be**.

Now, as stipulated above, the two-word term "**subjective experience**" does **not** imply that there is also something that would be called "**objective experience.**" However, we so far do not rule out that there are some things that we can indeed call "**objective models**." If the definition of such a model is possible, then we could possibly say that there are both **subjective models of subjective experience** and **objective models of subjective experience**. (And if it is found to be reasonable to call something "**the** Subjective Model of subjective experience," then we could possibly call something else "**the** Objective Model of subjective experience.") And if so, we can ask what those terms specifically are to mean, and how they are to differ in meaning.

THE OBJECTIVE MODEL: LINGUISTIC MODELING

We have seen that humans, and, if one wishes, at least many other animals, can be assumed to have subjective experience and a continuously developing Subjective Model of that subjective experience, a model on the basis of which action is taken moment by moment. I wish to clarify now what **we humans** have come to be able to do that **no other animals** (at least on this planet) can do to any comparable extent. This new capability I have referred to elsewhere as the "**first exponential change**," making our species **drastically different** from all other species on this planet, and **drastically different** from the way we were before that change.

(By **exponential** change, I mean change at first developing so slowly that such change is barely noticeable, but then developing in an accelerating fashion so that the change becomes very easily recognizable and even drastic, such that what has finally developed might even be called an "emergent," that is, something that did not previously exist but now does.)

This "**first exponential change**" is the development by our species of **the essentially infinite capability of the use of symbols and rules for using them** (e.g., rules of syntax), the primary and most important example being **language**.

Although there are other systems of symbols and rules for using them than language (such as algebra), I will for the most part be talking about language, that is, words used in sentences according to the rules of syntax.

And what I am describing is a "tool," something used to accomplish certain tasks.

Now we know that some other animals make use of tools, and we know even that chimpanzees can learn sign language, so we are not talking about something that we humans do that is absolutely not done at all by any other animals. But it is the **extent** to which we can use language that is so different from all other species. It is only we, on this planet, that can do what I am doing right now. And what I am doing right now is just a small example of what we can do with language, not to mention the other systems of symbols (e.g., algebra) with their rules of usage.

So now let us look at the basic process of the **development of symbols**, and how this process **adds something new** to our subjective experience, namely, **objective models** of it, to be **added to** (and distinguished from) the subjective models of it that we (and other animals) already have (and will continue to have).

And let me preface this discussion with the recognition that "objective models," whatever they turn out to be, are some things that develop gradually within each of us (and can also be said to be developing gradually within our species) such that they **still** are in the **process** of development. We need to understand this **developmental process**.

The most basic unit in our discussion will be the "**symbol**."

The most important fact regarding the development of the symbol is that doing so involves **two or more people**. It is a process of **agreement**.

(There can be exceptions to this statement, in that an individual can create his or her own symbol for something, perhaps intending to advocate its use to others at a later time, or even perhaps not intending to do so, but this will be a very unusual extension of the basic process that we will be considering. We want to understand the basic process, that which occurs almost always, and that basic process, I maintain, indeed does involve "**agreement**.")

There are at least **four common meanings of "agreement,"** each having to do with **similarity of belief**:

(1) "**Agreement**" can mean the **similarity of beliefs** between or among people. ("Unbeknownst to them, they agree about this. They have the same beliefs.")

(2) "**Agreement**" can mean the **act of reporting** (accurately or inaccurately, honestly or dishonestly) such **similarity of belief**. ("Yes, I agree with you. I believe the same as you do.")

(3) "**Agreement**" can mean the **decision** to do something that someone else wants one to do, this being the **intention to cooperate.** ("The person apparently agreed to do it, though no one knew that yet.") It thus refers to a **similarity of belief** between what one believes one **intends** to do and what someone else believes he or she **wants** one to do.

(4) "**Agreement**" can mean the (accurate or inaccurate, honest or dishonest) **act of reporting of a decision** to do something that someone else wants one to do, this being the **reporting of the intention to cooperate**. ("Okay, I agree to do what you request.") So it refers to the **act of reporting** that there is **similarity of belief** between what one believes one intends to do and what someone else believes he or she wants one to do.

It is the third meaning that I am currently using in describing this process of symbol development. The agreement is simply the **going along with** the proposed development of the symbol in question. And such agreement is usually, especially at first, automatic.

So, symbol development essentially always **begins** in infancy. The parenting person repeats a word while the child is paying attention to what the word is to stand for. The association is formed, such that, at least initially, when the word is used, whatever the word stands for automatically comes to mind.

(It should be noted that symbol usage is dependent upon the ability of something to come to mind in the absence of sensory perception of it. We usually refer to this kind of subjective experience as "memory" and "imagination." My understanding is that most other species have much less of this capability than our species does, and this may account, at least in part, for the drastic difference regarding the extent of symbol usage between ourselves and other species. It is indeed true that some other species seem to have an unusual ability to remember **certain** things, but we humans probably have a much wider **range** of things that we can remember, and imagine, than is true of other animals.)

In this way, the child automatically **agrees** to use that word in that way, and indeed soon begins to do so, by using it in his or her developing speech. This is the beginning of this new way of

communicating, that makes use of this new tool, namely, **agreed-upon "meanings"** of words, **words** that will ultimately be used in **sentences**.

And indeed the child learns to use words in **sentences**, constructed with the **rules of syntax**. ("Mary handed John the book" doesn't mean the same as "John handed Mary the book.") Initially, the child hears the same sentences over and over, and gradually learns their **meaning**. And soon the child himself or herself begins to be able to use such sentences and even to create new sentences with learned words arranged appropriately according to learned (but of course not verbalized at this point) rules of syntax, which could actually be said to include even inflection and other accompanying non-verbal communicative acts that further clarify how the words are being used in that specific instance of using them.

Notice that there is an initial process by which words become associated with elements of subjective experience. Someone, say a parent, essentially "tells" a child the equivalent of, "What you are now experiencing is…" (warmth, pain, cold, fear, anger, red, loud, itching, darkness, kitty, milk, snuggle, sneeze, teddy bear, shoe, etc.). The child does not choose his or her own words, usually, to label his elements of subjective experience, but instead adopts the usage **agreed upon** within his or her culture. This happens by virtue of the parent or other representative of the culture guessing, usually correctly, that the child is currently experiencing something that the child can recognize in the future as being approximately the same thing, and adding to that experience the hearing of a particular word, phrase, or sentence, which then will automatically become associated with that experience. The child therefore now begins to acquire a **language** with which to **model** his or her subjective experience.

Theoretically, one could assume that it would be possible for a child to make up his or her own language with words to stand for his or her various subjective experiences, simply for his or her own use, but we know this relatively seldomly happens. There is too much to do just to learn what others seem to be meaning by what they are saying, such that making up one's own words would be a needless waste of time and would not result in tools effective for communication and therefore cooperation. And usually idiosyncratic words that the small child comes up with tend to fade away, unless others **agree** with the usage (because of, perhaps, regarding it as "cute").

(Note that the primary function of this "teaching and learning" process is **cooperation**. We are a group animal, and **mutual influence** is essential to our survival. There are many identifiable patterns of mutual influence, such as crying/soothing, asking/giving, dominating/submitting, teaching/learning, mutual giving of affection, mutual stimulation, shared humor, etc. By virtue of our cooperation, our role-taking behavior, we are able to accomplish as a group what an individual cannot accomplish. So our symbol-using behavior enormously enhances our ability to cooperate, and therefore to accomplish things. We can tell each other **what** things to do and **how** to do them, ultimately in extreme detail, with extreme precision. And of course we also become able to influence how others **feel** by the sentences we use, and therefore what they **want**. Such induction of feelings, or motivational states, becomes an important part of the production of cooperative behavior, through positive and negative reinforcement, and of course therefore is an important part of the production of social relationships, including social hierarchies.)

Now, as the child becomes able to create **sentences**, he or she becomes able to do something really amazing. He or she becomes able to **linguistically model** his or her own **beliefs**. It is one thing to believe something, but it is another to **put that belief into words**. Some of the **sentences**

the child uses are **models** of what the child **believes**. They are **linguistic models** of the child's **subjective models** of that child's **subjective experience**. ("Where is your coat?" "[I believe that:] It's in the living room.")

In doing so, humans now become able to **share and compare beliefs**, by sharing their **linguistic models** of those beliefs. This is an enormously significant development in the history of our species, the first exponential change, making us drastically different from all other species and drastically different from the way we were before we developed this capability.

What the child is learning to model linguistically is not just the **entities** of his or her subjective experience, such as "chair," "doll," "milk," etc., but also his or her **beliefs about those entities** and about what has happened to them, is happening to them, or will happen to them, including what will happen with regard to them if he or she, or even someone else, does certain things.

So we have now considered how the child, or human, develops **linguistic models** of his or her **subjective models** of (beliefs about) his or her **subjective experience**, that subjective experience assumed in turn to be **models** of things-in-the-world, such models most likely being associated with sets of connections among neurons in the brain that become **models** of things-in-the-world, or "**reality**" (that which exists independently of any experiencing of it or thinking about it).

For instance, let's assume there is a chair in a room that no one has entered yet. We will call that a part of "reality." Now, a person goes into the room and sees the chair. The person's subjective experience of that chair is a model of it. We assume that that model corresponds to a particular network of synaptic connections or something like that, this network being the model of that chair. We are assuming for the moment that that network of synaptic connections is what corresponds to the subjective experience of the chair, and that both the network and the subjective experience are somehow going to turn out to be the same thing, just considered from two different frames of reference, though such consideration remains to be discussed.

The main point here, however, is that there is (1) the chair in "**reality**" with whatever properties it has; and then (2) a **model** of it, consisting of (2a) **perception** of the chair within subjective experience and (2b) **belief** about the properties of the chair, e.g., that it will hold me if I sit in it, and then (3) a **linguistic model of that perception and belief**, namely, the perception and belief "put into words" (one or more sentences). Perhaps the above can be better understood with the following table:

Part of reality	Model of part of reality	Model of a model of part of reality
Chair	**Perception** of the chair	**Verbal** description of the chair
Chair's properties	**Belief(s)** about the chair	Belief(s) about the chair put into **words**

In the above table, **perception of the chair** is part of subjective experience. **Beliefs about the chair** are part of the Subjective Model (which may of course be said to include also the perception itself, depending on how we want to use our words). The third column refers to **linguistic models** of subjective experience and of beliefs about that subjective experience (part of the Subjective Model). So there is "reality," then the Subjective Model of that reality, and then the Linguistic Model of that Subjective Model. (I am capitalizing "Linguistic Model" simply because it is referring to a vast set of linguistic models of the vast set of models that are a part of the Subjective Model, as the terms are being used in this presentation.)

And note that when we speak of "perception" and "belief" we can be speaking either of subjective experience or of the neurological processes that are associated with that subjective experience. This equivalence has been mentioned above but has yet to be discussed.

The main point of this section has been that subjective experience and subjective models of (beliefs about) that experience can be **in turn** modeled **linguistically**, through a procedure developed among humans involving **agreement** (with regard to symbols and the rules of syntax). It is this development that has enabled us humans to go beyond our subjective experience (and the Subjective Model) toward what we will be calling "**objectivity**." What we have just considered is the first step in that process, which becomes quite complex, as we will see.

Beliefs can be **shared** (described to another) because they are **modeled** by tools that have been developed by means of **agreement**, these tools being symbols and the rules of syntax, or language. The meanings of the sentences may be pretty much the **same** for those using them and for those hearing or reading them. This **similarity** has been produced by much repetition of interaction among humans using them, with **correction** of each other when meanings seem too atypical, the process by which meanings become more **objective**, or **independent of the individual**. (Note again that we are beginning to talk about **objectivity**.)

Furthermore, two people who share with each other (linguistic) models of their own beliefs about something can now **compare** those models and see whether they are the **same** or not. The models can be put into **sentences**, and then it can be seen as to whether those sentences are the **same**. By comparing their beliefs in this manner, they can come to a conclusion as to whether they **agree** or not (using the first meaning of "agree," given above, the having of the same beliefs).

But notice that I cannot compare your **linguistic models of your subjective models of your subjective experience** with your **subjective experience itself** to see if they are good (accurate) models, because I cannot experience your subjective experience and because your subjective models of your subjective experience cannot be observed, only inferred (from what you do and/or say). I can "take your word for it," with regard to whether you believe something or not. (But of course you could be lying, delusional, confused, linguistically inaccurate, etc.) What we can agree to is only whether we are "**saying** the same thing," and therefore are probably **in agreement**, because that is what we can both **observe**. ("Is that not what I said?" "Yes, I agree that that's what you said.")

Yes, you and I can tell whether you and I are using the same words in the same sentences, as we **linguistically model** our subjective models (or beliefs). I can repeat back to you what you have said, and vice versa. And **agreement** can mean that we will **tell** each other that our **linguistic models** (of what we believe) are the same, that is, consist of the same or sufficiently similar sentences (using the second of the four meanings of "agreement," above,). ("Yes, I agree with you," meaning something like, "If I were to state a sentence that modeled my belief about this, that sentence would be the same as the sentence you have just expressed.")

The **sharing and comparing of beliefs** is a **very important new skill** being added to our repertoire as a species, because we are now beginning to be able to **talk** about things that not only are **not currently present within our own subjective experience**, but in fact **may never be**. If I am **told** that someone I know is doing something far away from here, I will not be able to see that happening personally. I will **not** have that **subjective experience**. I may, within my subjective experience, be able to "imagine" it, meaning that I may take fragments of memories and construct a model of something that I will not be able to experience actually happening. This model (made out of imagined subjective experiences) will be my **belief** as to what my friend is doing, **independent of my being able to observe him or her doing it**. As a belief, it will allow for predictions on the basis of which I may take some action to achieve some predicted outcome.

I may model those beliefs with imaginary images as well as with words (sentences), but note how drastically different such images and sentences are from the actual seeing and otherwise

perceiving of what I believe is happening. Such beliefs are about things that are **independent of subjective experience**, that is, independent of subjective experience other than the subjective experience of having been "**told**."

And therefore, because of language, I can acquire **many** beliefs about things that are far, far away, so to speak, from my subjective experience. Therefore, I can have **many, many more** beliefs (and quite accurate ones) than I could have only as a part of my Subjective Model of my subjective experience. I can learn about things I would never even have imagined on my own.

And now notice that it is also becoming possible, with this **linguistic** modeling, to "**correct**" one's subjective models of subjective experience. (A says, "I looked where you **told** me to, but it wasn't there." B says, "Oh, well then I must have been **wrong**.")

Now let us be clear about something that is happening here. What we are beginning to talk about is what will be relevant to the meaning of our word, "**objective**." We are talking about **agreement**. So let us review.

You consist, so to speak, of the sum total of your **subjective experience**. (This is only one way of defining "you," that leaves out the concept of the ego boundary. I have stated it this way only to help you to focus on what I am talking about.) Only **you** have access to this subjective experience of yours, and this is **all** you have access to. (Remember that in the terminology used here, there is no such thing as "objective experience," that is, no meaningful use of such a term.)

Also, you have developed **beliefs** about (models of) your subjective experience that allow you to do things, such as walk places, get things, find things, use things, watch out for things, relate to people, etc. You have learned how to live moment-to-moment without making mistakes, most of the time. When something **surprises** you, it does so because it is different from what you expected, or were automatically predicting, by virtue of the **beliefs** you have had about that area of your subjective experience. Thus, if that happens, your **model** of part of your subjective experience (your beliefs about it) must be **inaccurate** in some way.

And that entire last paragraph has nothing to do with language. It is the same as what is true for other animals with brains or central nervous systems that are capable of learning. Although your life indeed depends upon others around you, your beliefs about your subjective experience are **initially and almost entirely** based only upon **your** subjective experience, resulting generally from your **experiencing** of some degree of **regularity** or **predictability** of experience.

Remember now that for our convenience we are labeling the **totality** of beliefs that you have developed in response to regularities in your subjective experience as "**the Subjective Model**." This model is the totality of how things currently **seem** to you at any given time or **would** currently **seem** to you for any possible situation you could be in. (And remember that the Subjective Model can even be considered to include subjective experience itself, though it goes beyond subjective experience to even fairly complex beliefs **about** it.)

But as we go **beyond** the "Subjective Model," we begin to talk about your **interaction with others**. It is through that **interaction**, and more specifically through **agreement** with others, that you now can have **linguistic** models of parts of that Subjective Model of your subjective experience. You can "**describe**" (create a linguistic model of) what your **subjective experience**

has been, and what you have come to **believe** about it. You can **describe** how things **seem** to you. You can describe how long the day has seemed, and whether the day has been tiring or exhilarating or anxiety-provoking. You can describe how cramped you have felt because of being inside all day, when you wished you were outside with others. You can describe how you nearly stumbled going down the stairs, and how you somehow grabbed hold of the railing and saved yourself from a fall. You can describe how scrumptious your lunch was, and all the memories of certain past experiences it aroused in you. You can describe how excited you are about what you think is about to happen. You can describe where you believe a particular item is. And you can describe how long you believe something will take to do or to happen.

But in addition, as you describe what you believe, you begin to find that others sometimes "**disagree**." You find that some of your beliefs probably are **inaccurate**, because others claim they are. (For example, someone says, "Oh no, it will take a lot longer than you think!")

So let us note that there is **something new** being **added on** to your subjective experience and your Subjective Model of it. What is being added on is based upon **cooperation** with others, **agreement** to do things in a certain way, that is, **agreement** to use words in a certain way. This "something new" is the beginning of the development of what I am calling the "**Objective Model**," called objective because **it requires something more than just your subjective experience**. It requires more than just your Subjective Model, your beliefs about what you have been, are, and will be experiencing, or how things **seem** to you. It requires **agreement with others** about certain things, for now primarily about the meanings of symbols and about the rules for using them. And it will ultimately require much more, as follows.

[Edit 02/22/2018:
Yesterday, a friend who is reviewing this book pointed out a seeming contradiction between what is written in the above paragraph, namely:
*So let us note that there is **something new** being **added on** to your subjective experience and your Subjective Model of it.*
and what has been written in the chapter on "Subjective Experience," namely:
For you, you "are" your subjective experience, nothing more. This is all you have to work with.
So indeed that sentence in the above paragraph should have been something like:
*So let us note that there is **something new** being **added on** to a **part** of your subjective experience and your Subjective Model of it; first, there is that **part** that **does not include** what those entities called "other people" tell you (through speech, writing, pictures, diagrams, equations, etc.), and then there is this **new, added part** that **does** consist of these extra beliefs (models) that you have acquired only from what you have been "told" by other people.*
End of edit]

 (Note that I am **capitalizing** "Objective Model" for the same reason that I am **capitalizing** "Subjective Model," to refer to the **total set** of models, or beliefs, that we are considering, with, again, the implied idealistic goal of it being completely consistent and maximally accurate such as to be one comprehensive and best Model, a goal being aimed toward, but not with the expectation of achievement.)

As the child develops, he or she soon learns that, no matter how things may **seem**, there is agreement by "everyone" (others, or most others) about certain things. The child learns that there may be the way things **seem**, but there also is the way things **actually are**, according to others. It

may not seem like bedtime, but it actually is, and there is apparently a way to tell. There is beginning to be a way for the child to tell whether some of his or her beliefs are "**correct**" or not, that is, whether his or her subjective models of subjective experience are accurate or not, a way to tell that does not rely upon whether or not the child has made a mistake, a way other than "learning from (one's own) experience." This other way is simply one of paying attention to others' linguistic models in comparison to one's own. It is listening to what one is being **told**.

Obviously, we are talking now about what might be called "**objectivity**." The child, all children, all humans have beliefs that can sometimes be demonstrated or claimed by other humans to be correct or incorrect, accurate or inaccurate (or at least questionable). And initially the way these beliefs can be checked for accuracy is through **sharing** them with others (describing them to others) and **comparing** them with the beliefs of others, done almost exclusively through language, but also (ultimately) through related **symbolic representation and communication** (like mathematics, diagrams, maps, etc.).

And please note again that with the advent of this new kind of modeling, this primarily **linguistic** modeling, the child, or person, can acquire drastically **more** beliefs than had been possible based upon his or her own subjective experience. The most obvious examples are what we call "**formal education**" and "**the media**," but also simply **being told** by someone else about what is happening (or has happened or will be happening) or what someone is doing (or has done, or will be doing).

So now we are talking about a **set of beliefs** that have been arrived at by **humans** by an agreed-upon method, independent of any **one** person's beliefs. That set of beliefs I am referring to as "**the Objective Model**."

(What we have described so far, however, is only the beginning of the development of the Objective Model. It will develop into something even more complex and useful, by virtue of additional methods of attaining "objectivity," and therefore increased accuracy, or ability to predict.)

We of course are quite aware that disagreement is widespread. The "Objective Model," as the term is used here, is really a **collection** of models, many of which are contradictory to one another. So when I refer to "**the**" Objective Model, this is really shorthand for the **entire set** of objective models (of the way the world is, was, or will be), even though those beliefs, or models, may be different for different people. What makes this "Objective Model" different from the "Subjective Model," beyond the agreement regarding word usage, is the beginning requirement of **agreement among people** for the legitimization of belief. (Again, there will be other requirements also, yet to be described.) Yet, the Objective Model is in certain ways indeed an improvement on the Subjective Model. The Objective Model does not replace the Subjective Model, but **adds to it**. The improvement is with regard to the probable **accuracy** of one's beliefs about certain things, in addition to the (vastly) **increased number** of possible beliefs one can have.

Since we are talking about the **emergence of**, or **development of**, the **Objective Model**, that is, a set of additional and at times different beliefs from those beliefs of the Subjective Model, it is important to recognize that this model is nevertheless **emergent out of** the **Subjective Model**. It is not a totally discrete phenomenon, coming out of nowhere. Yet, when we take a look at what it

has become, we can see it as **drastically different** from the Subjective Model. The Subjective Model is your own set of beliefs about your own subjective experience, activated in all of your moment-by-moment actions and by the moment-to-moment situations that you find yourself in. The Objective Model is a set of beliefs arrived at by **humans** through **cooperation** and **agreement**, at first having to do with assignment of agreed-upon meanings to words and development of agreed-upon rules for using them (rules of syntax), and then through comparison of the sentences (linguistic models of beliefs) produced by, not just oneself, but "everyone" (or at least "those in the know").

Another difference between the two Models, Subjective and Objective, has to do with the **source of**, or **reason for**, the beliefs.

The **Subjective Model beliefs** come **directly from subjective experience**, without a linguistic model producing the beliefs (even though the beliefs may later be linguistically modeled, as when we tell someone what we have experienced and what we have learned from our experiences). We simply learn, from moment-by-moment observation, that some things predictably occur in certain situations, and that when we do certain things, certain things happen.

The **Objective Model beliefs**, however, generally come **secondarily from linguistic models of the Objective Model, and thus from other people**. Very often we first learn something in **words**, spoken or written by **other people**, and then we take action based upon the belief that what those words say is actually so. ("I took that turn to the right, because I believed what I had been told about how to get there.")

The Subjective Model is built from the bottom up (from subjective experience), whereas the Objective Model is to a great extent built from the top down (from being **told** things, in **speech** or **writing**, by **others**, and thus coming to believe them and therefore to act upon them, and only then with possible resulting confirmation or disconfirmation of the accuracy of those beliefs by virtue of experiencing the outcomes of those actions).

So the **Objective Model** in a person's brain is almost entirely based upon or derived from a **linguistic model** of it that **comes from another person or other people**. Much of what we learn is sets of propositions (sentences) that are regarded as "true" or "probably true," which, however, have almost no effect on our behavior, or decision-making, beyond things we say (or think) **about** them. There are things that I believe that have no effect on my behavior other than what I tell other people as I am letting them know what I believe. In formal education, we come to believe all sorts of things that we learn from no other source than what we read or hear linguistically presented to us by others, and we seldom manifest the having of those beliefs beyond our simply **talking about having them**. In a sense, we acquire enormous amounts of "useless information," at least useless beyond our demonstrating our having it (with whatever benefits may accrue from such demonstration, such as social status or employment or degrees on the wall).

On the other hand, some parts of the Objective Model do indeed have **drastic** effects on our behavior. We learn from others all sorts of things that we could not have imagined ourselves, and we use this information, or these beliefs, in much of what we do. We wash our hands before eating because of the Objective Model, not the Subjective Model. Some of us eat certain things because we have been told by others that they are good for us. We go to a specific store because of what we have been told about it. We invest and vote because of what we have read and what

we have seen and heard in the media. But when we confidently plop down in our favorite chair, without fear of crashing through it, the Objective Model probably has almost no influence on that behavior, which is determined instead primarily by our Subjective Model (what we have learned to expect).

We should note that as the Objective Model develops within an individual, it does indeed have some mild "corrective" effect on the Subjective Model, and whether a particular belief is then a part of the Subjective Model or the Objective Model can therefore become unclear. But beliefs of this sort (of uncertain classification) are relatively extremely small in quantity, compared to those that are clearly within either the Subjective Model or the Objective Model. An example of lack of clarity as to whether a belief is a part of the Subjective or the Objective Model would be being told how to do something more effectively, in a way that does not come naturally, and after a while coming to do that thing the new way automatically, it simply "feeling" right (natural) to do it that way, the belief being that this is the way to do it that will be successful. (Some have referred to this, in regard to the development of a physical skill, as "muscle memory," though of course we know that the memory is in the central nervous system. The term "automatize" has been used for this process.)

Another way of dealing with this uncertainty regarding whether a belief is a part of the Subjective Model or the Objective Model is simply to state that a particular belief may be a part of both Models. ("I always knew that this was supposed to be true, but now I have seen it for myself.")

It should be noted that the "Objective Model" term is being used in two ways. It primarily is referring to beliefs obtained primarily from others in the manner described, those beliefs being in the mind/brain of an **individual**. But it also is referring to the total set of such beliefs increasingly developed by our **species**, through the methods described, so that **one individual can be said to have only one version of only part of this total set**. And of course many of these beliefs are contradictory to others, our species having different, conflicting beliefs about the way the world is, was, and will be. And therefore one individual may indeed have contradictory beliefs acquired from others, often without some recognition of such contradiction. So the defining characteristic of the Objective Model, as the term is being used here, is the **method** by which the referred-to beliefs have been arrived at (and therefore their source), not "where" those beliefs are located (within an individual or within a species). For any individual, both Subjective Model beliefs and Objective Model beliefs have an effect on behavior.

So although there is an overlap of, or indistinct boundary between, the **contents** of the Subjective Model and the **contents** of the Objective Model, that is, the respective sets of beliefs, there is a **distinct, defining difference** between the two Models having to do with the **process of arising** of those beliefs, namely, (1) arising automatically from ongoing, moment-by-moment subjective experience (how things "seem"), as opposed to (2) arising from the sharing and comparing of linguistic models of beliefs, such as to achieve "objectivity," that is, independence from how things "seem" to any one person. It is thus important to view the Subjective Model and the Objective Model as **two completely distinct models**, even though a specific belief may be found in both of them. And when the two Models contain beliefs that are contradictory, the probability is higher that the belief in the Objective Model is the more accurate one, because of being more "objective," though we know that the probability is not 100%.

There is, as has been noted, no guarantee that any particular part of the Objective Model is accurate or correct. In fact, we know that there is much that people collectively believe or have believed that ultimately may not be considered to be correct. But at least there is that **awareness** that it may not be correct. In response to this awareness, we have looked for a criterion or criteria to help decide whether to be satisfied that some part of the Objective Model is indeed accurate or "true." Simple agreement with regard to the linguistic modeling of those beliefs is not the best that we can do. So we move forward in our journey toward "**objectivity**."

So what **criterion**, or **criteria**, have we decided is or are to be used to decide whether a particular belief, or set of beliefs, or model, is "right or wrong"? So far, we have talked about only one criterion, whether or not everyone **agrees** (ascertainable by comparison of linguistic models). Yet, as noted, this criterion is not enough, because we can all agree and yet be wrong, and fairly frequently we even do not all agree. So it is the development of additional criteria for the legitimization of belief that is the **further development of this "Objective Model"** that we have been talking about. And this is where we start talking about "**the sciences**," or "**science**." My term for this additional criterion, for the purpose of this discussion, will be "**rationality**."

(By "legitimization of belief" I mean clarification as to why I believe something and why I believe you should believe the same thing. So you and I have a way of cooperating in an effort to agree, by first agreeing upon what criterion or criteria we will use to legitimate belief.)

One could imagine a situation in which everyone on the planet actually agreed to a complete set of beliefs about the way the world is, was, and will be, that set of beliefs being maximally accurate. That situation will undoubtedly never arise, of course, but it is actually the **goal** that **science** works **toward**, namely, the increasing development of a set of models that are all **consistent** with one another and are maximally capable of yielding specific **predictions** that turn out to be, or would turn out to be, what actually happens in certain situations, including situations in which we have done certain things.

And here I would like to mention what I have come to refer to as the "**second exponential change**," making our species **drastically different** from all other species on this planet and **drastically different** from the way we were before this change occurred. (Actually, the change is still occurring, but it is quite easy to see, including the exponential nature of it.)

The **first exponential change**, remember, was the development of the essentially infinite ability to use symbols and the rules for using them, the most important example being language, consisting of words and the rules of syntax governing the construction of sentences. We do not know how far back we must go in the history of our species, or perhaps genus, before we can say that we had essentially no language (another example of drawing a line on a terrain), but it is apparent that there has been a drastic increase in the ability to use symbols somewhere along the way, with such a marked escalation in that capability that we might say that it is now essentially infinite, that is, that we now cannot easily imagine a limit.

The **second exponential change** began accelerating noticeably during the last two or three thousand years, and especially during the last two or three hundred years. It has consisted of the development of (first) the **rules of logic** and (more recently) the **rules of evidence**, which serve as the **additional** legitimization criteria for the accuracy of scientific models, or sets of agreed-upon beliefs, additional to the criterion simply of **agreement** regarding the specific beliefs, or propositions, or models. In other words, it is not enough just to agree. In addition, what we agree to must be consistent with (be able to be legitimated by) the rules of logic and the rules of evidence. These rules of logic and rules of evidence have also, themselves, been arrived at by **agreement** (because of our seeing how well they work to produce beliefs that yield accurate predictions and that therefore enable us to avoid mistakes).

The **rules of logic** provide a way of ascertaining whether a set of propositions (linguistic, mathematical, etc.) are internally consistent (non-contradictory). If we are constructing a model of something and there is a part of it that can either be one way or the opposite, then we **lose the ability to predict** the relationships in the thing that is being modeled. If part of the model can be one way, but also doesn't have to be, then of what use is that part of the model (unless of course that is true of the thing being modeled)? And so if we are linguistically modeling a set of beliefs and we arrive at two sentences that say the opposite thing (are contradictory according to the rules of logic), then of what use is that set of beliefs?

The **rules of evidence** are those rules governing the obtaining of and management of (e.g., analysis of) data from **natural observations** or **contrived experiments** that determine how confident we should feel about our conclusions (beliefs, or models) arrived at from that data (conclusions about the way the world is, was, or will be). The basic idea is that we say, "According to theory X, if we do Y, we will observe Z, whereas if we don't do Y we won't observe Z," and then if we actually **do** Y, and we actually **observe** Z, and especially if we also don't do Y and don't observe Z, the confidence in theory X is increased. If we don't get such results, something is probably wrong with theory X, or perhaps with some other theory that has already been accepted and is also relevant to whether Z will be produced or not. (In this paragraph, I am using "theory" generally to mean any proposition.) The rules of evidence are tools used to **avoid making mistakes** by, for instance, misinterpreting coincidence as causation or failing to see alternative explanations for findings.

So just as the **Subjective Model** is an ever-evolving model **within an individual** (of course containing components that will be modified as time goes on), in the same manner the **Objective Model** is an ever-evolving set of models "**within our species,**" and **within each member of our species**, those models gradually becoming increasingly internally consistent and increasingly accurate (and therefore more useful) with the passage of time, this **consistency** and **accuracy** being promoted by the rules of **logic** and the rules of **evidence**, respectively. And it is the **commitment** to promoting (in self and in others) the development of beliefs and belief systems which, when modeled linguistically, can be shown to meet the criteria of the rules of logic and the rules of evidence, or shown to be logically consistent with other beliefs shown to meet these criteria, that I will refer to as "**rationality**" in this presentation.

Notice that the **Subjective Model** is communicated very often by poetry and art (in which, for example, the **connotations** of words add meaning to the impressions conveyed), whereas the **Objective Model** is communicated very often by technical literature that involves **well-defined** technical terms and symbolic systems such as mathematics, chemical equations, statistical computations, physical diagrams, etc. ("Communicated" here means modeled linguistically or otherwise symbolically, and thereby shared with others.)

Notice also that the **response** to presentations of a **subjective model**, through literature, poetry, art, etc., is expected to be of the nature, "Well, what this **means to me** is…," whereas the **response** to presentations of an **objective model**, usually through scientific literature, is expected to be "Well, what this **means** is…." So within scientific literature there is an important reliance upon precise definitions of terms. The more important that agreement becomes, the more important precision of definition of terms becomes. (This assertion can be seen to be true in legal matters, also.)

Now let us be clear that **whereas** the "Objective Model" is represented **in its extreme** by the scientific belief systems (that many individuals have no access to or awareness of), it **also** exists in its more general form in the "knowledge" (set of beliefs) that is generally held by most all within that culture or subculture, and communicated in much less precise and accurate ways (with much use of metaphor). But even within a culture or subculture that is not well educated with regard to the sciences, there still is some valuing of rules of logic and rules of evidence, or **rationality**, such that an individual may be considered "**irrational**" if he or she expresses beliefs that are seen as illogical (self-contradictory) or unfounded (not supported by some sort of evidence). So we value the rules of logic and the rules of evidence to a certain extent, even without having a strongly scientific orientation and even without any clear understanding of what those rules, as used by scientists and academicians, actually are.

(There is, however, not a uniform valuing of the rules of logic and the rules of evidence, used in the service of an effort to have beliefs that are as accurate as possible. This is partly because, as we well know, we often have a strong need to believe certain things, for personal comfort and joy and for secure group membership. A "postmodern" development, to deal with this issue, has been the increasing belief that there is a lack of "true meaning" of some literature or work of art, and even of anything written. There is the "text," and then each individual's interpretation of that text, including that of the individual who actually created it. What the text "really" means, in and of itself, is considered rather undeterminable and therefore irrelevant. Thus, everyone can be "right," even though they may not agree. This orientation seems somewhat acceptable with regard to text that is modeling parts of the Subjective Model, and text that is modeling parts of the Objective Model which however is designed to stimulate the creation of new ideas or perhaps stir up motivation, but not with regard to text that is an effort to assist the accomplishment of important tasks requiring cooperation and accuracy of belief. No one is going to go to the moon, or undergo brain surgery, using a model that has no specific, agreed-upon, presumably correct meaning. And indeed, there is much pain, suffering, disability, and early death produced by inaccurate beliefs maintained only because of the comfort and joy produced by having them or the wish to be socially secure in a group whose identity includes commitment to advocacy of those beliefs.)

The **key concept** in this whole presentation of the **difference** between the **Subjective Model** and the **Objective Model** is that of "**objectivity**," which will now be extended some.

What does **objectivity**, as being used in this presentation, **mean**? It means, first, **independence** from any **one** individual's perceptions and/or beliefs. It is therefore **independent of the subjective experience of any one person**. But then **upon what IS objectivity BASED?** What brings us **beyond** our own subjective experience and our own subjective model of that subjective experience in such a way as to provide extra value? Let us first review.

First and foremost it is **agreement**. To the extent that there is not agreement, then, without there being any additional criterion for legitimization of belief, there is nothing to distinguish between one subjective model and another.

The extreme of this criterion of objectivity would be agreement on the part of everyone. To the extent that that agreement has not been achieved, then the model of "reality" falls short of maximally demonstrating objectivity. Note then that **complete** objectivity is a goal to **aim for**, not something that can be proclaimed as having been achieved. For instance, everyone might indeed agree currently, but that does not mean that such universal agreement will continue. (Please note that in this presentation, "everyone" should not be taken literally; it generally means "the vast majority of those people in a position reasonably to have an informed opinion.")

And **since it is possible, therefore, for everyone to agree and still be wrong, additional criteria of objectivity are desirable**.

Those additional criteria have been attained by the development of "**rationality**," **the rules of logic and the rules of evidence**, that "everyone" has **agreed** improves the likelihood of **accuracy** of the model. And that **accuracy** means the **ability of the model to predict** what will happen (in general or in response to doing some particular thing). (Improvement in the ability of the model to predict is the added value provided by "objectivity.")

That is why science (which is specifically committed to the rules of logic and the rules of evidence) is currently the source of the greatest amount of objectivity.

One might ask why we should view science as more objective than general or even current universal agreement, and also why objectivity beyond simply general or even current universal agreement should be valued. There is one specific answer:

Science has demonstrated its capability by enabling us to do that which no other method of legitimating belief has enabled us to do.

Science has enabled us to do that which, before the development of science occurred to any great extent, would have been considered "miracles." And these "miracles" are essentially the ability to **predict accurately**, i.e., to predict accurately what will happen and especially what will happen if we do certain things. And it is this ability to predict accurately that enables us to do such amazing things.

But **even outside of science**, there is objectivity that is acquired simply by paying attention to the beliefs of others (as linguistically modeled by them), such that one **compares** them to one's own. So the effort to achieve objectivity involves at the very least paying attention to the ideas of others, as expressed by them, and attempting to arrive at agreement, by convincing the other(s) or by being convinced by them, or by jointly coming up with an agreed-upon "third alternative." And that process has come to involve, to an increasing extent, the use of the rules of logic and the rules of evidence, or "rationality," recognized increasingly by us as a way of arriving at more accurate beliefs.

It is noteworthy, again, that philosophical postmodernism, the idea that there is no particular value in agreement (my summary statement), represents a move away from objectivity. Postmodernism has helped us to allow each other to express opinions that are different without our getting so upset, even to the point of killing each other, but it does not foster in-depth exploration of difference of opinion in an effort to arrive at agreement. "What is true for me may not be what is true for you, so let's just agree to disagree and move on." The added value of this method of legitimization of belief is, instead of increased ability to predict and therefore to do, increased comfort and joy, and security of group membership.

Now to continue to extend our concept of "objectivity," a fundamental concept that is a part of objectivity as it is being used here is "**measurement**." Measurement, in turn, is related to **predictability**.

Measurement results in the ability of two or more individuals to agree, including the scenario in which those two or more individuals may be the same individual but at two or more different times. Thus measurement is a procedure designed to achieve as much as possible agreement among everyone forever. This is why it is a central concept in the more general concept of "objectivity."

First, measurement is a **procedure** (a repeatable act or series of acts designed for a specific set of situations). It may or may not involve equipment (such as a ruler or a detector). The individual engages in a procedure and observes the **result**. If this is a measurement, then the individual has some degree of confidence (belief) that anyone (others or self) carrying out the same procedure again will observe the **same result**. Confirmation of this belief is accomplished by self or other(s) indeed engaging in the same procedure and reporting "yes" or "no" as to whether the same result has been obtained.

Let us take an example. You use a ruler and measure the length of an object, finding it to be, say, 3½ inches long. And let's say you are going to make use of that information to do something important. Now suppose you measured it again and got 2 inches, and again and got 5 inches. Would you be able to complete your project? What is crucial is that the measurement be the **same** each time. You have to be able to count on it, meaning that the result has to be **predictable**.

Now if you look really, really closely, each time you measure the object you may come up with a slightly different result. But if the results are only slightly different from each other, you can still do your project. Those differences would be measurement error, that is a recognized phenomenon and poses no problem, because those tiny differences will make no difference, or if they will, then the measuring procedure will be improved so as to make the project possible.

Essentially, you will be able to say that the length of the object is 3½ inches or close enough to it not to make an important (significant) difference.

But now suppose you got unpredictably different results, as mentioned above. Would you say that you had successfully measured the object? Successful measurement means measurement the results of which can be **relied upon**. And that means the results are **reproducible**. And that means that one can **predict** the outcome of the measuring procedure, no matter when it is done or who does it. It means that if the measurement is **different** at two different times, then the length of the object, for instance, can be confidently assumed to have **changed**, and that others would find the same thing and **agree** with you.

The ruler is the result of **agreement**. It is a device that gives predictable results not just for you. Others have used it (or copies of it) and have found that it is reliable, that it produces results that are **predictable**, **independently** of who uses it.

If you devise a new method of measuring, how will you and others develop confidence in it? You will use it over and over in a situation in which the results should predictably be the same (or different as predicted), and others will do so also, always seeing if the results of the measurement are what are **predicted**. The more times that the results are as **predicted**, the greater **confidence** is produced in everyone that the measurement procedure is an **accurate** one.

If your measurement method is sufficiently similar to one that is already agreed to by others, and is described in such a way as to make that clear, then others will probably not need to demonstrate for themselves that the method works, unless perhaps it produces results that seem strange to them.

But the whole idea here is that measurement involves **predictability** for **anyone** using the procedure, the prediction being that there will be **agreement** among people as to the results. And this is why measurement serves to enhance **objectivity**. It is based upon agreement, if not among people in general then at least between oneself at one time and oneself at another time, and/or among those who most use it. So the **most objective measurements** involve **confident agreement on the part of everyone who is knowledgeable and involved**.

And measurement can result in numerical results that are on a scale all the way down to a binary scale of "yes" and "no," and therefore expressible as a "0" or a "1." So when you ask someone whether it is raining outside and he or she looks and tells you "yes," he or she is performing a measurement which you can confirm by going through the same procedure and seeing if you come up with the same answer. You may have the belief that it is not raining outside, but when another person says it is, you will question what was probably a belief in your Subjective Model, and develop a belief that is more accurate because it is more objective, that is, not only based upon agreement with others but also confirmed by measurement, and is therefore part of your Objective Model (as well as, now, your Subjective Model, if you go see the rain for yourself).

So **measurement** is simply an extension of the concept of the development of **objectivity**, based upon **agreement** and upon **reproducibility** (ability to **predict**).

Please note that **objectivity is not the same as accuracy or correctness**.

What we mean by **accuracy**, or **correctness**, is that the belief in question leads to **predictions**, or would lead to predictions, that turn out to be **what actually happens**, or **would happen**.

Objectivity is simply a way of **increasing the likelihood** of accuracy or correctness.

A general way of thinking about these concepts is to regard all "**evidence**" as consisting of the results of "**measurements**," and the **rules of evidence** as having to do with the principles guiding the methods of doing those measurements and the principles guiding the interpretation of the results of such measurements.

The act of "looking to see" can be considered measurement, and the results considered evidence, though the rules of evidence, if usable, would enable one to have much higher confidence in the interpretation of the results of "looking to see." (Most of the time, however, we have to be satisfied with not being able to use the rules of evidence, because there is no way to involve others in the effort, or to involve repetition of observation under varying conditions, at least to the extent accomplished in carefully done experiments.)

The confidence involved in "looking to see" is primarily a phenomenon in the Subjective Model, rather than in the Objective Model. Measurement is carried out as a part of the development of the Subjective Model, as we learn through repetition of experience what to expect, and the results of such measurement are therefore evidence supporting beliefs within the Subjective Model. But it is the addition of the **rules** of evidence that contributes so much to the effectiveness of measurement and therefore to the recently exponential development of the Objective Model.

So progression toward objectivity is one produced by the symbolic (primarily linguistic) sharing and comparing of beliefs, the use of the rules of logic to identify inconsistencies, and the use of the rules of evidence applied to the results of the use of measurement. And the payoff is increased ability to predict and therefore to do, with consequent reduced risk of making of mistakes.

But there are problems that arise in this effort toward objectivity, and those problems are what this presentation is about. We now need to look more closely at how we go about this modeling behavior.

We are continuing to approach the point at which we can discuss more clearly the "mind-body problem," along with the "free will vs. determinism problem." There is **one remaining awareness** to have about the nature of these models (the Subjective Model and the Objective Model). It has to do with **what the models are "made of."**

Remember that we said that any model is **made** of something, or some things, **arranged** in a particular way, such that the **relationships** between those things (i.e., between the "parts" of the model) allow one to **predict** things about the **relationships between the parts of the thing being modeled**. So a model car may be made out of plastic and metal, and how those things are put together allow one to know what the "real" car is actually like, even if one has never seen one. And how a picture is put together allows one to develop beliefs about what that which is pictured would really look like if one were to observe it directly. And how words are put into sentences allows one to imagine what is being described. So the "**material**" out of which something is modeled is **arranged** (drawn, sculpted, spoken, imagined, remembered, etc.) **in a specific way**.

But when we are talking about **beliefs**, what is this "**material**"? There are perhaps many different kinds of this material, but is there anything we can say about **all** of it?

It has to be something that can be **experienced**, that is, can be a part of one's **subjective experience**, either directly perceived, or imagined, or remembered.

(Thus, we are at present talking about the mental world, not the physical world containing the patterns of enhanced synaptic connections in the brain or whatever is going on in the brain "correlated with" subjective experience and modeling.)

Remember, subjective experience is the "raw material" of all modeling for the Subjective Model. It is all you have to work with. It cannot be something that you have never experienced, can never experience, and have no ability to imagine. For instance, a person completely blind from birth, who has never seen anything, cannot have a visual model of something (at least in our usual meaning of the word "visual"). The person could still have beliefs (models) about the world, but they would not be visual models. They would be, as examples, tactile, kinesthetic, auditory, and/or verbal (linguistic) models, "made out of" those subjective experiences, or the memories or "images" of them.

It should be apparent that the above has to be true of our subjective models of our subjective experience. My belief that the chair will hold me if I sit in it consists of predictions as to what my **subjective experience** will be if I sit down in it. Such predictions are **imaginations** of subjective experience to come (either potentially or actually), and imaginations themselves are subjective experiences. So **models of, or beliefs about, subjective experience are made out of that which exists within subjective experience**.

(A memory is a model of what one would experience if one went back in time and relived the experience, and an imagined experience is a prediction of what one would experience if the imagination were true. The important point is that models of subjective experience are **made out of the material of subjective experience**, that is, **subjective experience itself**. And that is because all we ever experience is subjective experience. That is all we have to work with.)

We need to clarify a possibly confusing part of our terminology. We have considered those situations in which a person did not know that he or she had a particular belief until he or she was surprised as something turned out not to be as expected. What was expected is what we are considering the belief to be. So prior to that surprise, it would seem that the belief (expectation) was not manifesting itself in any detectable manner.

But we can go further than that. Obviously, a person has an extremely large number of identifiable beliefs that are in no way manifesting themselves at the current time. I could ask you a question right now about your personal life, such as where you lived as a child, whereupon your belief constituting the answer to the question would become apparent (as you remembered some things about your childhood). What can we say about the "material" out of which that belief is made **prior to** its becoming active? We could say, perhaps, that the belief existed in the brain in the form of a network of enhanced synaptic connections, and thus with increased potential for becoming active, but there would be no **manifestation** of that belief within subjective experience. Nevertheless, if we were indeed to be working only with the operation of neurons in the brain, it is not likely we would find anything new added, beyond the activation of a potential, when the belief became active such as to be identifiable within subjective experience. It is not as if inactive and active beliefs are made out of different "material."

When someone imagines a particular situation to exist somewhere, he or she will be using the material of subjective experience, such as visual images. When we are talking about the beliefs that are being manifested by whether or not current subjective experience is occurring "as expected," we are essentially talking about whether current subjective experience is "matching" expected subjective experience. We can make the assumption that current subjective experience is being matched to the model of subjective experience that is being activated by the ongoing subjective experience, and so that expectation, again, would most reasonably be considered to be subjective experience, or the "material" out of which subjective experience is "made." Ongoing subjective experience is matched against a model of subjective-experience-as-expected. So if the model of subjective experience is actually manifesting itself, the "material" out of which the model is made is that of subjective experience. What I am looking at is matched against my image, being activated at that point in time, of what I expect to be seen there.

So, again, we can say that the "material" out of which the Subjective Model is made is subjective experience, which may either be potential or actual.

But what about the Objective Model? Right away we can see that **what** we are trying to model may be things that we are assuming we can never subjectively experience (like things happening on the sun, atoms, radio waves, and black holes). It's not just that we **may** never experience these things. It is that we **can't** ever experience these things. So we have to use what we **can** subjectively experience (the only material we have) to model things we **can't** subjectively experience.

So we say that X (what we are trying to model, but have no way of subjectively experiencing) is **like** Y (something we can indeed subjectively experience). Y has some characteristics (internal relationships, tendencies to interact, properties) such that with our understanding of them we can predict what we will find if we study X, which presumably has those same characteristics (internal relationships, tendencies to interact, properties).

So our models are like analogies or metaphors.

But then we start running into the fact that there may sometimes be no things we can subjectively experience that are suitable models for some of these things we are studying but can't subjectively experience.

This fact should be apparent with some simple examples, though we will also probably come to some conclusions that may be somewhat surprising to some people.

For instance, at some time in the past, we came to the conclusion that "matter," which often seems quite "solid," consists of "atoms." These "atoms" first were thought of as something **like** little billiard balls (something we can experience), even though they are so small we understand that we will never "see" them (or directly experience them). And we used billiard balls as models because we assumed atoms would **behave** at least somewhat **like** them (have somewhat the same properties, or tendencies that we have learned about within our subjective experience). Thus, the billiard ball (or something like it) was a model for an atom. But before long we came to the conclusion that these atoms are actually not like (solid) billiard balls, but are made of even smaller "particles," though these "particles" again were perhaps imagined to be **like**, or to **behave like**, billiard balls. But then we came to the conclusion that these "particles" have properties (under certain conditions) that are **completely different** from the properties of billiard balls, in fact, so different from **anything** we can observe (subjectively experience) that they can only be modeled by mathematical equations, which are modeling materials from which all properties have been removed other than "kinds of relationships" (equal to, more than, less than) between measurements.

So increasingly modern physics has become sets of **mathematical models**, designed only to predict **measurements** found in experiments or natural observations, as opposed to material/mechanical or pictorial models, made of parts that are familiar within subjective experience. Space (or "space-time") itself has become "fields" of numbers determined by mathematical equations, with the recognition that subjective experience simply does not have entities within it that would be easily used to model, for example, "curved space-time" or "transmission of force."

(When modern physics is explained to the lay person, that effort continues to make use of, as much as possible, materials that can be imagined at least to some extent, such as "two-dimensional bugs in a two-dimensional space like the surface of a sphere.")

To make this matter even clearer, however, let us go back to the cartoon depicting two people looking at a house, with a balloon over each person's head that has a house in it, depicting that person's subjective experience of the house. Remember that we concluded that the "**real**" house, the one supposed to exist even if no one is looking at it, has to be **different in all respects** from the **subjective experience** of the house, since that subjective experience is at the **end** of a **chain** of **transformations** (from light waves to depolarization of retinal cells, to action potentials occurring along axons, to some pattern of activation of synaptic connections between cells in the cortex, etc., ultimately associated with "seeing the house one is looking at"), those transformations being "**changes**" into **something different** than what produced them, that is, what the "real" house must consist of. But if the relationships among the parts of the "subjective-

experience-of-the-house" allow one to predict what will happen (within our subjective experience) when we do things that involve the house, then that "subjective-experience-of-the-house" may be a satisfactorily accurate model of the "real" house. If the model "works" (allows one to predict accurately), then that is all we can ask of it.

But we certainly don't have to be surprised if we start finding out that these "real" things that we are attempting to model may be impossible to model very accurately by anything within our subjective experience. Another way of saying this is that "reality" may be far stranger than anything we can imagine! And indeed that is exactly what scientists are finding out as they work at the frontiers of our knowledge. Anyone who has tried to understand the latest theory of the nature of the universe, including the nature of "matter," "energy," "space," and "time," and concepts such as "strings" and "branes," will readily know what I am talking about. These concepts, or models, are primarily mathematical ones, only vaguely and incompletely (inaccurately) imaginable visually.

We are saying, then, that the world ("reality") consists of things we simply can't see, or even imagine, except in very limited, inaccurate ways. We say that atoms are "like" billiard balls, but not really. They are like little collections of tiny billiard balls arranged in certain ways, but not really. The tiny billiard balls are like "particles," but not really. They are like "points" in "fields," but not like the fields we know that we plant grain in. They are more like diagrams of plotted numbers, but not really. They may be like "strings," but not anything completely like strings we know. But one thing we feel certain of is that we will never subjectively experience an atom. We will never be able to point to one and experience it **as it is**, **independent of anyone's subjective experience**. We may point to a picture (model) of one, but not to one itself. We may model one in our imagination, but that will only be a model, an inaccurate one. And whatever model we use to predict things about those atoms, the **more** that model is like what we know (experience), the **less** likely it is to be an accurate model of the atom, as determined by results of measurements made through experimentation. The structure and operation of the nervous system determines the **limits** of our ability to model, and determines **how** we will model.

The **Objective Model** is indeed constructed out of **parts of subjective experience**, which are the **material** with which we attempt to model the world as it "really" is, that is, as it is independent of our experiencing it. We say the world is "sort of" like what I can imagine, and using what I can imagine, I can make predictions that work pretty well most of the time. But the more closely, accurately, and completely I attempt to develop (my version of) the Objective Model, the more I find that material from my subjective experience is inadequate to do the job, our models therefore ultimately becoming reduced to mathematical equations, stripped of anything we are familiar with (like balls, water, waves, warmth, music, etc.). Of course mathematical equations are within our subjective experience, as things we see on paper or screen or imagine seeing on paper or screen, but the **only similarity** between the equations and what they are describing, or modeling, is the **kinds of relationships** (more than, equal to, less than) found in **measurements** obtained in the studying of what they are modeling.

So let us realize also that, as we have said, what we find within our subjective experience is just a **model** of what is "actually there" in "**reality**," that which exists **independently** of anyone perceiving it or thinking about it. What is in that balloon over the head of the person that is looking at the house (in our cartoon) has to be different from the house itself, for the reasons we have described. But what we have within our subjective experience is a model of what is actually

there **to the extent** that it allows us to **predict** what will happen if we interact with the house, and **only to that extent**. And it may be a satisfactory model even if under more rigorous conditions it does not work well. Remember that a model cannot be the same in all respects as that which it is a model of; otherwise it would be the same thing, not a model. And it is what the model is being used for that determines what aspects of it should "work," that is, allow for accurate (enough) prediction. Metaphors are models, and we well know that metaphors can be over-extended, being made to mean more than they were intended to mean by the original user of the metaphor.

But we need also to recognize that some of our models of "reality" contain things that actually **don't** "exist in reality." They **exist by definition only**. For instance, we have found it quite helpful to talk about "groups." When I speak of "a group of five people," the group of five people **exists by definition only**. Someone going through the universe and cataloguing all of the entities found would not come up with that group as an entity. He or she would catalogue each individual, but not the group. Similarly, although we say that North Carolina exists, it **exists by definition only**. No alien would ever find it in a study of our planet. Yet, it is a very useful model that affects my behavior under certain circumstances, such as when I am asked where I live, or when I want to get my driver's license. So just because we have a model of something doesn't mean that that something actually "exists in reality," no matter how useful the model is, that is, how well it "works." We have found that it is sometimes quite helpful to draw arbitrary lines (or walls) around parts of things and assign labels to what is within those lines or walls, bringing things into "existence" **by definition only**. Again, we draw lines on terrains, and label the lines as "boundaries." And we give labels to what is on either side of such boundaries, bringing new entities into existence, e.g., countries. (These issues will be clarified further later in this presentation.)

And to summarize the above, we can point out that all we are ever dealing with is **models**. These models are not the things they are modeling. We never experience "reality." We subjectively experience sensations and perceptions of it (what we see, hear, touch, smell, taste, etc.) and develop **beliefs** about those sensations and perceptions, such that we are able to **predict** what is going to happen (what our subjective experience, those sensations and perceptions, will turn out to be). And that **collection of beliefs about our own subjective experience** is what we have been calling the "**Subjective Model**," which as we have noted can be said to also include the subjective experience itself, if we wish.

But our **subjective experience**, remember, is **itself** a **model,** a model of part of "reality" (that which exists entirely independent of our perception of and beliefs about it). And as has been stated earlier, that subjective experience is "correlated" probably with some sort of neurological activity (probably the activity of certain networks of neuronal connections), those networks being "correlated" in turn in some way with the world as it actually is. (There will be more about that later.)

And that model (that subjective experience) is subject to **inaccuracies**, such as sensory deficits, perceptual illusions, and hallucinations. And our "**Subjective Model**" (extending to all our beliefs **about** our subjective experience) is subject to **inaccuracies**, such as ones based upon coincidental occurrences (e.g., superstition). And our "**linguistic models**" of our subjective models are subject to **inaccuracies** in language usage (e.g., the same word meaning different things to different people), leading to communication breakdown and misunderstanding. And our "**Objective Model**" of "reality" is subject to **inaccuracies** often produced by the inadequacies of

the "materials" we use to model parts of "reality," that is, the materials that are parts of our subjective experience that we say parts of "reality" are "like." And of course those models that are a part of the Objective Model are also subject to inaccuracies produced by insufficiently developed scientific methods, observations, and conclusions (giving us "frontiers of knowledge").

And finally we should note that even our idea that there is a "reality," "outside of" our subjective experience, is an act of modeling, using the relationship between "inside of" and "outside of" to model that relationship between "subjective experience" and "what is there independent of subjective experience," as we did with our cartoon model, where the interior of the balloon over each person's head represents, or models, that person's subjective experience, in relationship to the actual, or "real," house (and even the person's body). And we can therefore ask **how adequate** that model (the cartoon as a whole, containing the "actual" house **and** the balloons) is to represent **both** the "state-of-the-world" **and** "our awareness of and beliefs about that state-of-the-world." (Contrary to what we see in the cartoon, we never actually experience, or observe, that boundary of our subjective experience.)

So we are coming up with **three entirely separate entities** as a way of looking at the totality of everything we are considering in this presentation:

There is the **Subjective Model**, consisting of subjective experience and a growing set of beliefs about that subjective experience acquired automatically from moment-to-moment experience.

There is **reality**, that which we can never experience or "know" in the same manner as we know the things within our subjective experience, but that our subjective experience is considered to be a model of, though not necessarily a highly accurate model.

There is the **Objective Model**, consisting of our growing set of linguistically modeled beliefs acquired from agreement with others and to a certain extent also legitimated by consistency with the rules of logic and the rules of evidence, that set of linguistically modeled beliefs being considered to be a better model, under certain circumstances, of that reality than is our Subjective Model, better only in that it leads to a better ability to predict more accurately regarding a wider range of certain things, and therefore better ability to do more (and quite impressive) things of a certain nature. (And those "certain things" are ones that are more likely to involve "everyone," or at least larger numbers of people.)

And of course this set of three entities is just a useful model for organizing some of our beliefs, useful in producing clarity of thinking (that can lead to better decision-making), what this whole book is about. But this model needs elaboration, especially with regard to the meaning of "reality."

SUBJECTIVE MODEL, OBJECTIVE MODEL, AND REALITY

Let us now try again to summarize and clarify, this time more completely, the meanings and implications of the whole concept of the "**Subjective Model**" and the "**Objective Model**," including the implied concept of "**Reality**," soon to be capitalized as will be explained below.

All animals that can learn develop beliefs, or models, in their brains or nervous systems of the way the world **seems** to be, on the basis of which they do things, moment by moment, that involve **predictions** (expectations) of what will happen when they do those things, and most of the time this goes smoothly because those predictions turn out to be accurate enough, that is, turn out to be what actually happens. We are arbitrarily saying that each of those animals has "subjective experience," which can be observed by no one, but is, from the animal's standpoint, all that that animal is, or has to work with, and each of those animals has beliefs about that subjective experience. That is true for us humans. Each of us experiences the world in a particular way that no one else can ever observe. And we have beliefs that have arisen from such experience so far.

We humans can, however, produce within the subjective experience of others something (which we can't observe) by our learned and agreed-upon use of language (our "first exponential change"), and we can observe the "outward" reaction of others to our doing so.

We have to follow agreed-upon meanings of words and agreed-upon rules for using them in order to do this communicating. We state how we feel, what we perceive, what it means to us, etc., and others listen and react in some way. That reaction matters. As we put our Subjective Model beliefs into words, the reactions of others means something in that they will sometimes seem to agree or disagree, and if they disagree, then we begin to wonder if what we believe is actually so or not. When others say, "That's not correct," we often tend to believe there may be a problem with what we believe. This is the very beginning of "**objectivity**" as it is being used in this presentation.

And it is occurring because we have begun linguistically modeling (putting into words) parts of our Subjective Model of our subjective experience. As soon as we do, we are introducing an element of objectivity, because we are beginning to use **agreed-upon** tools to try to model our Subjective Model, and we are paying attention to the **reactions of others** to our presentation of it to them. Thus, rather than being satisfied with how things "**seem**," we are looking to others for some degree of guidance as to how things "**really are**." This is a process of gaining **independence** from subjective experience and from the further subjective modeling of (development of beliefs about) that experience, on the road to **objectivity**.

But just whether others agree or not is not the best we can do in the way of criteria for the legitimization of belief. (Remember that by "legitimization of belief" I mean "demonstration of appropriate and acceptable reasons for having the belief," that is, clarification of why I believe it and why I believe you should believe it.) We together, as a species, have developed the **rules of logic** and the **rules of evidence** that give us **additional, agreed-upon criteria** for the legitimization of belief. Doing so has, in the extreme, given us science and technology, and the absolutely amazing capability of doing what no other animals on this planet have ever been able to do, nor ourselves before this "second exponential change." But even without going to the extreme of science and technology, it is still extremely impressive the extent to which we learn

from each other what the world is "really" like, including how to do things, such knowledge being far beyond what any one of us can learn only from his or her own day-to-day experience, excluding such learning from others. What we learn from others adds drastically to (and sometimes contradicts) what has seemed to us to be "true," giving us drastically improved capability with regard to certain aspects of living (but of course not all).

So the sum total of the growing, increasingly **agreed-upon** beliefs about (models of) the way the world is, was, and will be, as **epitomized** by the sciences, is what we are calling the "Objective Model," as opposed to the "Subjective Model," the sum total of all of the beliefs that each of us has built up from our own subjective experience, independent of what anyone else has to say, and active primarily in our moment-by-moment living of our daily routines, whether or not ever put into words.

So the primary **source** of the beliefs within the Objective Model is "being **told**" by others. We first learned to linguistically model our own **Subjective** Model, or collection of beliefs, based upon our own subjective experience, but we finally have developed our (own version of the) **Objective** Model primarily through linguistic modeling done by **others**, from whom we have learned.

But now it is time to make an even clearer distinction between these two models, the Subjective Model and (one's own version of parts of) the Objective Model.

One could metaphorically look at the Subjective Model as a large and growing mass (of beliefs), and then imagine a bump appearing on that mass. That bump (Objective Model) becomes a larger and larger mass, coming to exist alongside the first (also growing) mass, and containing only a small connection with the mass from which it differentiated. That would be one way of conceptualizing.

And it should be clear that there are not two spatially separate sets of neurons in the brain dedicated to either the Subjective Model or the Objective Model. That would be very, very unlikely. Instead, we could easily imagine that a particular neuron had some role in certain Subjective Model beliefs and also in certain Objective Model beliefs. And this idea would be consistent with our recognition that **both models have to use the same material**, the material of subjective experience, in their construction. Also, as we have considered before, any particular belief is interconnected with other beliefs, as for example the belief that my car is in the garage being interconnected with my belief that I have a car and a garage, and my beliefs about cars and garages in general.

So we could say that there is, in one way of looking at it, no clear dividing line between the Subjective Model and the Objective Model (in an individual).

Yet the **criteria** for determining whether a belief is part of the Subjective Model or part of the Objective Model are **distinct**. The Subjective Model is of the way things **seem**, whereas the Objective Model is of the way things "**really are**," whether they **seem** that way or not (recognizing that that model can of course be inaccurate).

So the crucial understanding to have is that a particular belief could be a part of either the Subjective Model, the Objective Model, or both. Your belief as to what it will feel like when you

sit down in your favorite chair is most likely completely within the Subjective Model. Your beliefs as to what crystals of salt are really like (atoms, forces, spatial configurations, etc.), are completely within the Objective Model. Your belief about directions to the nearby convenience store, told to you by someone before you went, and found to be correct when you went, are now in both models. And sometimes the Subjective Model is what will help you and sometimes the Objective Model is what will help you.

And what I continue calling attention to is that **both of these Models may be operative simultaneously in all of us**. When we are walking carefully, we are primarily using the Subjective Model. When we are choosing a route, we are primarily using the Objective Model. When we are making love, we are primarily using the Subjective Model. When we are planning a date, we are primarily using the Objective Model. But we are probably almost always using both Models to some extent at the same time. In fact, it is essentially impossible not to be using the Subjective Model to some extent in everything that we do, moment-to-moment.

And because both Models are operative in us at the same time most of the time, it is not surprising that we have difficulty telling the Models apart, and therefore tend to **try to integrate them into one**, even though in certain respects they may be incompatible. And this tendency, I maintain, is part of how the "mind-body problem" arises.

Now it is time to clarify further the third entity, "**Reality**," (capitalized) in our model that will consist of Subjective Model, Objective Model, and Reality.

As we know, most of our words have more than one meaning, and the intended meaning in a particular act of communication or thought is often fairly evident from the context in which it is being used. But sometimes such difference in meaning is unclear, and when that is so, communication and thought become ambiguous. And that can certainly be true of the concept of "reality." When the word is being used, it can have substantially different meaning depending on whether one's thinking is primarily involving the Subjective Model or the Objective Model.

To understand two drastically different meanings of "reality," we have to go back to our discussion of solipsism and bring ourselves forward. I mentioned that, as a part of the Subjective Model, almost all of us make the **assumption** that we are not alone, and that there is more to "existence" than just our own immediate, ongoing subjective experience. An assumption, of course, is a belief, and a belief, as we are using it in this discussion, is a model. So that assumption is the creation of a model. So we need to look more closely at that process.

Very early in our existence, almost all of us begin to "structure" (develop beliefs about) our subjective experience, that is, produce a model of it, that **includes**, by virtue of "imagination," **what is not presently being directly experienced**. The development of the cognitive map is an example. When we play peek-a-boo with our infant, we are getting our infant used to the idea that things are still present or nearby even when we don't see them. The infant retains an image of that which has just been seen, and learns that in time it will be seen again, so the imagination provides a cognitive map that includes **the unseen object still existing**, in a place in that cognitive map, even though not visible currently because of interfering circumstances (e.g., Mother's hands over the infant's eyes).

And as a part of everyday experience, Mother disappears and reappears. Before long the infant "learns that" (develops a model that includes the belief that), under certain circumstances, Mother is in the next room. The infant can "see" her in the next room in his or her "mind's eye," or imagination, and it becomes a belief. Here is another example of the lack of a clear line of demarcation between subjective experience and belief about that experience. Mother is **not actually seen**, but Mother is **imagined** to be in the next room. That **image** also represents a **belief**, that it is "really so," such that the belief can result in predictions that will often turn out to be correct (e.g., crying will bring her back right away, because she's just around the corner).

(Note that images imagined are not necessarily beliefs. For instance, we can imagine things that we believe are **not** so. Images are beliefs only insofar as they tend, or would tend, to produce predictions in specific situations. We also have the ability to imagine that which we believe is not so, or that we are not at all sure about.)

So what we are considering here is the "**belief in the existence of the unseen**." We develop the "awareness" (belief) that things exist even though we don't necessarily "see" (experience) them. This is our first development of the concept (model) of "**reality**," or belief in the existence of things that are **independent** of subjective experience. The potential or actual imagination (including memory) of this set of things that exist independently of our experiencing of them indeed is much of what we are **meaning** by "the Subjective Model," along with any rules by which we believe these things behave such as to make them predictable.

But also note that the **image** of those things that exist independently of subjective experience is basically similar to the **perception** of those things when experienced within subjective experience. Mother in the next room is experienced very similarly to Mother in the same room (and visible). When Mother walks into the next room, she doesn't, in the mind of the infant, transform into something totally different, and even unimaginable. As noted earlier in this presentation, the only material out of which we can construct our models is subjective experience, i.e., the entities of subjective experience. So when we **imagine** (model) Mother as being elsewhere, our image of Mother remains basically the same as our **perception** of Mother when Mother is present.

So we readily include in our developing Subjective Model images of things that don't change just because we cease experiencing them. This model is that of a world that exists unchanged whether we experience those entities or not, referred to usually as "**reality**." Things are considered to be **as they are experienced**, and **remain the same** as they have been experienced even when we stop experiencing them. There is thus, in the Subjective Model, one "**reality**," sometimes experienced and sometimes not. This is the beginning of what, in the Objective Model, becomes an important **inaccuracy**. But within subjective experience and within the Subjective Model, there is no problem with the use of this assumption. Within the Subjective Model, the automatic assumption is made (in infancy) that **the world is as subjectively experienced, whether subjectively experienced or not**.

(Not all that is subjectively experienced is considered "real." We do at times produce images in our minds that we know to be creations rather than reproductions, that is, things that we imagine rather than remember or actually "see," and that we would predict that we would never "see." What is "just being imagined" may be considered "not real," "unreal," or "imaginary."

On the other hand, under some circumstances we might label as "real" **the image itself**, of something, even though it is an image of something that is "imaginary." The unicorn is not real, even if a particular **picture** of one is. So we use a potentially somewhat slippery terminology when talking about "reality" within the Subjective Model, but this slipperiness may not be a problem if we recognize the different uses of some of our words.)

So now note how different this assumption about "reality" within the **Subjective** Model is from our conclusions within the **Objective** Model regarding the "real" house and the houses in the balloons over the heads of the two people in the cartoon. In that scenario, the entity which is independent of being seen or thought about, "the **real** house," is entirely different from that which is "in the minds of" the two individuals "perceiving" the house (such that what they have available to each of them is only what is in the balloon over the head of each). The house in each balloon is a **model** of the "real house," not the "real house" itself. According to the Objective Model, there is the world of subjective experience and the world independent of it being experienced.

This "reality" that is meant within the Objective Model we can now call "Objective Reality," and contrast it with "Subjective Reality," the "reality" that is usually meant within the Subjective Model. To simplify, whenever we are referring to Objective Reality, we can simply use (the capitalized) "Reality."

Within the Objective Model, our perceptions of and thoughts about entities in Reality are considered to be just **models** of those entities that presumably "exist in Reality." But the assumption in the Subjective Model, developed by the infant and retained as a part of the Subjective Model throughout life, is that there is one "reality" (Subjective Reality), that is as experienced and as imagined (as previously experienced), or remembered, and therefore the same whether experienced or not.

So in the Subjective Model, "experience" and "reality" are automatically (from infancy) assumed to be made, so to speak, of the same thing, whereas in the Objective Model, "experience" is different from "Reality," in that "experience" is a **model** of "Reality," and made of something **different** from "Reality," that is, made of the entities of subjective experience. This is consistent with the idea that what is in the balloon over the head of the person seeing the house refers to something about the neurons in that person's head, whereas the "real" house is made of bricks, etc.

We can say here, however, that even a thought or a feeling may be considered to be a model (perception) of a process occurring in Reality, that is, in the brain-in-Reality, whatever that is. If, for instance, it turned out to be true that a particular feeling would occur in an individual if and only if a particular neuron, or a set of particular neurons, in that individual's brain were firing, then one could refer to that feeling as the "perception" of the firing of that or those neuron(s) "in reality," and thus a model of it (the intensity of the feeling perhaps being, e.g., a model of the frequency of firing of the neuron or of the number of such neurons firing).

Notice that if we take this approach, then the **perception** of the house (within subjective experience) is really a perception of the **network of neuronal interactions** in the brain, that is in turn a model of the **house**. So we would be saying that **subjective experience is a model of the**

neuronal activity of the brain, which, in turn, is (or at least can be) a model of the entity (e.g., house) in Reality (what exists independently of our perceiving it or thinking about it).

And indeed this makes sense because we know that entities can be experienced that do not actually exist "in Reality," as when we have hallucinations and dreams. In such cases, the neuronal activity that is a model of the hallucinated or dreamed house is taking place in the absence of the house existing "in reality." The perception or image of the house is a model of the neuronal situation, but it may or may not be a model of the house in Reality.

(We are also making an assumption here that reports of any kind of subjective experience by an individual could be demonstrated to be correlated with some finding(s) in our growing set of neurological imaging techniques and/or other neurophysiological techniques. We do not know this, of course, but our growing set of findings gives no indication that there are such reported or reportable subjective experiences that are not correlated with neuronal processes, and we would always be able to say that we just had not so far found a way to do so if there were some reports of subjective experience for which we had not yet found a neurophysiological correlate. All evidence to date seems to indicate that the central nervous system, functioning adequately, is necessary for subjective experience to occur. So I will be making that assumption for the present.)

In the **Subjective Model**, things are as they seem; in the **Objective Model**, there are (1) things, and then there are (2) our perception (and memory and imagination) of those things, that is, our ways of experiencing (modeling) those things.

When I look at a chair, then I will say to myself that the chair is "real," not "imagined," and thus a part of my **Subjective Reality**. However, when you and I are discussing our perception of the chair, I will say that your perception of the chair and my perception of the chair are two different models of a third thing, namely, the chair that exists in **Objective Reality**.

Within the Subjective Model, you will primarily use the word "real" to distinguish between (1) what you perceive, or could perceive, within your subjective experience and (2) something that you have imagined (or even dreamed), or could imagine, that you believe would be impossible for you to perceive because of it not "existing" (as opposed to an inability to perceive due to some limitation in your own ability to perceive things or to get into the proper position to perceive such things). So within your Subjective Model, when you are looking at something, or hearing or feeling something, what you are seeing, hearing, feeling, etc. is what is "real," as opposed to "imaginary." If you are traveling down a curving road, what you see you would classify as "real," just as you would classify the image in your mind of what is about to be perceived as you go around the curve. And you could imagine something around the corner that you knew was not there even though you can imagine it, something "unreal" or "imaginary." In the Subjective Model, "reality" (Subjective Reality) is as perceived or as could be perceived, being therefore made of the entities of subjective experience, as has been noted.

But, again as we have noted, within the Objective Model, "Reality" is by definition a totally unknowable world that our subjective experience and our (Subjective Model and Objective Model) beliefs are models of. In the Objective Model, the only "access" to Reality is our modeling of it, using the entities of subjective experience as the material with which to do that modeling, and with the recognition that it is entirely possible, and even likely (considering what

science has come up with so far) that there is nothing within subjective experience that can be used to create a completely satisfactory model of Reality, beyond mathematical equations modeling the results of measurements.

So we can actually become clearer in our thought and communication by considering that "reality," as the word is customarily used, could mean either "Subjective Reality" or "Objective Reality," depending on whether the term is being used within the Subjective Model or the Objective Model. In this presentation, when the term "Reality" is being used, it is always referring to "Objective Reality" as the term has just been used, especially since this whole presentation, of course, is an act of modeling within the Objective Model.

So we can summarize our developing model by once again clarifying that there is the Subjective Model (including subjective experience itself), the Objective Model, and Reality, which both the Subjective Model and the Objective Model are considered to be models of. And the presumed "existence" (by definition only) of that Reality is the **reason** that those Models can actually **work** (allow for any kind of reliable, successful **prediction**).

A metaphor that somewhat depicts what is being said is as follows. There is a contest going on, with people trying to win a prize for guessing at what is behind a curtain. But they are not guessing at what it actually is; they are guessing at what it is like. So they make their guesses as to what it is **like**, and the contestant leader responds with answers that indicate how good the guess is. The contestant leader only responds with "good" or "not so good" ("good" meaning will result in increased likelihood of success of prediction and ability to do things, and "not so good" meaning will result in increased likelihood of being surprised and of making mistakes), and the contestants never get to see what is behind the curtain. But if we can mostly get "good" responses, that is what we want, and we aim for the time when we only get "good" responses for the rest of time (though we will never be sure we have gotten there). That is the best we can ever do. (In a sense, perhaps, this contest is the living of our lives.)

So when we speak of Reality being what the Objective and Subjective Model are models of, we are using the Objective Model, and therefore using the "Objective Reality" meaning of the term. And indeed this whole presentation is, of course, a part of the Objective Model, not being at all possible without agreed-upon linguistic modeling of beliefs obtained through formal education, the media, and other, interpersonal, learning experiences.

So far, we have been talking about the "Subjective Model" and the "Objective Model" as if these were two separate things and perhaps the only two alternatives as far as our modeling of "Reality" is concerned. And in one sense this would be true. We can indeed think of all those beliefs that develop from moment-by-moment subjective experience and that guide our behavior from moment to moment, and contrast that with all those beliefs that we have acquired instead primarily from others through the use of language and other sets of symbols, and that sometimes modify (often in very important ways) what we imagine and what we do.

If we think about the development of either the Subjective Model or the Objective Model, we will realize that the history of the development of those Models was not the orderly development of increasingly complex beliefs based upon the very simplest and most basic beliefs possible, as would be attempted in a geometry textbook. Instead, we can imagine that the development of each of these Models (Subjective and Objective) is similar to the development of many individual "lumps" within a fluid, lumps that ultimately will coalesce, such that the liquid presumably ultimately will become completely solid. According to this metaphor (model), each of those lumps is a model (or sub-model), useful for the purposes at that time, and it is only with the passage of further time that it perhaps becomes evident that two or more of those models are specific examples of a more general model, that represents an "underlying truth" of each of the more specific models. (This would be the coalescence of lumps in our metaphor.)

But since we know full well that models, or beliefs, can be inaccurate, or "wrong," it may come to pass that two lumps will not be able to coalesce, because they are logically **incompatible** in some way, such that the rules of logic (applied to linguistic models of those beliefs) will not allow both of them to be considered correct (because of resulting in opposite potential predictions).

So to a great extent we have lots of little "**belief systems**" about various seemingly unrelated topics. Within each of those little belief systems, if the beliefs are expressed in words, they will most likely be found to be non-contradictory according to the rules of logic. The beliefs will be logically consistent with each other, and indeed "hang together" like "systems." But it is also possible that if we take a close look at two "little belief systems" ("sub-models") within the total collection of belief systems, we will find two beliefs (one in each little belief system) that, if modeled linguistically ("put into words"), will be found according to the rules of logic to be contradictory to each other. And certainly we know that in the Objective Model (that is the "property" of our species in general) there is much disagreement, and thus there are **contradictory sub-models** within that Objective Model. So when we refer to the Objective Model, we must always remember that we are not referring to an internally consistent belief system, but instead to a collection of belief systems, some of which may be contradictory to each other.

We have also seen that the most important feature of a model is that it "**works**," that is, produces specific **predictions** that turn out to be, or would turn out to be, what actually happens or would happen (given certain specified circumstances). That most important feature is essentially the defining characteristic of a model. And we have seen that some models are **easier to work with** in some situations than are others. For almost all of our daily living, we do not need to go beyond Newton's laws to accomplish things satisfactorily. But to get our astronauts back from the moon, we need, as I understand it, to use the more precise, accurate, and comprehensive model of

relativity. Similarly, there are some highly specialized fields that require using quantum mechanics, a model that is quite "counterintuitive," and usually very unnecessary. Furthermore, we do not even need to know anything at all about Newton's laws to get up and go into the kitchen, or even to get to the convenience store.

So we have been talking about how two models (or sub-models) can be **incompatible** with each other in that they are **inconsistent** with each other logically, because of **contradiction** according to the **rules of logic** when applied to the linguistic models of those two models, even though they may have some usefulness in certain (usually different) situations.

But there is **another kind of incompatibility** that involves the use of **different "materials"** for that modeling. Under such circumstances, each of the models may be quite satisfactory for the intended use, but they cannot be **combined** into one modeling process.

There are many simple examples of this kind of difficulty. Very obviously, a plastic model of one half of a car cannot be combined with a picture or diagram of the other half of the car to produce an effective model of the car. Another example would be the incompatibility between a holographic image and a sculpture (both combined to make one object). In the same way, a linguistic model cannot be combined with a diagram.   And another example would be two descriptions rendered in different languages. They can both be used, but not as one model.

It may (or may not) be possible that the information provided by one model can be transferred to another model by a translational process, but the two models cannot be considered just two components of one model. That translational process actually involves modeling at a "higher level," involving the development of a third model, a model, for instance in the case of two languages, that allows one to use sentences in one language to predict what people using a different language would say in the modeling of a belief, conveying a request, etc.

More subtly, there may be two linguistic models (in the same language) using the same words, but with the words having different meanings in the two models. The use of both models as parts of the same model would involve the construction of a third linguistic model that allowed for accurate translation of the words as used in one of the models into words that would mean the same thing in the alternative model.

So what we are considering here are certain problems that may arise from the attempt to merge sub-models into one model, when the same words in the two submodels may mean different things, this being a problem with the "material" with which we construct our models, words (or language) being a component of subjective experience, which is, as we have noted, the only material we have to work with.

As we have studied, during the development of the Objective Model, what we might call "the nature of Reality," we have done so in many different ways, related to many different problems that we have had to solve and many different decisions that we have had to make. That is why we have "fields of study." Each of those fields of study may use models specifically created for that particular field of study.

We know that the Objective Model has its origins in linguistic modeling and that therefore it is highly dependent upon language. And for any objective linguistic model to be effective, the

words that it uses must have the same meaning, by agreement, to everyone using the model. This is fairly obvious in the sciences, where each individual science has a lexicon, or agreed-upon terminology, that it uses to deal with the subject matter that that science is about. So we can say that it is likely that any objective model of significant complexity and usefulness will more than likely **have its own language**, so to speak. It is not that **all** of its words will be used only within that model, but that there will be **specific words** that have **specific meaning in that model** such that the model is coherent and effective and teachable.

Now these words that are specific to a particular model may happen to be used only within that model and not have additional meanings that are useful in other models, or they may indeed also be used in other models with different meanings. So confusion can occur because of words having different meanings, depending on what model they are being used in. Often confusion is avoided because people can tell what the model is that is being used. They would be likely to call that judgment "understanding the meaning of the word because of understanding the context in which it is being used."

But it can also happen that people **may not recognize** the fact that the word is being used with a different meaning, dependent upon the model, or context, in which it is being used. And it will turn out, I believe, that this is one of the factors causing the "mind-body problem" and the "free will vs. determinism problem."

So we have seen that both the Subjective Model and the Objective Model, as the terms are being used in this presentation, are actually **sets** of models (and therefore capitalized), and that as those individual models within each of the two Models have developed and have tended to merge with one another, at times imperfectly, some models may be considered to be sub-models within other, more general, models. And these sub-models may be somewhat incompatible by virtue of logical contradiction if linguistically modeled, this fact being consistent with the idea that this modeling process is an imperfect but probably gradually improving process. And we have seen that the imperfections of language (linguistic modeling) may indeed complicate and make more difficult to understand some of those contradictions.

So we have the situation that the same brain may have many, many models (patterns of enhanced neuronal synaptic networks) that are partially independent of each other, and either consistent with or inconsistent with each other, but useful to a greater or lesser extent, depending upon the situation. In some situations one model may become active, and in other situations another model may become active. And if what we predict will happen is what happens, e.g., if no mistake is made, then the model has worked, whether or not it is inconsistent with or contradictory to some other model that also sometimes works.

So now we need to look at some ways we have of thinking about (modeling) Reality that involve different methods of modeling, for instance, using different materials or different starting points (assumptions), with an awareness of the possibility of incompatibility of the models developed by those different methods, despite their usefulness in different kinds of situations.

THE PHYSICAL AND MENTAL (SUB-)MODELS

So I want now to look at two Models ("sub-Models") within the Objective Model. (Of course these two Models, themselves, can be further divided into "smaller" models, or collections of beliefs, that have accumulated within certain fields of study or at least within certain "areas of thought." The fact that we are dealing with collections of models is the reason, again, for the capitalization.)

Each of these two Models has its own lexicon or terminology. And indeed some words are used in both Models, but with different meanings in the two Models. (And lack of awareness of this contributes to the problems we are considering.)

And probably most (though not all, as we shall see) beliefs within the Objective Model will be able to be found to be a part of one of these two Models, so that we could say that the Objective Model to a great extent **consists of** these two (sub-)Models.

These two models that are **(sub-)Models within the Objective Model** will be called, in this presentation, the "**Physical Model**" and the "**Mental Model**."

(Again, they are both **capitalized** in this presentation for the same reason that "Objective Model" and "Subjective Model" are capitalized. They are both to refer to the **total set** of such models, or beliefs, as distinguished from more specific ones.)

This distinction is somewhat understood by everyone, and has been referred to vaguely as the difference between the "**physical world**" and the "**mental world**."

Remember that by "**world**" we are meaning everything that exists, consisting of **entities** and their tendencies to **interact**. These entities are the material with which we make our models. So the difference between these two sets of models, related to the vague awareness of these two different "worlds," can best be understood by the introduction of a classification of "**entities**" for the purposes of this discussion. This is a classification of the entities that are the **materials** out of which are constructed the Physical Model and the Mental Model.

At the beginning of this presentation, I stated that an **entity** would be anything that a name or noun could be assigned to. In a sense, however, we could assign a name or noun to anything we could possibly think of, or experience, and it would thereby become an entity. On the other hand, we can readily understand that there are important differences among various things that we have names for, such as chairs, companies, thoughts, discussions, relationships, nations, concertos, dimensions, imaginary objects, etc. So it becomes understandable that we could talk about different "kinds" of entities.

As we try to understand the basic issues that this presentation is about, we will have to understand better how we are using all of our terms, including the term, "entity." Also, I don't believe that it is possible simply to say a few words about the topic and then have a satisfactory understanding of these concepts. I believe such understanding will gradually increasingly develop as the presentation proceeds (and probably with a significant amount of necessary re-reading).

We have noted that we can say that we bring some entities "into existence," so to speak, simply by defining words. We can choose a word that currently has no meaning assigned (by anyone so far) and then draw a circle on a wall, and finally assign the word to the area within that circle. Now there is an "entity" where there was none before, an entity brought into existence, and therefore "existing," by definition only. I believe if we look closely at this issue, we can see that we have many, many entities that exist by definition only. We have noted that one way we could attempt to identify such entities would be to ask whether, if an alien from another galaxy came to Earth and did not know any of our languages, that alien on his or her own would ever come across and be able to identify the entity. He or she would undoubtedly find chairs and houses, but would he or she find North Carolina? Your family? A corporation? Democracy? So some "entities" are brought into existence only because we humans have undergone the first exponential change, the ability to use symbols and the rules of syntax, or language, essentially to an infinite extent.

And let us recognize, even more thoroughly and generally, that something qualifies as an entity only because, so to speak, a line has been drawn around it. If we identify a particular entity as a "door," that entity might consist only of some wood, or it might also include some hinges on it, or even additionally a doorknob, and it might also include the paint (or dirt) on the door or not, this being a matter of arbitrary definition. And we know from modeling developed in modern physics that nowhere "in nature" (the physical world) can it be said that there is a precise boundary up to one side of which there is something that is not on the other side of that boundary also.

So it is we that populate "existence" with "entities," by virtue of our attention being drawn to what we generally call "things," and especially by virtue of our assigning names to those "things" that have attracted our attention. And our attention may even be drawn to some "things" that "exist" only in imagination, or are parts of "things" that "exist" only in imagination.

And to be really thorough, we could look at the problematic word "exists." Let us start with "X exists."

How will this sentence be useful? It might be useful if we are trying to communicate with each other, sharing and comparing our beliefs to see if we agree, so that we can improve our knowledge and our ability to cooperate. But for the sentence to be useful, it will have to have the same meaning to both of us, and therefore we would have to mean the same thing by the same words. Well, we have not yet developed an agreed-upon meaning of "X."

This difficulty could be removed if, for the purposes of this particular discussion either I gave "X" a different label, a word in general usage, and said that it meant what it usually means to people, i.e., its usual definition, or if I gave it my own definition.

But suppose I did one of those two things. Then there is the question as to what "exists" means.

Does it have **one** meaning that would apply to **any** word that "X" was replaced by (or any definition I gave of "X")? What can we say we **mean about** "X" if we say that "it exists"? Is there **one** thing that we can mean by "exists" that would apply to **anything** that we meant by "X"?

Try to come up with one answer, using as replacements for "X" the examples already given (North Carolina, your family, a corporation, democracy) and add things like "abstraction," "contradiction," "explanation," "the unimaginable," "the absence of something," "existence," etc.

Is there one meaning that we can give to "exists" that would allow us to arrive at a conclusion with regard to each of those examples as to whether it exists or not? (And what if I said that "X" exists in my imagination only?)

And I don't mean simply to substitute another word or phrase for "exists" that is just as problematic, such as "is" (as in saying that "to exist" is "to be").

The closest concept that has the broadest meaning I believe would be something like "My attention is on this 'thing.' And I have some belief about it, that can most easily be conveyed by saying that I believe it exists (or doesn't exist), and from the context you will have to guess what I mean."

We could then work out together an agreed-upon method (set of criteria) that would enable us to decide whether we were in agreement or not, that is, had the same belief or not.

I will assume that you will not be bothered by this complex problem as I continue to use the word "exists" in what follows.

But in this presentation, the use of the word "model" is quite extensive, and I believe it will be helpful now to review certain aspects of the concept. "Model" is a noun, and it therefore refers to an "entity." So if we have the rock, and the dried mud, each of which is a model of the other, how many entities do we have? There is the rock, and there is the dried mud. That's two entities. But we also have the model of the rock and the model of the mud. Is that two more entities? How did four entities come into existence? And what does it mean in this case for something to "exist"?

So we remember that some "entities" are "brought into existence" "by definition only." So there are different **kinds** of entities (and thus different meanings, as we have noted, of "exist"). Certainly entities that are brought into existence **by definition only** are **secondary** entities. And note that all we have to do is destroy one of those original, primary entities, the dried mud, and we will have destroyed three of them, the dried mud, the model of the rock and the model of the dried mud. The "existence" of an entity called a "model" is dependent only upon whether a particular entity that does exist (in another sense) could be used to predict something (whether it is so used or not).

So again, there are different kinds of "existence." The existence of the rock and of the mud is a different kind of existence than the existence of a "state of affairs," namely, that the mud could be used to predict something about the rock. The rock and the mud are **primary** physical entities, and our considering the mud to be a model of the rock, although it "brings into existence" another physical entity ("model"), does not bring into existence another **primary** physical entity. A woman and a child would be two primary physical entities. If the woman had given birth to that child, that would not mean that there were four primary physical entities, a woman, a child, a mother, and a daughter.

Now, moving on, since "things" can draw our attention even prior to the attainment of or use of language, and therefore indeed become regarded as "things" or entities, this recognition of entities probably occurs for many animals in addition to humans. Of course we humans are quite creative in our designations of entities, the term "entity" itself being a tool useful for attainment of agreement for the sake of cooperation. And in fact we humans continue to create even more entities by the processes of "abstraction" and of imagination, leading to essentially an infinite number of potential entities.

We will, for the purposes of this discussion, divide entities into three classes:

  (1) Primary physical entities: entities that everyone can "see."
  (2) Primary mental entities: entities that only one person can "see."
  (3) Secondary entities: entities that no one can "see."

(The word "see" is a simplified term for "experience." Because of its importance for us humans, when we talk about experiencing things, we tend to think primarily of the visual sphere. But we must realize that we are really talking about all sensory modalities, all emotional states, and anything else that we can "notice" or "focus attention upon.")

Within your subjective experience, that which you are specifically experiencing at any given moment, there are two kinds of entities, both of them being "**primary**," as the term is being used here. There are **primary physical entities**, all those things that you can experience and **point to** or make reference to in some way such that others will agree with you, on the basis of their own subjective experience, that the entity is actually "there" (like that chair over there), and there are **primary mental entities**, all those things that you can experience that anyone else would have to take your word for (like your thoughts, feelings, perceptions, motivations, etc.).

If indeed the difference between primary physical entities and primary mental entities is the ability to **point** to physical entities and the inability to **point** to mental entities, then the concept of "pointing" is a crucial one, so we need to look closer at this concept. Just what is this activity called "**pointing**"?

We have already covered the fact that all you ever have to deal with is your subjective experience. Within that subjective experience are also the manifestations of your beliefs about that subjective experience when those beliefs become active. (Those manifestations may include how you feel and/or what you find yourself doing and/or what images come to mind and/or what words and statements you find coming to mind.) These additional manifestations are simply more of your subjective experience. It is all just your subjective experience.

So you have the subjective experience, for example, of an object in front of you (in your vision), or a particular sound, or a particular smell. There is also another object, a person, standing there in your subjective experience. Now you can do an experiment involving the person. You can **in some way, either by gesture or by words**, ask the person whether he or she is "experiencing **the same thing**." We would say that you are **calling to the person's attention** what you are **paying attention to**, another way of saying that you are **pointing** to a thing. And the experiment would result in two possible outcomes. The person might say that he or she indeed was experiencing the same thing, or he or she might ask you what in the world you were talking about. If he or she said that he or she was indeed experiencing the same thing, he or she would be **agreeing** with

you. (That person would be reporting the belief that he or she was experiencing the same thing as you, confirming that you and the other person have the same belief that the thing is "there.") So once again, please note, we come back to the crucial concept of **agreement**.

So you could perform this same experiment with regard to entity after entity within your subjective experience, and classify those entities according to whether pointing to them resulted in agreement regarding the other person's experience of them or lack thereof.

And during the course of doing so, you might point to a ringing sound, and get a negative response, indicating you are experiencing something the other person cannot experience, most likely an example of tinnitus ("ringing in the ears"). Conceivably, you also might find that you were most likely experiencing some hallucinations, right along with your experiencing of most things that, when pointed to, resulted in agreement. And you could take any such item and describe it further, using words, to indicate what your experiencing of the entity was like, and see if the other agreed. You would be "pointing to" some of the entity's attributes and getting confirmation (or disagreement) regarding those attributes.

But now let's take something that you can point to, say a chair, and can get agreement from the other person that the other person has that chair in his or her subjective experience. You don't know that the other person is being accurate, because you can't experience the other person's subjective experience. So all that is happening is that you (and the other person) are assigning that entity to a category of entities, namely, "physical entities" (or "mental entities"), based upon your experiment. And, of course, you do indeed automatically assign entities to these two categories (physical and mental entities, though not necessarily using that terminology) based upon your ongoing, everyday experience involving interactions with other people (within your subjective experience). You know, from experience, whether other people can perceive your thoughts and emotions without you giving them any evidence, such as emotional behavior or verbal expression, just as you know, from experience, whether other people can also perceive certain things, such as chairs, that you can perceive around you.

We need to recognize that it could also happen that someone else could point to a sound, or other entity, whereupon you would find yourself puzzled, because you were not having that same experience. Under those circumstances, you might wonder whether the other person was "imagining something," or whether you were, for some reason, unable to experience something that was "actually there." This could result in further experiments, but the experiment carrying the greatest weight would be to involve a third person (or more), to see if there was agreement with the other person or with yourself regarding whether the entity could be experienced. If the other(s) agreed that it was indeed "there," you would consider the entity a physical one that for some reason you could not experience. If the other(s) agreed with you, then you would consider the entity to be a mental one, existing "only in the other person's mind." Once again, the concept of **agreement** as the crucial factor enabling the classification of entities into "physical" ones and "mental" ones becomes evident.

Note that the other person may agree that he or she has **the same reaction** to something, but that reaction is not what we are talking about. Others can do something to cause themselves to experience something within their own subjective experience that they **assume** is **like** what you are experiencing in your subjective experience, but that is not the same thing as experiencing **your own** subjective experience within their own subjective experience. You may feel sad about

something, and so may the other person, but what the other person is experiencing is an entity in **that** person's subjective experience, not in **yours** (and vice versa). His or her (reported) sadness is not the same thing as your (experienced) sadness.

This distinction between experiencing the same thing and experiencing a similar thing is similar to the difference between two people looking at and experiencing the same chair in their own subjective experience as compared to two people trying to imagine the chair from a description of it. There is an assumption that what each person is imagining from the description could easily be rather different, such that their imaginations of the chair are obviously **two different things**, whereas what each person is experiencing when both individuals are looking at the chair is the same except as can be explained by such things as difference in perspective, perceptual limitations, etc., so that they could be said to be seeing **the same thing**.

So pointing to a primary physical entity is completely different than what might be called pointing to a primary mental entity, as the terms are being used here.

If we both point to a chair and ask each other questions about it, we are assuming that we are pointing to the same thing and experiencing the same thing (though of course our ways of experiencing it, perspective and sensory quality, may be different). The "it" that we are experiencing is, we agree, **the same thing**, a **single entity** that we are **both** experiencing.

The only primary mental entity that I can experience is one within **my own** subjective experience. No one else can experience that entity. We can talk about it, of course, but not both experience it (even from different perspectives). The best I can do is say, "Look, I know that you must be feeling the same way I am about this, namely (e.g.) anger. So that's what I am talking about. We are both experiencing the same thing." But we **aren't** both experiencing the **same** thing, or entity. I am experiencing **my** anger. You are experiencing **your** anger. We are **not** both experiencing **one entity**. We are each experiencing a separate entity. You have to take my word for it that I am experiencing something "like" what you are experiencing, and there is really no way to know that the experience is similar, even if the label being used is the same. And even if it were similar, it would still be two different experiences, e.g., two different angers, yours and mine, and thus **two different entities, not just one**.

The act of **pointing** can actually be considered a part of an act of **measurement**. Successful "pointing" is a simple form of measurement, involving agreement, and can be accomplished only with **physical entities**, not mental ones. If I point to something and ask you a question about it, and the answer you give is the same as my answer to that question, or can be linguistically converted into the same as my answer, then the result of the measurement is the same, such as, most simply, a "yes" or "no." "Are we seeing the same thing? For instance, is what you are seeing round and blue?" "Yes. How about you?" "Yes." So each person is saying the equivalent of, e.g., "What I am seeing is round and blue." As such, each person's statement is an act of agreement, reporting similarity of belief, that belief being that what is being seen is so, another example of the merging of "perception" and "belief about that perception." And the **reproducibility** of the **agreement** with regard to the results of the procedure of "looking" is consistent with the concept of **successful measurement**.

So, once again, your subjective experience can be divided up by you into those entities that you can **point** successfully to (and even measure) and those entities that you can't, the criterion of

success being **agreement**. And that is the crucial difference between "primary physical entities" and "primary mental entities."

The **Physical Model** as used here is essentially all of the beliefs that the members of our species have developed **about primary physical entities**. They are our beliefs about chairs, and stars, and chemicals, and sounds certain things make, and lakes, and living organisms, etc. These beliefs, of course, include ones about the **ultimate nature** of those entities and the **rules of the universe** that those entities seem to follow, if they do. Therefore, as we have tried to model with increasing accuracy these things that we **can** all "see," and even "point to," we have used models involving **secondary entities**, entities that we **can't** "see" (e.g., atoms, electrons, force fields, electromagnetic waves, etc.), and even entities that we can't imagine (that is, ones that do not resemble anything in our subjective experience, such as black holes, 11-dimensional space, superstrings, etc.), other than as mathematical equations having to do with the results of measurements, and perhaps some of the graphs (on paper or screens) of those equations.

It seems appropriate to refer to those secondary entities used to explain primary physical entities as **secondary physical entities**, and to assume that **secondary mental entities**, used to explain primary mental entities, will be different than the secondary physical entities.

Thus, the Physical Model consists of beliefs about primary physical entities and about the secondary physical entities used to explain (model) them.

And the Mental Model consists of beliefs about primary mental entities and about the secondary mental entities used to explain (model) them.

A requirement of the Physical Model, beliefs about the "physical world," **as used within the sciences**, is that it be completely consistent, that is, non-contradictory. (Science, as discussed above, is distinguished from other methods of attaining beliefs by its strong commitment to adherence to the rules of logic and the rules of evidence for the legitimization of belief. The rules of logic are used to prevent the acceptance of models containing contradictory beliefs.) Therefore the Physical Model (as existing in our species) is obviously not yet complete, because this requirement has not yet been met, as has been discussed above.

On the other hand, we **all** use the Physical Model, whether educated regarding the sciences or not, and most of us ignore or consider irrelevant the fact that there are within it contradictory beliefs and belief systems, and choose for one reason or another, at a given time, to accept specific beliefs as "probably true" or "true beyond a reasonable doubt" or "true enough" or "true for all practical purposes," or "true enough for the purpose at hand." (Most of us recognize that there are probably many things we ourselves believe that are actually incorrect, even though we do not yet know what those incorrect beliefs are, and may never know.)

The **Mental Model**, in turn, consists of our beliefs about thoughts, feelings, memories, fantasies, wishes, fears, goals, purposes, imagination, etc. These beliefs, of course, also include ones about the **ultimate nature** of those entities, and therefore about other presumed entities (secondary mental entities) that are not within subjective experience, such as "subliminal perception," "unconscious anger," and "repressed memories." Any of the primary mental entities can either be observed by you and no one else, or by someone else (one other person) but not you or anyone

else. The secondary mental entities cannot even be experienced by you. They can be **modeled** (e.g., linguistically or with metaphoric images, diagrams, etc.), but not **experienced**, by anyone.

And all of the things we have said (in the paragraph before the last one) about the Physical Model regarding its uses within the sciences and also generally by everyone, whether educated in the sciences or not, can be said about the Mental Model also.

To review, everyone has "equal access" to primary entities in the Physical Model. A house can be observed by "**everyone**" (you and anyone else who has such ability to observe and is in the right situation). But that is not true of a feeling or thought, a primary mental entity, to which there is "unequal access," namely, by **one person only**.

So, again, we can all point to a chair, a star, a specimen under the microscope, a cloud, the ocean, a plant, an animal, a human, etc. These things collectively are the **starting point** or **basis** of the development of the Physical Model, and everyone has **equal access** to them and can **point to** them, including **measuring** them, obtaining **agreement** that what is being talked about is **the same thing**. But we can never point to a feeling, a thought, a fantasy, a memory, a decision, an imagination, a perception, a sensation, etc., which are the starting point or basis of the development of the Mental Model, as the term is being used in this presentation. You have these things as a part of your subjective experience, but you can't point to them (i.e., your own experiences) in others' subjective experience, nor can anyone point to yours (i.e., cause others to experience your experience within their own subjective experience).

When we model "Subjective Reality" within the Subjective Model, everything that exists is as it is or could be experienced, whether experienced or not.

As we develop the Objective Model, we develop a set of beliefs about a group of entities that we agree we are able to experience and point to (agree are actually "there"), and we add entities to the model that none of us can experience but that add to our ability to predict. And this allows us to use measurements of those entities and their interactions, the measurements being experiences that we can point to and fairly precisely agree upon (if the measuring process is satisfactory). And all of these entities we are calling "physical entities," primary ones being the ones we can see and point to while agreeing we are pointing to the same thing, and secondary ones being ones that we add in to make the model more effective in our effort to predict (and thus to explain). This is our development of the **Physical Model**, our Model of "Objective Reality," to which we refer as "**Reality**" as we develop our Objective Model.

Then, because we have already learned how to model for others (describe) our own subjective experience, even though we cannot point to the entities we are talking about, we can use those subjective experiences and words to construct a model of entities and their interactions that seem to "correlate" somewhat with some of the entities and interactions within the Physical Model, and in this way come up with another Model, the **Mental Model**.

To make this clearer, if we go back to our cartoon, the house that is in the balloon over the head of one of those individuals can be considered to be a model of what is going on in that individual's brain, which, in turn, may be a model of the house as it is in Reality ("Objective Reality"), independent of it being seen or thought about (though of course it could also be an hallucination of a house that is not really there). And what is going on in parts of the brain of the

individual can be considered to be a model of what that person is experiencing within his or her subjective experience, that we assume he or she is having, especially if he or she reports having it, such report being something we can all observe and point to and even measure.

The Physical Model is fairly well known and understood of course at various levels, dependent primarily on formal education, especially in the physical sciences. It consists of various specific models, used in chemistry, physics, astronomy, biology, etc., all of which are based ultimately on primary physical entities that "everyone" (in the right position to do so and with the normal sensory and other neurological capabilities) can point to, and even measure. And of course we have creatively expanded those models utilizing additional secondary physical entities, created primarily by definition, resulting in an enormous capability to predict measurements and events, including outcomes of our actions, and therefore resulting in the accomplishment of what would at one time have been considered impossible or "miraculous." As noted, these models are not necessarily all in agreement, such that they can be considered all just one internally consistent model, even though that is the ultimate goal of those sciences. And each individual, during the course of his or her life, only gradually develops very incomplete objective models in many different areas of "knowledge," with much of what is believed being at least somewhat inaccurate, significant exceptions being individuals who have spent most of their lives studying and perhaps using occupationally one or a few of those scientific models.

Since the Physical Model is so well recognized and understood, at least from a distance, we will not need to focus on it specifically. The Mental Model, however, is a little more obscure, despite being in widespread use. It is that set of models that are built upon primary mental entities, and, similar to the Physical Model, have been elaborated on extensively through the addition of secondary mental entities.

We are saying that feelings, thoughts, perceptions, etc., in other words all "primary mental entities," are components of subjective experience. But as a part of the Physical Model component of the Objective Model, the most thoroughly appropriate way of referring to them ("feelings, thoughts, perceptions," etc.) is "whatever it is that is going on in the brain of the individual when he or she reports having particular subjective experiences (assuming of course that his or her report is accurate)."

But that is **not** how we are limited in our **linguistic modeling**.

Obviously, such linguistic modeling as the above ("whatever it is…") is somewhat awkward and cumbersome, so it is not surprising if we attempt to **simplify** our linguistic behavior by letting **fewer words** mean what we are trying to say. So instead of saying "whatever it is that is going on in the brain of the individual when he or she reports having particular subjective experiences," we **simply** say "what he or she subjectively experiences." And we can omit the observation and study of the neuronal connections and just look at the correlation of his or her reports of "what he or she experiences" with what that experience is "of," the thing in the Physical Model that that experience is a model of. This is a linguistic convenience. But you can see that this linguistic simplification is the introduction, so to speak, of the **Mental Model**, as a simpler model to use, under some circumstances, than the Physical Model. In the Mental Model, we simply leave out reference to what is going on in the brain.

Also, the "whatever it is that is going on in the brain" when a person is reacting to a situation is extremely complex, so if we are trying to study a person's reactions to situations, we will have a much easier time using his or her reports of subjective experience rather than having to look

everywhere in his or her brain to see what is happening. This is no different from speaking of how one nation reacts to the "behavior" of another nation. It is far easier to say that one nation feels threatened by another nation than to try to describe all the reactions of every person in that nation, even though that "nation" **exists by definition only**. And the same is true of pressure systems in talking about the weather (as opposed to talking about molecules) and recession in talking about the economy (as opposed to talking about dollar bills and coins and ledgers).

So indeed we have **two different models**, the Physical and Mental Models, to deal with what is really only **one thing**, and sometimes one of those models works best and sometimes the other does. More specifically, that "**one thing**" is the reaction of the animal, or its brain, to things within its environment, as through perception. We can study processes such as neural processes, reflexes, instinctual behaviors, and conditioning (learning) using our models of the neurons, etc., in the brain or nervous system (using the Physical Model). And we can study processes such as breakdown of relationships using models of the feelings and thoughts of individuals (using the Mental Model), without paying any attention to neurophysiology. As noted, this is little different than choosing to study pressure systems for prediction of weather, rather than atomic and molecular kinetic interactions.

So what has happened is that for a number of reasons we have attempted to develop a model that we can all **agree** upon, of the **set of subjective experiences of individuals**, thus making that model a part of the Objective Model. In other words, we wish to arrive at **agreed-upon** beliefs about (or an objective model of) **everyone's** subjective experiences, such that the model would even account for the presumed **differences** between individuals' subjective experiences (e.g., perceptions), and also their predictable interactions. Examples of the use of such models would be studies of "how memory functions" or "the meaning of dreams" or "the nature of optical illusions," or "the relationship of beliefs to feelings," or "the reliving of experiences," or "the relationship of obsessions to compulsions," etc. The data we would have to accept would be individuals' **reports** as to their subjective experiences, with, of course, the recognition that those reports might not be accurate. (Later, some might say, "I was mistaken," or "I meant something different," or "I lied," or "I didn't understand the question," or "That's the way it seemed to me," etc.) The subjective experiences being studied would not **themselves** be observed; only the **reports** of them would be (or perhaps behaviors, other than reports, that were assumed to be associated with those subjective experiences).

Note again that the "material" **used** for this modeling, as always, comes from **subjective experience**. This is the only material available, as discussed earlier. So when, in the Mental Model, reference is made to a feeling or a thought, one uses one's own experience that has been labeled that way as such material. This is in one respect no different from using billiard balls as material to model atoms. Atoms cannot be observed, but they are (somewhat) like billiard balls that I have experienced. Subjective experience of others cannot be observed, but it is assumed to be like what I experience. You and I use entities within our own subjective experience to model that which cannot be observed.

But there will need to be important clarification regarding a linguistic ambiguity in order to maintain a consistent lexicon, or way of using words.

We can both of us look at (and point to) a house and start talking about the house. But there is a drastic change of subject when we start talking about your **perception** of the house and my

perception of the house (or "perception" itself). When you see the house, what you are seeing is the **house**, not the **seeing of the house**. Your subjective experience is **of the house**, not **of the subjective experience of the house**. When we start talking about "the perception of a house," or "the perception (of anything)," we are **sometimes** beginning to talk about the unseen (by anyone). The **house** is seen; the **perception** of the house is unseen.

So "perception" itself is really a **secondary** mental entity, not a **primary** mental entity. No one sees a "perception." An awareness of this ambiguity can be strengthened by contrasting two common uses of the word "perception," namely as in "your perception of the **house**" and "your **perception** of the house." Or even more, one can contrast "your perception of the house rather than the barn" and "your perception of the house rather than your memory of the house." Note then that "perception of the house" can have two different meanings, referring either to a primary mental entity or a secondary mental entity. Here is another example of words having different meanings in different contexts, but such that people will not easily recognize the difference in usage, or meaning.

Another way of intensifying awareness of this difference is to consider what is meant by the word "pain" in (1) a request put to an injured person to describe where the pain is being experienced, and in (2) a statement about the inability of people with certain injuries of the spinal cord to experience pain, or the role of pain in the motivation for attainment of physical fitness. The primary mental entity is a specific experience experienced by one specific person, though we can empathize with that person and imagine the experience. When we are talking about "experience of that sort," we are talking about a secondary mental entity, because there is nothing that we are referring to, and meaning, that is, was, will, or could be experienced by one person and one person only. Your pain in your right knee can be experienced only by you. Perception of pain is something that we all have equal access to, in that none of us experience it but we regard it as an entity that we can talk about and develop further beliefs about. This is like the difference between talking about three individuals (each having a name) versus the group (that could also have a name) consisting of those three individuals, producing a set of four entities, the last one created by definition only. "Perception of pain" is an entity created by definition only, added to our growing set of secondary mental entities.

We have already considered "**subjective experience**," meaning all the things **you** experience, that no one else can experience (because it is your own subjective experience), and also the **Subjective Model**, meaning not only your own subjective experience but also all of **your own** beliefs about **your own** subjective experience, what you have come to expect (predict), acquired primarily from **your own** previous subjective experience alone (that is, independent of language and independent of having been "told" by others).

But when talking about the Mental Model, we are now talking about a sub-Model within the **Objective** Model, so we are talking about things that we can all, at least potentially, **agree upon**. And as we increasingly develop the Mental Model (similarly to our continuous development of the Physical Model), what we are all agreeing upon, or trying to agree upon, is beliefs about subjective experience "in general," that is, not just your subjective experience at a specific point in time or a specific period of time, but **anyone's** subjective experience, or subjective experience itself, a secondary mental entity. We are attempting to find the rules by which the entities "within" subjective experience interact, so that we can use that modeling to predict and thus to "understand" (have accurate beliefs about) each other better.

For instance, we may not be talking about **your** sadness that **you** are feeling right now (if you are), but about **sadness**, as it is felt by people under certain circumstances, and what its effects are. Just as we could write an article about entities such as houses, or sunlight, or atoms, or black holes, we could write an article about entities such as sadness, or fear, or thinking, or imagination, or the experience of pain. Such an article would be substantially different from, for instance, a fictional, biographical, or autobiographical account of an individual's interesting, exciting, joyous, depressing, irritating, and anxious experiences, the account being linguistic modeling using many primary mental entities, with of course probably some additional secondary mental entities.

So we are talking about our using of the Mental Model, and our trying to arrive at beliefs in it that we can all **agree** upon. So that **agreement** is the first step (after the agreement in the use of symbols and syntax, that is, language) in the building of the Objective Model, in this case the Mental Model, a sub-model of the Objective Model.

Okay, so since the Objective Model is (first of all) based upon **agreement**, what is it that is being **agreed to** in the Mental Model, a sub-model of that Objective Model? If the entities in the Mental Model are ones that cannot be pointed to and experienced by everyone, and therefore measured, then what is the **basis** of **any** agreement within the Mental Model?

Remember that in the Subjective Model we have the situation in which you have come to believe (as a part of your Subjective Model) that things, as you perceive them (as they are within your subjective experience), continue to exist **without change** even when you are no longer perceiving them and thus independently of your experiencing them. The road continues as imagined around the curve, and the experience of going around the curve confirms that. This assumption allows you to agree with others that certain objects exist, and have certain characteristics, or properties, that you can linguistically model (talk about), that are **not** dependent upon your **experiencing** them, perhaps even ever. This assumption is one that others are making, also, so with your and their linguistic modeling (discussion, etc.), you can come to **agreement** about things that are not within your subjective experience (and may never be). Thus, even though "objective modeling" (development of the Objective Model) **begins** with the equivalent of "pointing," as language is being learned by the small child, **"pointing" is ultimately unnecessary in the process of arriving at agreement**. If others are **making the same sentences** as you would make, that is enough for agreement to be considered achieved (with of course the uncertainty produced by the possibility of misunderstanding and untruthfulness). And that process of continuing to work toward agreement is the continuing development of the Objective Model.

Agreement can occur in the Physical Model because you and others are using the same sentences as you describe what you and/or they believe. **Initially, the act of pointing was indeed necessary**, but as time went on, you and others began talking about things that neither you nor they could experience and therefore point to. This would be true, e.g., of atoms, and things in the past, and things on the other side of the earth, and of course eventually "warped space-time," etc.

But we recognize that primary mental entities are ones that are not experienced by anyone but you (or some other person and not you). So we are talking again about unseen (un-experienced) entities. We are talking about entities that presumably exist "in" other people, entities that you can't "see." (The use of the word "in" will be discussed later.) But it will turn out that you and

others can agree with regard to them (by agreeing to the same sentences), thus making possible the continuing development of the Objective Model, and, more specifically, the Mental Model.

But what if we are indeed all talking about the pain that a certain specific person felt when she fell down?

We can all talk about "such pain," that a person would experience upon falling down. We all have the same access to that "pain-in-general," namely, no access. None of us can experience it, but we all can talk about it. It is a **secondary** mental entity, just as an atom or the atmosphere is a secondary physical entity.

Yes, you say, but what about **her**? She is indeed **experiencing** the pain. And she is talking about it. So one person actually **is** experiencing it, among all those talking about it. What she is modeling with her language is her own subjective experience of pain and her own Subjective Model beliefs about that pain. So, does that mean that she, the one experiencing the pain, cannot use the Mental Model regarding her pain (because she can experience it, and in fact is experiencing it), and has therefore to be left out of the conversation? No, of course not. This is an example of the fact that we all are using our Subjective Model **all the time**, even if we **also** are **often** using the Objective Model **at the same time**.

So **at the same time** that she is experiencing her pain and developing beliefs about what makes it less and more (e.g., what positions she can get in), and is linguistically modeling her subjective experience of her pain for us (telling us where she is experiencing it and what it feels "like") and also linguistically modeling her subjective modeling of that pain (for instance, what she has come to believe from her experience makes it worse or better), she can **also** be talking with us about what she believes to be the causes of pain like that which she is experiencing and what usually helps people who have such pain (such as general attitudes toward pain), and we can offer our own opinions about that, all of this discussion making use of the Mental Model, and secondary mental entities in that Model.

(Remember that the brain can do more than one thing at the same time, like remembering what happened yesterday while tying one's shoelaces, or answering a person's question while wondering why he or she was asking it and thinking about what question to ask in return. So many models can be active in the same brain at the same time.)

So, what is the difference between our talking about primary mental entities and our talking about secondary mental entities?

How can you and I talk about **primary** mental entities? The answer is that I can talk about this pain that I am experiencing, or experienced yesterday. I can also talk about whatever it is that you are experiencing or have experienced that you are calling pain.

And how can you and I talk about **secondary** mental entities? The answer is that we can both talk about pain in general, what seems to cause it, what can be done about it, etc.

So perhaps you can see that as I talk about my pain that I am experiencing, I am linguistically modeling what I am experiencing within my own subjective experience, including my beliefs that are a part of my Subjective Model. As you hear me linguistically modeling those beliefs, you are

developing beliefs within your own Objective Model, beliefs about what I am subjectively experiencing. As you make the assumption that I exist and have subjective experience and am linguistically modeling that subjective experience for you, you are developing your own Objective Model, one in which I have an invisible, opaque balloon-like container within which I am experiencing certain primary mental entities, one of which is the pain I am talking about. And if we are talking about the specific pain that I am experiencing, i.e., the way I am experiencing it, we are talking about a primary mental entity, talking about it from two positions, yours and mine. But as we talk about pain, and causes of pain, we are talking about a secondary mental entity, "pain." We are talking not about what you or I are experiencing, but how the world works.

Remember that, yes, subjective experience consists of primary mental entities, but only when using the Objective Model. The Subjective Model has no use for entities called "primary mental entities." This whole discussion is a development of the Objective Model.

(Note that what we are talking about when talking about a secondary mental entity is most often referred to using the concept of "abstraction." People refer to "this pain" and "that pain," and then, "abstractly," to "pain in general." This concept of "abstraction" (or generalization) is frequently highly useful, but for our purposes the use of the term would obscure with a label the very thing that we are trying to talk about in greater depth. The reason is that "abstraction" refers to a linguistic process, one that brings new words into existence in response to the experience of "similarity" or "familiarity." What we are talking about in this presentation is in part that experience of "similarity" or "familiarity" itself, understanding it in terms of the modeling concept. So the concept of "abstraction" will not be an important one in the modeling involved in this presentation, which is trying to clarify phenomena **underlying**, in part, what we refer to as "abstraction.")

Regarding the person who was telling us about her pain, we can imagine that there are **two different neuronal networks** (probably having a fair number of neurons in common) active in her brain, **one** as she linguistically models for us a part of her **Subjective Model** of her subjective experience (telling us about her pain) and **the other** as she linguistically joins our conversation, using the **Objective Model**, about the kind of pain she must be experiencing and, for instance, what we humans think can be done about pain like that, and what part of the nervous system must be active for that experience of pain to be occurring. And it is possible to talk about pain, as a secondary mental entity, without calling up within the imagination the memory of what pain feels like, whereas if we are talking about a person's specific experience of a specific pain, we tend to use empathy and "imagine what it must be like," that imagination being a model of (belief about) what is happening.

So, again, the primary entities in the "**physical world**" are ones that **we all have equal access to**, whereas the primary entities in the "**mental world**" are ones that are **accessible to no one other than one person**, even though we can all **talk** about them and attempt to come to **agreement** about them, using explanatory secondary mental entities, such as "pain," "thought," "imagination," "intention," "abstraction," "intuition," "will power," "grief," etc.

But now if the primary entities in the mental world cannot be observed by more than one person, and thus none of them can be pointed to, how can we have **agreement** about them, beyond just blindly taking each other's word for beliefs about them? And what is the role of **measurement** in such agreement?

What all of us **can indeed observe** when a person **reports** having some particular subjective experience are certain things in the "physical world" that we model within the Physical Model (the primary entities of which we all have access to), and that we have come to **associate** with **reports** of things within the "mental world." We have come to associate, for instance, certain changes in the observable **body**, such as a reddened face, with a **report**, such as that of a feeling of embarrassment. And we can observe certain **behavior** that looks to us like "flight" or "avoidance," as well as certain results of **measurements** indicating hormonal changes and neurological processes, when a person **reports** a feeling of fear. And when your vision is tested, by having you **report** what you are seeing, the ophthalmologist is associating those **reports** with things about your **body**, that is, your eyes and the nerve pathways in the nervous system that are involved, consisting of primary and secondary physical entities.

And of course note that a "**report**" is **itself** a primary entity in the **physical world**. It is something we can **all** point to and experience.

(It may be subjectively experienced differently by different people, including the one reporting, this being a difference in perspective, but there can easily be agreement as to whether the report is "there" and what the report is. "So you are saying X?" "Yes, that is indeed what I am saying." We can all point to the report and agree as to what it is. We can agree that when we point to the report, we are pointing to the same thing.)

This "equal access" to reports and other events and situations in the physical world that are believed to be "correlated" with mental entities and situations in the mental world is what allows for **agreement** that goes (a little) beyond simply taking another's word for it. So it is because we can correlate **primary entities in the physical world**, such as facial expressions, changes in skin color, lab results, and results of imaging techniques, with **reports in the physical world** of primary mental entities that we can come to agreement about the "existence" and "properties" of mental entities. It is this correlation of (1) reports (which are entities in the physical world) of entities or situations in the mental world with (2) other entities or situations in the physical world that allows us to use the scientific methods (rules of logic and rules of evidence applied to measurements) with regard to mental entities and situations. Thus, psychology can become a science.

A belief that there is a "correlation" is a belief that there is predictability of measurements of one thing given the measurements of something else, and a belief as to how to arrive at such predictions (usually the mathematical equation to use). We have learned that we can predict certain **reports** of subjective experience given certain observations, **even measurements**, of certain things about behavior or the activity of neurons in the nervous system or the concentrations of certain substances in the bloodstream, and vice versa.

(And, by the way, the field of psychology attempted to deal with this concern about the inaccessibility of mental entities by focusing attention only on the physical entities that are presumed to be related to mental entities, thus developing the sub-field of "behaviorism." And in the area of public "mental health," those who fund the procedures to be of help developed concerns about what they were paying for and started using the term "behavioral health," subtly moving away from the concern about and empathy for suffering, and replacing it with what could be **measured**. The extreme of this has been to establish goals regarding the reports of patients by

specific target dates, etc. "The patient will make 75% fewer threats of suicide by target date xx/xx/xxxx." You may detect that I have difficulty following this trend, and indeed I have noticed a more recent lessening of the trend, though the term "behavioral health" is still quite prevalent, and probably more a hindrance than a help in the effort to alleviate suffering.)

One additional point, mentioned earlier, to emphasize, which might at first seem surprising, is that **no measurement is possible of mental entities**. Remember that measurement requires that two or more people can make the same observation and experience the same result, that is, be able to point to the same thing and agree to what it is. But mental entities cannot be observed by two or more people. Yet, for psychology to be a science, and for other reasons also, there is a need to be able to measure, and thus to point. So how is this done?

An assumption is made that the existence of a mental entity or a mental process can **be reported** by an individual such that the **observation of the report** can be used **in the place of** the observation of the mental entity or process, for the purpose of measurement. And this is true not just of observation of reports, but also of observations (also in the "physical world") of other behaviors and of various physical, chemical, and imaging results, all considered to be adequately reliable and valid **substitutes for** (models of) the mental entities and processes of concern. This assumption, that is, belief accepted without legitimization, is of course a model.

The Mental Model has within it many different models, that most people eventually become at least somewhat acquainted with.

Sigmund Freud developed a model that consisted of the Conscious, Preconscious, Unconscious, and Reality, changing it later to a model that consisted of Ego, Superego, Id, and Reality. A "hydraulic" model of mental functioning has been in great use, consisting of the idea that certain "feelings" or "drives" build up "pressure" and tend to "come out" in various ways, thus relieving that pressure "inside." There have been many, many models constructed, usually presented accompanied by diagrams that make the models analogous to models of the physical, spatial world, such that there are boundaries and areas in which entities reside, with perhaps interactions among entities in neighboring areas. When someone presents his or her new ideas to groups of people, he or she often uses such diagrams on, for instance, a screen.

So in these mental models (that the Mental Model consists of), primary mental entities interact with one another according to rules inherent in the modeled rules of interactions between secondary mental entities. The Ego behaves in certain ways, having certain functions that are mechanisms (properties involving action) that result in varying degrees of success in achieving certain goals. So a specific example of some mental event, involving one or more primary mental entities, is just an example of how such things occur among certain secondary mental entities. "His ego used repression to keep his anger confined to his unconscious, because of pressure from his superego, that has a strong tendency to produce guilt in response to perceived internal anger and especially to any expression of it." Of course none of that sentence contains any primary physical entity to which we can all point such that we can agree that we are pointing to the same thing. Nevertheless we can all agree if we find ourselves using the same sentences, containing the same agreed-upon meanings of the words in them.

As the physical sciences have made such progress, demonstrating amazing abilities to do things, the mental sciences have tended to be less respected and admired, and even more suspected of

inaccuracy, because there has not been anything like such demonstrable progress in the ability to do things. And those involved in some study of or application of the various mental models have often wished to try to obtain a higher status of recognition and greater degree of usefulness by developing ways of utilizing the Physical Model (e.g., information from the physical sciences) such as to be able to engage in actual measurement. These measurements, considered to be of entities that are "correlates" of mental entities, are as we have noted, obtained with things like psychological tests and questionnaires the results of which can be "quantified" (utilizing numbers) and with various tests of entities in the nervous system or body in general. But although those test results can be correlated with other things in the physical world, there can be **no actual correlation** with mental entities, which **cannot be measured** (or even pointed to).

But even though the mental sciences have not impressed us with results equivalent to getting us to the moon and back, or the creation of artificial life-forms, they have become widely engaged in, such that they do indeed drastically affect our lives now compared to just a few hundred years ago, in ways both appreciated and feared.

As you may have concluded already, the two sub-models we have been considering within the Objective Model, the **Physical Model** and the **Mental Model**, are in certain ways incompatible, and therefore, if combined, can sometimes produce confusion. This combination tends to occur primarily when we **communicate** with each other. Such communication requires language, with which we linguistically model. This linguistic modeling and communication is a source of confusion, and contributes to the appearance of the "mind-body problem." We need to explore this process more in depth, as follows.

Each of these two models is associated with its own lexicon, or language. There is of course much in common between those two languages. Both languages have the same rules of syntax. Both languages have many of the same words, spelled the same way, pronounced the same way, and meaning the same things. Most of these words are the non-technical words that make up the general vocabulary of a language, and are the majority of the words used in talking and writing.

However, there are words that are used in each of those Models that are almost never used in the other. The Physical Model makes use of "hydrogen" and "voltage" and "DNA" and "centimeters" and "cubical" and "Fahrenheit" and "neuron." The Mental Model makes use of "quaint" and "nostalgia" and "beautiful" and "doubt" and "worrisome" and "disgusting." We have already noted that the scientist, studying atoms, energy, etc., makes no explanatory use of "feelings," "thoughts," "fantasies," "wishes," etc., and that the person describing his own subjective experiencing of something does not use "atoms," "wavelengths," etc.

The language used in the Mental Model includes words that are labels for primary mental entities, everything that we can "directly" observe, or **experience subjectively**. The entities in this model to begin with are one's own perceptions, thoughts, feelings, memories, fantasies, wishes, fears, etc. These entities are everything that one's self can "experience." These "entities" are assigned words by us, such that with sentences including them one can cause others to understand (have accurate beliefs about), to some extent, oneself and what one is experiencing.

Initially, these words primarily are used to model subjective experience and the **Subjective Model** of subjective experience (one's beliefs about one's subjective experience). "I saw a beautiful garden, and inhaled the pleasing scents of the flowers, this producing for me a feeling of joy, accompanied by memories of my childhood garden and thoughts about how lucky I am to be able to experience all this. I believe that these memories are accurate," or "Ouch!! This is hot!"

Secondarily, however, these words will also be used as part of the **Objective Model**, referring to "subjective experiences that people have or can have," and additional words are used to label secondary mental entities, used to explain what people experience subjectively. This secondary use is what the field of "psychology" is all about. It is about, for instance, what "people," including oneself, may experience when they enter a garden, and it is about, for instance, how accurate or inaccurate childhood memories can be. It is about different ways of experiencing pain. This language is used in the **Mental Model**, to model that which is independent of any one person's subjective experience or Subjective Model.

The language used in the **Physical Model** includes words that are labels for primary physical entities, and is also used to model a world that is independent of any one person's subjective

experience. This second language contains some words that are rather precisely defined so that communication will be as effective as possible, and the words stand for images that have aspects to them that are analogous to what are believed to be the properties of the entities being modeled. This has been discussed before, when we were considering the **images** associated with the concepts of molecules, atoms, sub-atomic "particles," force fields, electromagnetic "waves," etc. (Note that in the Mental Model, the "**images**" that are used are the **memories** of entities within one's own subjective experience, such as feelings, memories, thoughts, etc.)

Now a potential source of confusion arises from the fact that the languages contain certain words, **similar** in spelling and sound, that mean **different** things when used in the two different languages relevant to the two different models. The two different languages are used in two different contexts (two different kinds of situations, as parts of two different models appropriate for those situations), for two different sets of purposes.

The word "heavy" can be used to refer to the weight of something as measured on a scale on a particular planet or satellite and compared to a standard (Physical Model), but it can also refer to the experience a person has while holding something, that experience being different for people who are strong and weak (Mental Model). ("People with this illness experience heaviness of their extremities.")

This "different meanings for the same words in different models" actually also applies to differences between the Physical Model and the Subjective Model. Examples might be such as "large" and "red." ("It **seemed** large to me, even though I understand that its size is **actually** small (below normal size statistically)." "For some reason it **seemed** red to me, even though I understand that it was **actually** reflecting light primarily in the orange portion of the spectrum.")

And the difference in meaning, dependent upon the model, or context, may be easily understood by almost everyone.

But what is less obvious is that both models can use the **same** word, that means something **different** depending upon the model in which it is being used, but **without recognition of that difference by many people**. There are some words that many people use with little awareness that such use is basically incorrect because of lack of awareness that there is such a difference in meaning, such word usage sometimes essentially being metaphoric.

The best example of all, I believe, is that of "energy." People have very little awareness that "energy" as used in describing the experience of being "full of energy" or of "lacking in energy" is not the same as the "energy" that the physicist is referring to when describing the energy coming from the sun or the energy being converted from potential energy to heat energy, or being released in nuclear reactions. "Energy beverages" are ones that contain caffeine, not ones that necessarily contain more calories (which might make a person sluggish or sleepy, and therefore less "energetic").

A close look at the use of the word "life" will, I think, reveal the same common fallacy. "Life" to the biologist means something different than "life" as used by many religious practitioners and advocates of positions on abortion, as will be discussed later. But you may guess that the religious practitioner will tend to be using the Mental Model when using the term "life."

Certainly one is using the Mental Model when one reports feeling "lifeless," or describes a person as "full of life."

For another example, when the biologist says that a species developed a particular characteristic "in order to" compete better with other species, he or she does not really mean that the species analyzed the situation and made a decision, but simply that the particular characteristic had the **effect** of allowing the species to survive longer and/or reproduce more efficiently and productively. So the phrase "in order to" is metaphoric, and suggests an implication that the evolutionary biologist would not agree with.

Such incorrect use of language by non-scientists is occasionally referred to as "pseudo-science," especially when the effort is to create the impression of scientifically acceptable statements for the purpose of making money, but it is really also a perfectly normal and accepted communicative behavior.

So I hope that I have clarified the extreme importance of being aware of the possibility that problems can be introduced into our modeling because of the ambiguities of language. Failing to recognize that words are being used that can be taken as having two different meanings can thus obscure the fact that a particular sentence is assuming the integration of two different, incompatible models. Without that recognition, then the sentence can give the impression of having understandable meaning even though it is a complication in the modeling process that can lead to not yet realized contradiction. I believe that this is what is happening to a great extent in many of the (I would say unsuccessful) attempts to solve the "mind-body problem."

We are now approaching where the "mind-body problem" begins really to present itself. I have already mentioned at several points that a part of the problem is the attempt to integrate incompatible models. So now we need to look at what that inappropriate attempt at integration consists of, and what we might do instead.

We have studied the Physical Model and the Mental Model, recognizing that the models are built upon two different sets of entities. The Physical Model is based upon primary physical entities (accessible to everyone and measurable), and the Mental Model is based upon primary mental entities (accessible to only one person and not measurable).

But we should always keep in mind that the Physical Model and the Mental Model are **two different Models** that can be used to model the **same "Reality,"** referring to "Objective Reality."

(Remember that what we mean in the Objective Model by "Reality" is what is completely hidden behind that curtain, that we have no access to and will never have access to, **other than** the development of our **models** of it that allow us to **predict** what is going to happen, including what is going to happen if we do certain things. Essentially, Reality, or Objective Reality, is an entity constructed by definition only to explain why we are able to predict anything at all. It is the assumed "reason" why modeling is possible. This "Reality" is to be distinguished from what we usually mean in the Subjective Model by "reality" (Subjective Reality), namely, what we imagine and anticipate finding, i.e., perceiving, when we round the curve in the road, as well as what we are perceiving now, there being no basic difference other than whether we are perceiving it now.)

If we decide to study "the tendency toward aggression," we can use **either** the Physical Model or the Mental Model. We can study the processes in the brain that produce aggressive behavior, including things about the limbic system and neurotransmitters. But we can also understand the role of beliefs acquired through past experiences on the experiencing of anger, as modified by beliefs about social expectations, imagined consequences of acts, etc. The first way of studying is by using the Physical Model. The second way of studying is by using the Mental Model. But we will run into trouble if we try to combine models, such as trying to determine the relative contributions of dopamine release and attitudes toward revenge in the tendency toward aggression.

It is important to realize how we obscure the issue as to which model we are using by using similar words to mean different things and different words to mean similar things. For example, let us use "anger," and (simplifying) "amygdala activity" as our mental and physical entities, respectively. When this relationship is being talked about among scientists, there is not the assumption that anger is "causing" the amygdala activity or that the amygdala activity is "causing" the anger. The nature of the relationship between the two is generally not part of the discussion. Instead, anger and amygdala activity are considered to be two ways of talking about the same thing. Anger is considered to be the **entity** (in "Objective Reality") from the viewpoint of the person who has it and amygdala activity is considered to be the same **entity** (in "Objective Reality") from the viewpoint of the person seeing and talking about the brain of the person who has it. This **entity** (in "Objective Reality") needs a **name**. The simplest name to use is "anger." "Look at the amygdala. Anger is being produced." But that is not the only possibility. One can also use some terminology from the physical model to refer to the same thing, an example being

"amygdala hijack." "She is feeling amygdala hijacked," or "He is getting a lot of dopamine out of that experience." Thus, one can obtain the vague impression that one is dealing with one Model rather than the other Model, because a word is taken from one Model and used metaphorically in the other Model.

Now the picture that is portrayed by the Physical Model (which has given us such amazing capability because of its ability to rely upon measurement and therefore produce highly accurate prediction) is sometimes, as we have said, referred to as the "physical world." There is a fair amount of recognition that mental entities do not have a clear place in that Model, if any place at all.

The Mental Model produces a picture referred to occasionally as the "mental world." It helps us to empathize with each other and to work at optimizing the quality of our subjective experience through improved interaction with others based upon that empathy. We learn how people think about things, and what they feel about them, and we make use of that knowledge in how we relate to them. Much of that knowledge (set of accurate beliefs) comes about in the development of the Subjective Model, of course, but the Objective Model, more specifically the Mental Model, carries us much, much further, as we learn to give up our stereotyped thinking about individuals and as we learn to a much greater extent "what makes people tick," that is, what the rules are that describe the interactions of entities in a person's "mind." With this additional knowledge, we can develop a much greater ability to help (or of course "manipulate" or "control") people. The psychological sciences contribute substantially to our capabilities.

There is very little actual use made of the terms, "physical world" and "mental world," but you may notice that the word, "world," usually refers to "all there is." So there is recognition among people, to a certain extent, that one can look at these two "worlds" separately, as two separate "totalities." In our discussion here, such reference would be to the Physical Model and the Mental Model, each with their somewhat overlapping lexicons.

What happens, though, is that there is an understandable desire for, and belief in the appropriateness of, there being just one "world." So it is quite understandable that we would take the Physical Model and the Mental Model and try to make them into one Model. It would seem most appropriate to call this sought-after, unitary Model the "Physico-Mental Model."

Now let us review what we mean by "world." We generally mean **all the entities in that world and all their tendencies to interact**. In fact, we seek to learn the **rules** according to which those interaction tendencies occur, because that is what allows us to **predict** what is going to happen, including what is going to happen if we do a particular thing. That ability to predict by use of a model is the defining function of a "model."

So in the "physical world" modeled by the Physical Model, there is assumed to be some potential interaction among some or all of the entities in that world, according to some rules that we will hopefully keep discovering (and maybe one day will have discovered completely). And we can say the same thing about the Mental Model, though rather less confidently. We do believe that the various mental entities have various effects on each other, such as our recognizing that certain thoughts cause certain feelings, and that those thoughts and feelings cause certain decisions to be made, and we do recognize that there is a certain amount of predictability regarding these

interactions (and thus the existence of some "rules" that are being followed, at least to some extent, in those interactions), enabling us thereby to "understand" one another.

Now a problem does come about in trying to actually **isolate** these two Models, because our attention is often drawn to **both** primary physical entities and primary mental entities **at the same time**. We see things (that others can see), and have thoughts and feelings about them (that others can't see) at the same time. We decide to do things (decision being a primary mental entity in the mental world), and observe ourselves doing them (seeing things happen in the physical world). It is not easy to focus attention only on entities in one of the two "worlds." So it is quite understandable that we would simply and naturally tend to combine them both into one. In fact, of course, we never even began with two separate, discrete "worlds." As was discussed earlier, our modeling is like the development of the gradual solidification of a fluid, with many, many small areas ("lumps") of solidification gradually merging with each other. So it is not surprising that teasing these models apart is such a difficult process, that does not come naturally.

But you could say, "Okay, I agree that we are putting mental entities and physical entities into the same "world," and maybe we shouldn't, but if we shouldn't, **why** shouldn't we? Why is that obviously a wrong thing to do?"

You remember that we can have multiple models of any particular thing. But what we can't do (without producing problems) is try to take two different models of the same thing, the two different models being made out of different materials, and merge them together into a single model. We can't take a picture of a car and a plastic model of a car and successfully merge those two models into one.

Now we have to be aware of a subtle difference in our terminology.

We have indeed talked about the merging of separate models into one model by virtue of finding that all the entities and their interactions that are described (modeled) by each of those models are still described (such that accurate predictions can be made) with a more comprehensive (and perhaps even "simpler") model, that explains why both of those models work. This is the merging of "lumps" within the "modeling medium," or "fluid," to use our metaphor. This lump, made by the merging of two lumps, is a new, or third, **larger** lump.

But what we are talking about now is the modeling of any particular "thing," with the attempt to take two models of that thing and **without changing** those models use **both at the same time**. With regard to the picture of a car and the plastic model of one, each one can lead to predictions as to what the "actual car" will be like if actually encountered, but it would be impossible to construct an object that would be a useful model of the car by sticking the piece of paper with the picture on it to the plastic model of the car. The resulting entity would not look like the "actual car" anymore. It would be a "mess."

But one could indeed choose a particular model of that car and transform it into a most comprehensive model, by **adding into** the model how the details of it could be successfully translated into the details of any of the other models of it. This would be the development of a new, **higher level** model that now **included** those rules of translation. It would not be just the glomming together of two or more kinds of models of the car as if no translation were needed. And again note that this higher level model would thus have to have those translational rules as a

part of it, and as a more specific example, involving linguistic modeling, have rules that dealt with the fact, if so, that in both of the original models some words were used that actually had different meanings, dependent upon the model in which they were used.

To make this distinction clearer, we need to look at a possible example of the Physico-Mental Model. This has been presented early in this presentation, as something like the world as imagined to be like the physical world, involving space, time, matter, energy, etc., and the rules governing the interactions of those entities, but with additional but invisible entities currently floating around somewhere in that world, always or sometimes attached to certain collections of mass identified as "bodies," perhaps only human ones but more likely ones in addition to human ones, assuming that chimpanzees and cats have them, these floating entities being labeled variously as "minds" or "consciousnesses" or "spirits" or "souls."

And indeed when these entities are added into this (now) Physico-Mental Model, the predictability enabled by the Physical Model becomes disturbed, just like the addition of the paper picture of the car to the plastic model of the car made something that no longer looked like, or modeled accurately, the car. If these invisible entities have any effect on the physical entities in the physical world, then the equations describing the rules those physical entities seem to follow would be expected to be disturbed, and yet this has not happened, at least not yet, despite verifying these equations with exquisite sensitivity. So if these mental entities have no effect whatever within the physical world, what are they doing in the Model? The Model is better off without them.

But who would want to throw out mental entities from the Physico-Mental Model? That would be like throwing away either the picture of the car or the plastic model of the car, each one possibly being valuable in certain situations. So the Physico-Mental Model is a model that we imagine, just as we can imagine all sorts of things that are not necessarily possible or likely, but we do not really **use** the Model **practically** (i.e., to make important, accurate predictions), and it is basically a flawed Model. We may use it in our rhetoric, but not in our efforts to predict accurately. (We of course use it extensively in political and religious discourse, so it does have effects on us, but effects that do not have to do with accurate prediction, the primary function of the Objective Model.)

So we find incompatibilities within that Model. The effort to solve the "mind-body problem" is indeed the effort to find a comprehensive model involving all entities, and the Physico-Mental Model fails as a candidate for a comprehensive model that solves the "mind-body problem." But what, then, can be a solution?

Note that in a sense our model involving the Subjective Model, Objective Model, and Reality, making use as it does of "Objective Reality," that which is behind the curtain but makes our other models possible, is indeed a candidate for something like a comprehensive model, if indeed those translational rules can be discovered. We need to look more closely.

We talked about how it looked like one answer to the "mind-body problem" might be that mental aspects and physical aspects were really not "aspects," but just "manifestations" of the same thing. So that "same thing" would be, according to the Objective Model, what lies behind the curtain. That "thing" that "exists" in "Reality" is neither our primary physical entity nor our primary mental entity, which are only our **models** of what is behind that curtain. (And remember

that subjective experience is also a model of what lies behind the curtain, even though we don't think this way within the Subjective Model, which uses a "Subjective Reality" that is different than Reality, or Objective Reality, as the terms are being used in this presentation.)

And remember that two different models of the same thing may not necessarily be modeling the same properties of the thing being modeled, so that one model may give us certain abilities to predict whereas another model may give us different abilities to predict. We may be able to tell certain things about a car from its picture and other things about it from a diagram of it or a plastic model of it. And indeed, when talking about certain things, we may find the Physical Model more helpful in certain situations, and the Mental Model more helpful in other situations. We do know that there are (different) places for Newton's laws, relativity theory, and quantum mechanics, even though they cannot so far be combined successfully, a higher level theory being much sought after currently. (And again remember that the Subjective Model is what we are using all the time, whether or not we are also using one of the Objective Model models.)

We do sort of have a "crosswalk" between the Physical Model and the Mental Model, and that could be called (erroneously) the "correlation" between physical and mental entities. The error is clarified by remembering that **correlation** is a relationship **between measurements**, and there can be no measurement of primary mental entities. What we instead measure when we attempt to measure "mental things" are actually just their presumed "correlates" within the Physical Model. These "correlates" are not actually correlations, which are limited to the Physical Model where measurement is possible; instead, these "correlates" are essentially indeed just assumptions, beliefs assumed without legitimization, but found to lead to somewhat accurate predictions.

So we say that a particular primary mental entity is "whatever the person is experiencing" when he or she **reports** experiencing a particular entity (using a particular label, or word, such as anger, image, or thought). And to model that within our own subjective experience, we use images that we have assigned the same labels to.

We say we are talking about the person's subjective experience (his or her primary mental entities), but we are actually "dealing with," for example measuring, only the person's **reports** of that experience (or perhaps the **results of examinations**, such as imaging, of the nervous system or various markers of what is going on within that nervous system such as certain materials in the blood or spinal fluid), and thus ultimately only primary **physical** entities, not primary mental entities.

So you can see that this presentation of our modeling processes, our model involving the Subjective Model, the Objective Model, and Reality, is a candidate for the model that indeed integrates at a higher level the Physical Model and the Mental Model, and thus solves the "mind-body problem." Well, that may still not be very easy to see, so let's review and clarify.

Remember first that the "mind-body problem" is a problem that arises during the course of the development of the Objective Model. We are not bothered at all by anything we could call the "mind-body problem" if we never go beyond our Subjective Model. No other species is likely to be bothered by this problem, no other species having the capability to develop the Objective Model (unless to a very tiny, rudimentary extent, as when one chimp learns from another chimp, by watching, how to do something).

And what we have found to be our basic assumptions about the Objective Model are that we have the Subjective Model which is a Model of what lies behind the curtain, called Reality (Objective Reality), and we have the Objective Model, which is an add-on Model of that Reality that increases the quantity of our beliefs and makes some of them extremely accurate compared to those within the Subjective Model. And we remember that the "material" out of which those two Models are made, namely, primary mental entities, has to be different from what lies behind the curtain. Reality is stranger than anything we can imagine. What we can imagine is determined by the structure of our brains, not the structure of Reality other than whatever that structure of our brains "really is" behind the curtain.

So again, although our models within the Physical Model and the Mental Model are all made of the same "material," we know that that material has been found to be inadequate to create models that actually work precisely, obviously within the Physical Model, in which we are driven to the point of having our models be only mathematical equations modeling the relationships (equal, greater than, less than) between measurements. It is impossible to imagine (e.g., visually) atoms and space and time to be the way our measurements indicate them to be. There is nothing completely like that within subjective experience, even subjective experience that consists completely of imagination.

We should note, by the way, that it would not be appropriate to say that that which lies behind the curtain **causes** the two different kinds of models (primary physical entities and primary mental entities). The "causation" itself exists behind the curtain. Our picture of the curtain, with the models on one side of it and something mysterious on the other side, is just a convenient way of visualizing something analogous (i.e., is just a model). Reality (Objective Reality) remains completely behind the curtain and is self-contained, according to this model. We do, nevertheless, use the concept of "causation" in our Physical Model and in our Mental Model, as well as, of course, our Subjective Model. The causation relationship is between or among entities within each of those Models, and that causation relationship is assumed to be a model of rules that what actually exists behind the curtain follows. ("Causation" was covered earlier in this presentation, in the chapter on "Causation and Explanation.")

We have to recognize that the Subjective Model and the Objective Model are two sets of models of the same thing, Reality (Objective Reality). It is not that the Subjective Model is a model of the Objective Model, or that the Objective Model is a model of the Subjective Model. It is true that there can be some success in cross-walking between the two models, but not entirely. What we come up with in the Objective Model can be quite different than the way things **seem** to us within subjective experience. Sometimes they are the same and sometimes they are different. The more the Objective Model gets developed, however, especially as seen in the Physical Model, the more the discrepancy becomes evident. Things are not as they seem, we are told.

To a certain extent, since perception within subjective experience is a model of the same thing that the network of enhanced neuronal connections in the brain is, namely, whatever is behind the curtain, then it is not surprising that one can be used to predict what the other will be, meaning that it can be used as a model of the other **to some extent**. Reported subjective experience can make us believe that certain things are happening in the brain of the reporting person, and we can also imagine (model with entities within our own subjective experience) what the subjective experience of a person might be like, given our knowledge of what is going on in his or her brain,

but we could be wrong. Models only work to a certain extent, anyway, and being imperfect does not render them useless.

But if whatever is going on behind the curtain involves a person having an hallucination of a house, then what is in the brain of that person is somewhat different than what one would assume was in his or her brain if one did not know that what was happening was an hallucination. So when the hallucination is taking place, it does not present, to the individual having it, an accurate model of what is happening in the physical world, despite his or her belief to the contrary. So, again, subjective experience (the Subjective Model) is not a completely reliable model of what would be found in the Objective Model. And that, indeed, is why the Objective Model is so extremely valuable to our species, adding greatly to the number of our beliefs and to their accuracy, or ability to predict and therefore to do. The Objective Model is not just an alternative Model; it is an **important, corrective add-on** to the Subjective Model.

So if we do believe that this new model, the one having been elaborated on in this whole presentation, is indeed an improvement over the Physico-Mental Model, and we wish to give it its own name, then my choice, for this presentation, would be the **Tripartite Model**, the model that is completely made up by three discrete entities, the **Subjective Model** (subjective experience and beliefs about that subjective experience acquired from the subjective experience alone); the **Objective Model** (the growing set of agreed-upon, by all those in the position of having an opinion, beliefs acquired objectively, independently of subjective experience other than the subjective experience of agreement with others regarding the symbolic modeling of those beliefs, enhanced to a great extent by the rules of logic and the rules of evidence); and **Reality** (that which is assumed to exist that makes it possible for any models to work, that is, makes predictability possible, but manifests itself in no other way). And of course these Models, and the Tripartite Model, **exist by definition only**.

But there is one extremely important conclusion to be drawn within the Tripartite Model.

The Objective Model, we must always remember, is basically created by **agreement**, ultimately agreement achieved by **pointing**. We have talked about our agreeing about many entities and situations in which we are using linguistic models of entities that **cannot** be pointed to. If the Objective Model is indeed ideally a completely internally consistent model, then all of the beliefs within it should be **consistent logically with beliefs about those entities that can indeed be pointed to**. Those, of course, are the **primary physical entities**, existing within the **physical world**.

Therefore **it is extremely important to recognize that the Mental Model, with its utilization of mental entities, is ultimately another way of modeling the physical world**.

So, despite how we talk, and even think (using the material of our subjective experience), the entities within the Mental Model are just "**shorthand**" for **whatever** is going on in the brain in the "physical world." We don't have to think that, or be aware that, we are "really" talking about what is going on in the brain when we talk about thoughts, feelings, etc., but whenever we become really serious about having a well-founded, internally consistent, comprehensive Objective Model, we must recognize that it is **built upon the Physical Model**, wherein lie the **sciences**.

Almost all of the time (actually all of the time) that we are using the Objective Model, we are doing some highly specific modeling that does not involve "all that we can objectively know." Ignoring this "reductionism," to use a pejorative noun to describe something actually very valuable, is therefore fine for most of what we do.

But when we are trying to solve our biggest, most perplexing problems, for which **agreement** and **accuracy of what we are agreeing to** are so very important, then we certainly do not want to ignore what would be a basic flaw in our modeling processes. So I ask you to try to really understand and, if what I am saying seems correct, try to develop a confident awareness of, this component (unavoidable "reductionism") of the Tripartite Model.

But now we need to move on to a discussion of specific problems produced by the Physico-Mental Model, so that we can achieve, ultimately, the solutions to the problems that keep us from accomplishing so much more in the way of cooperation and attainment of a good quality of life.

One of the most widely used entities that has arisen from the use of the Physico-Mental Model has been that of the "mind." Almost no one questions the existence of "minds." But we must take a closer look at that entity from within our new Tripartite Model.

Let us first be very clear about the concept of the "**mind**" itself. (It is an important entity, or concept, in the Mental Model.) We have already covered this to some extent, but we need to look more closely at it.

When I referred, above, to (mental) entities that presumably exist "in" other people--entities that you can't "see," why did I use the word "in"?

Let's say that I tell you that I feel sad. There may be nothing about how I look or how I behave that would cause you to believe I was sad, but my telling you that I feel sad would lead, probably, to your coming to believe that I was feeling sadness. And you would have a memory of a feeling of sadness that you had had and assume that "in" my subjective experience that same kind of feeling is present.

But in order for you to have that belief (model), you have to have some **mental content**, some **material** out of which your model will be made. In order for you to have a belief about my sadness, you will tend naturally to "locate" it somewhere within your subjective experience, since it obviously does not occupy the totality of your subjective experience. You probably will use for your model something such as an invisible, opaque balloon-like entity that represents the totality of my subjective experience or the container of it, and believe that my sadness is "inside" that invisible, opaque balloon-like entity.

For a child, that balloon-like entity may actually be the surface of my body, which indeed is opaque. The child knows almost nothing about what is inside, and may be quite satisfied to believe that whatever else is in there (including what comes out at times), there is somewhere in there that feeling of sadness, or whatever else I might be describing as my subjective experience. As we grow older and acquire more and more of the Objective Model, and specifically the Physical Model, we become increasingly skeptical that the surface of the body can be the wall of the container for another person's subjective experience, so the location of that opaque container becomes more uncertain, but somewhat disconnected from the person's body. And probably most of us come to visualize our own minds as some kind of balloon that sees out through the eyes, but probably does not have as a boundary some part of the anatomy, such as the back of the head.

Remember that you have to have a way to construct your model, and you can only use your own subjective experience to do it. The memory of containers (or balloon-like objects) is a part of your subjective experience. It seems to be a workable material with which to begin your model. In fact, almost everything seems to be inside of something else. So you create a model that consists of a balloon-like structure that is invisible and opaque, and that contains all of my subjective experience. You have created something you will label as "your subjective experience," or "your mind" (referring to my subjective experience, or "mind"). And it is not a significant jump to then refer to the subjective experience of everyone, or all minds, each one being one of these balloons, and to conclude that that must be true of you also.

We should be aware that different people include different things as a part of the "mind." I believe that almost everyone would include what we have been calling "**subjective experience**," consisting of primary physical and mental entities. However, many would also include things

that are not currently within subjective experience, but could be. They would say, "Somewhere in the back of my mind I know what I am worried about. I just can't bring it fully into my mind." Some have referred to this as the "**preconscious**" part of the mind, as opposed to the "**conscious**" part (what we have been calling "subjective experience"). Not only that, but some would say that there is an "**unconscious**" part of the mind, and that, perhaps with certain specialized techniques (psychoanalysis, hypnosis, etc.), things "in" that part of the mind can be "brought into" the conscious part of the mind. And then some would say that there are things that are in the unconscious part of the mind that can never be brought into the conscious part of the mind, probably because of the neurological structure of the brain. We would say that these entities that cannot be experienced but are believed to exist and are used to explain mental functioning more thoroughly are what we are calling **secondary** mental entities. And remember that we can talk about whatever you are experiencing that you are calling pain, this being a primary mental entity, but also talk about "pain" as an entity that people feel under certain circumstances, or perhaps "the perception of pain," now referring to a secondary mental entity, sometimes referred to as an "abstract" concept of, e.g., pain.

For the purposes of our discussion, let us assume that by "mind" we mean **only subjective experience**, or what we would say consists of "**consciousness**" or "**conscious awareness**." That way we will be clearer as to what we are talking about and we will be using a meaning that all could agree to, even though some would include more in the concept. I believe that in what we are to consider, these other possible "contents" of the mind will be found not to be relevant to our specific discussion.

So let us directly tackle the concept of the "mind." Let us recognize right away that we are working within, or creating within, or adding to, the Objective Model. We are attempting (linguistically) to model something about "Reality," that is, about things that are "true" or "existent" independently of your or my experiencing them. You might die, and thus no longer have your own subjective experience, but what we are talking about, the "mind," would still exist, assuming there were others still around to have such things ("minds").

So how do we model this presumed entity? We have seen that we have to use materials from our subjective experience. Well, as we have noted, one thing that is a well-recognized subjective experience is that of various kinds of "**containers**." We see things being inside other things. We see a jar filled with pieces of candy. There is the jar, and there are the pieces of candy inside, so we see a "jar of candy." There is the container, and there are the contents. So I believe that it is easy to see that we are approaching what we mean by "mind" when we see it as the "container" of our subjective experience(s). My perception of this chair is not my mind, but is "**in**" my mind. I can keep things "in mind," and things can "escape from my mind." We speak of that which remains "out of sight" becoming that which is "out of mind." The "mind" generally is used to refer to the presumed "container" of physical and mental entities, or subjective experience.

But of course an objection can be raised in that the jar is made out of something **different** than the candy is made out of. So we can say that the mind model perhaps really should be made out of the same thing that its contents are made out of. In other words, the mind would simply be the sum-total of all of the things "in" the mind. In this way, we would use the model of something like a bar of soap. The "bar" is what the soap is "in." There is a **boundary** between where the soap is and where it isn't. So if we "draw" a "line" (or "wall") around a particular "volume" of space, so to speak, that line or wall will be a **boundary** inside of which we will find soap and

outside of which we will not. That is what the "bar" is. It is everything inside of that boundary. So our basic model of the "mind" may be that of subjective experience, a boundary around it, and something outside of that boundary that is not "mind" (at least not the mind we are considering).

(And soap bar may not be as good an analogy as candy bar, in which the contents of the bar are not homogeneous. There can be more than one kind of thing in the candy bar, just as there are all kinds of subjective experiences within what we are calling "subjective experience," or "mind," but in another sense, all of those entities contained in the "mind" probably should have some common characteristic, and that characteristic is probably what is assumed to be common to all "subjective experience," whatever that might be.)

The key idea is that, if we use the "container" model as a model of the "mind," the most problematic part of the concept is that there is a **boundary** between what is the mind and what is not the mind. Things can enter the mind and leave the mind. Things can be forced out of the mind or brought into the mind. And the mind is somehow surrounded by what is **not** mind, or what is not **that** mind, though perhaps it could be another mind or minds. Yet that boundary, and what is on the other side of it, is almost never made reference to, and especially made reference to in ways that everyone is in agreement about. What is on the other side of that presumed boundary? No definite, agreed-upon answer has been proposed, that I am aware of. The matter is just dropped.

Now we also should be very clear about another thing, already mentioned. **No one has ever observed a mind.**

First, you cannot actually observe your own consciousness or mind, in that you cannot see its **boundary** or **contrast** it with anything else that you can observe.

For example, although you may believe by virtue of your subjective experience that your visual field of one eye is a circular disc, it is actually the shape of a "doughnut" with its hole. If you close your left eye and hold your right hand out at arm's length, wrist bent up so you are looking at the back of your hand, with fingers all extended and stretched apart, and you look (with your right eye) at your thumbnail, then, if your hand is positioned correctly, you will not be able to see your little finger, even though you do not observe any "hole" in your visual field. You don't **see** the hole, and you don't **see** the boundary around it, and therefore don't **see** that particular boundary of your visual field. In the same way, you do not **see** the outer boundary of your visual field. So even though you see lots of things "in" your "field of vision," you cannot see your "field of vision" itself.

You cannot see that which you cannot see. You cannot hear that which you cannot hear. You cannot feel or smell that which you cannot feel or smell. You cannot observe that which you cannot observe. All you can subjectively observe are the things **in** the balloon, not the balloon itself. But because we can construct a verbal model, as a part of our Objective Model, that stands for a "container" for our subjective entities, we now tend to make the (unwarranted) assumption that that entity actually exists, right along with houses, atoms, electromagnetic radiation, etc.

Second, no scientist, working with regard to the "physical world" (physicist, chemist, biologist, neurologist, etc.) has ever observed a mind, or even done any modeling of or experiments with such an entity. Scientists have indeed done experiments that have to do with presumed **parts** of

the presumed mind, such as perceptions and emotions, but never upon "the whole mind" itself. You might protest and say that they have done experiments with regard to consciousness, for instance, correlating things going on in the brain with "levels of consciousness," but actually what they deal with is **reports** of subjective experience or other kinds of observable **behavior** (such as movement in response to "pain stimuli"), **not a "consciousness" itself**. In other words, what is actually worked with is a set of primary physical entities, not of primary mental entities.

So you can see that we might be able to say that the **"mind"** is one of those things that **"exist by definition only."** And it models nothing. There is nothing that we deal with (that is, that we can do anything to and observe what happens to it) that has **no boundaries** distinguishing it from that which it is **not**. Whenever we make reference to the mind, we can expect that we will actually be referring to **things** that we would say were **in** that mind. When we talk about levels of consciousness, we are talking primarily about **consciousness of things** like pain, or light, or sound, that is, of specific kinds of sensory (or emotional, or cognitive) subjective experience, not subjective experience itself as a presumed "entity" in its own right.

And remember our original conclusions regarding subjective experience. Your subjective experience is all you ever deal with. It is all you are (in one sense), as far as you are concerned. And you can observe no one else's subjective experiences, nor can anyone observe yours. We think of (model) subjective experience as a container and its contents, but that model breaks down as we look closely at the way things seem, and are unable to observe a boundary between what **is** the-mind-we-are-considering and what **is not** the-mind-we-are-considering. This seems somewhat equivalent to the breakdown of our models of subatomic particles, which can be modeled with nothing that is familiar to us within our subjective experience, other than mathematical equations, which model only kinds of relationships between measurements ("more than," "less than," "equals").

So although our use of the modeling concept of "mind" is highly useful under some circumstances, just as is the modeling concept of "the group" or of "North Carolina," such modeling does not bring into existence a new entity in the physical world. We are just drawing a line (or wall) around something, and in the case of the "mind," our line (or wall) around it cannot be shown to correspond to a boundary (between it and something else) that can ever actually be observed, much less experimented with.

So the "mind" is never observed (within subjective experience), and although it is a model within the Objective Model that is very linguistically convenient within certain contexts, it fails as a modeled entity in providing any specific predictions about anything.

The "mind" is a **linguistic convenience** to refer to the entire subjective experience of an individual animal (especially human), and perhaps to subjective experience that the animal could have under certain circumstances (e.g., being reminded), and maybe even to subjective experience that would exist if there were the neurological capability (the inaccessible "unconscious mind"). It is simply a linguistic convenience, similar to "my collection" (e.g., of stamps). It is a term to refer to a group of things, primary physical and mental entities at least, that belong to one person and no one else.

There is an analogy between the term "my mind" and "my clothes." Both terms are referring to a specific set of entities, but no one can point to the mental entities, whereas everyone can point to

"my clothes." The use of such linguistic labeling is such as to be able to restrict the "mental entities" that we are talking about to "my mental entities," just as we can restrict the "clothes" that we are talking about to "my clothes." We are bringing into existence a new entity, namely, a collection of things. The things were already existing, but linguistically we constructed a new entity that exists by definition only. Nothing new is brought into the world by doing this. I could even tell a person that, as of this moment in time, I am giving him all of my clothes. Now they are not "my clothes" but "his clothes." Nothing new would enter the world, but the re-definition might be very desirable to myself and the other person, permitting us to live up to each others' expectations regarding "ownership."

Thus, within the Objective Model, the "mind" itself cannot actually be found in any of the equations describing relationships among things in the world of "Reality," the reality that is being modeled especially by the scientific methods, whether within the Physical Model or within the Mental Model.

We can now ask a rather important question. Why do we have this model, called "mind," if indeed we can't experience it, we can't do anything with it or to it, and it exists by definition only?

I would say that the "idea" or "model" of the "mind" arises to a great extent from certain subjective experience within the Subjective Model, and therefore from that indistinct connection between the Subjective Model and the Objective Model. We have already considered the fact that most of us do indeed have a rather distinct feeling associated with ("primary") entities within subjective experience having to do with whether those entities are part of the "self" or not. Most of us tend to divide up our subjective experience into entities that are either "self," "others," or "inanimate objects." (We probably include, as "others," animals and even perhaps occasionally plants, as when we believe they respond to our talking to them.)

The "self," as we have said, probably is based upon a rather marked feeling of "familiarity," a sense of confidence in predictability. I "know" (can predict confidently) that my hand will move in this direction (that I "intend" to move it in).

"Others" are those entities that seem to move around a lot and can suddenly cause the self to have to do something and therefore tend to cause a certain amount of "tension," or preparedness to respond. These would be referred to as "other people," and perhaps even "other animals."

"Inanimate objects" are things that tend to be still or move only in very limited, predictable ways, or in highly unpredictable ways that we have learned to live with (such as breezes) and don't require us to respond to novel situations very much other than ways that are fairly routine and expectable. And when an inanimate object cause us substantial worry, we tend to start thinking of it as an "other," even perhaps with a personality, sometimes a malignant personality, and occasionally even give it a name that we would give a person (as we do with hurricanes).

As we look at "others," we usually see fairly clear lines of demarcation between what the "other" is and what the "other" is not. We see a "boundary" between the "other" and the space surrounding the "other." So it is easy to regard (model) the "other" as a "container" of everything inside, a container the surface of which is opaque, as we have noted above when discussing early modeling of subjective experience by the child. (All of this modeling could be considered to exist

somewhere in that indistinct boundary between subjective experience and the beliefs about that subjective experience, referred to as the "Subjective Model," as we are using the terms in this presentation.) And somewhere in the indistinct boundary between the Subjective Model and the Objective Model is the belief that inside that container are thoughts, feelings, perceptions, "awareness," etc., similar to one's own, even though invisible. So the "other's" body, that opaque container, is seen probably to have within it somewhere subjective experience like one's own.

The reason this is somewhere close to or within the Objective Model is because it is to a great extent taught by others, using words as well as non-verbal communication. ("Well wouldn't that make you angry? Well that's the way I feel! So stop it!!")

On the other hand, this "theory of mind" phenomenon (belief that the other has thoughts, feelings, etc., also, and not necessarily the same as one's own) is considered by some to probably be present to some extent in at least a few other species (that don't have much symbolic communication), so it could then qualify as part of the Subjective Model (unless one posited that some other species have a rudimentary Objective Model, such that they can teach each other about what it is like to be the other).

(But let us also note that all of this subjective experience and subjective and objective modeling is, according to the Physical Model, presumably going on within the **brain** of the self, in response to input from the environment.)

So the bottom line is that the belief that there is a "mind," that one has it, and that others have it, is a model, **created by the brain**, and it is a model created using the material of subjective experience, as all models are, the specific subjective experience probably usually being used being that of the "container." And since it is an entity not identified by observation, but brought into existence by definition only ("let 'mind' mean the container of subjective experience"), it is therefore a secondary (mental) entity, not a primary one, as the terms are used here. And it is a model that develops very early in most of us. And it has been found to be very useful as a linguistic tool. We can indeed all agree to define the "mind" as the "container" of all primary mental entities, or something like that (such as "collection"), the specific definition being used being dependent upon the situation in which it is being used. And any model can be used appropriately in certain situations and inappropriately in others. (The neurosurgeon had better be using the Physical Model, not the Mental Model.) When used inappropriately, problems can be caused. And improper use of the model of the mind, I believe, is involved in the "mind-body problem." It is indeed a part of the Physico-Mental Model, but as we have found, that Model is flawed in its basic assumptions, producing most clearly the "mind-body problem."

So now we should be ready to deal with the "free will vs. determinism problem."

Why is it that we have a concept of "free will," and what does it mean?

A very basic observation that we can make within our own subjective experience is that we are able to imagine ourselves at a given future point in time doing one of several or many different things, though the doing of one of them would rule out the doing of the others.

For instance, at this point in time you can imagine five seconds from now your raising your hand and you can imagine your not doing so. In fact, you can imagine your moving your hand in many different directions, though of course not at the same time.

Also, you can remember an action you have engaged in and also imagine several or many other actions you could have engaged in instead.

So although you can imagine several different **possible** actions that you could take at a given point in time, you know that only **one** of those actions will be the one that occurs. Under these circumstances, we tend to say that we have "**choices**," and that we "**choose"** to act in one particular way out of a large (perhaps an infinite) number of possible things that we could have done.

Prior to the behavior actually occurring, there is a wide range of **possible subjective experiences** that could occur.

For instance, each of us has had the **subjective experience** of **not knowing** what to do, and then of "**deciding**" what to do, and then of **doing** it. And we can often say "**why**" we have done what we have done, giving our "**reason**" (or "reasons") for having done so, namely, a **predicted and hoped-for outcome**. At the beginning of that process, we may be unable to predict what we will eventually decide to do. Afterward, we know what we decided, and why. All of this is our own **subjective experience**, reportable to others, but not possible to be experienced by others (though others will report similar subjective experience of their own, of course), other than any outwardly observable behavior that is the actual doing of what we decided to do (or behavior observed and interpreted by others as some sort of "struggle" to decide).

We also have the experience at times of finding ourselves doing something despite not wanting to. We are unsuccessful at inhibiting reflex behavior (such as the knee-jerk reflex), even though we can also **decide** to make the same movement very consciously. There seems to be a difference between such behaviors, referred to as "involuntary" vs. "voluntary" (**consciously decided-upon**).

We also have the experience of finding ourselves doing, or having done, fairly complex things (like getting dressed or driving) while thinking about something else. The body just seems to know what to do and "does it on its own," so to speak, even though we can also **decide** to do the same things very "**consciously**." Such behavior (occurring on its own, so to speak) may be called "automatic" or "automatized," as opposed to "**deliberate**."

So there is a subjective state that we can identify that precedes some, but not all, of the decisions that we make. The word we usually use to label this feeling that sometimes exists to a greater or lesser extent prior to the choosing of a particular act is the **feeling of "intention."** It is part of our **subjective experience**.

The "will" concept comes from the situation in which we subjectively experience the **feeling of intention**, usually accompanied by subjectively experiencing the **behavior intended**. So "will" is part of one's **subjective experience**. One has the subjective experience of "**consciously deciding**" that is, **intending,** or "willing," to do something, and then the **doing** of it.

So "will" is an **experience** within one's subjective experience on a moment-by-moment basis. Therefore, whatever one's **beliefs** are **about** that experience are part of the Subjective Model of subjective experience. As an example, I can decide to make a decision rapidly (more automatically, or by flipping a coin) because of knowing (believing) that if I think about it too much I may become hesitant and miss an opportunity. Such believing is the manifesting of beliefs within my Subjective Model about my own "will." Another example of a belief about my own "will" is my belief as to whether a decision will be easy or difficult, a belief about the discomfort or effort that will be required to make my decision, that is, to exercise my "will."

Let us also recognize that although so far I have referred to "will" as an "experience" (of the feeling of "intention"), it could also be looked at as a **belief**, a **prediction** that, for instance, my hand is about to move in a predictable way because of something about my current state of mind (that state of "intention"). This is another example of the occasional lack of clear distinction between "experiencing" (for example, "feeling") and "believing," as has been discussed above.

That feeling of intention, as we noted, **varies in intensity**. This variation in intensity seems **analogous** to "**force**" in the Physical Model. Will is described as "**weak**" versus "**strong**." The stronger the "will" is, the more likely it will cause something to happen, according to this modeling. If the infant or small child wants to do something really strongly such that he or she makes strong efforts to do it, and if this happens pretty frequently, and especially if the behavior is undesirable such that there are efforts by others to prevent it that have to be overcome, he or she will very likely be labeled "**strong willed**." This **variable** characteristic of "will" is sometimes referred to as "**will power**."

Thus, "will" is perhaps an aspect or varying characteristic of a "motivational state," a state most frequently linguistically modeled in the Subjective Model with the general word "**want**." "I want to do this thing really badly." "I want to make it happen." "I want to do this because it will be very pleasurable." "I want to do this to stop the pain and suffering." "I want to do this because I believe it is the right thing to do, and I want to do the right thing." "I want to do this because I will feel really good about myself if I do." "I guess I must not have wanted to do it all that strongly, because I gave up pretty easily." "Will" may be regarded as the "strength" of the motivational state, that is, how strongly we want to do something that we have decided to do. And this variability in the strength of intention is referred to as variability in "will power." (And note here the use of the word "power" in the Subjective Model as well as in the Physical Model, though with different meanings.)

We should note that there is a distinction that can be made between "deciding" and "willing." The concept of "decision" does not necessarily include the idea that that process of decision is

"deliberate," or the result of "deliberation," because we can also say that we automatically, or even "unconsciously," decided to do something. This variability in the subjective experience of "deciding" is in the **intensity** of the "intending" feeling, and is most closely associated with the concept of "will."

In summary, "will" is thus a component of **subjective experience**, about which beliefs can develop, that are a part of one's **Subjective Model** (remembering that the Subjective Model can also be considered to include subjective experience, so that the "will" itself can be said to exist in the Subjective Model). And it is possible to put those beliefs into words, that is, to develop a linguistic model of that part of the Subjective Model, on our way toward objectivity and increased accuracy of belief, i.e., on our way toward the Objective Model.

Now from within the **Physical Model** of the Objective Model, however, as we have noted regarding subjective experience in general, by "willing" or "intending," or even for that matter "deciding," we are meaning "whatever exists or is happening in the brain or nervous system that corresponds to, and is necessary for, the individual's doing one thing as opposed to another." A simplified statement would be, "When you decide to do something, or intend to do something, it is your brain that is doing that deciding or intending." And of course the neurologist is looking at the activity in the brain and assuming that it is following the rules of the universe. To do otherwise would be to proclaim that the physical and chemical processes in the brain at times did not obey the rules of the universe, or physical world. So what we are observing within our own **subjective experience** that we are calling "**deciding**" (including "**intending**") is, within the Physical Model, a process that is **obeying the rules of the universe**, a process that is "**determined**" by those rules of the universe, or more precisely within the Tripartite Model, Reality.

Let us look at the word "free" in "free will." What is supposed to be free from what? At least as far as the "free will vs. determinism" debate is concerned, the freedom is freedom from being determined by the rules of the universe. The "will" experience is supposed to be free of the necessity to adhere to the rules of the universe. But science makes the assumption that whatever happens happens according to certain rules, and then science seeks to learn what those rules are. Science does not make the assumption that there is lack of "lawfulness" in the universe; if science did, there would be no reason to study any further, since finding such rules is what science is basically about.

(Well, there might still be reason to engage in such study if we thought that most of the time, or some of the time, the rules were being followed, because doing so would increase our odds of making good decisions. And there would be more reason to do such study if we were able at least to designate the circumstances under which we could be confident that the rules were being followed. However, our enthusiasm for trying to understand "everything" would be reduced if we thought that the rules were not always being followed, because understanding those rules is what we mean by understanding, or having accurate beliefs, or models, that allow us to predict.)

The inability of science to explain something is not considered within science to be evidence that some things do not happen according to the rules of the universe. The explanation of this inability to explain would have to do with the complexity of that which is being studied and/or the inaccessibility of needed data, and/or incomplete understanding of the rules of the universe (frontier of knowledge).

Remember that a model is a model only to the extent that it allows **predictions** about that which it is modeling, and prediction is only possible if that which is being predicted is occurring according to rules. **To be predictable means to follow rules**. (Remember that the word "rule" can be used in at least two different ways: a "rule" can simply be a description of what always happens or tends to happen, or it can be a description of what one should do. We are using the first meaning here.)

The **Subjective Model** includes beliefs about the rules of subjective experience, that is, what can reliably be expected to occur next within our subjective experience, given the current subjective experience. But our subjective experience is replete with lack of predictability. We very frequently don't know what is going to happen, and that fact is accepted by us all. So there is no assumption or expectation that **everything** we subjectively experience is going to occur according to rules, only **certain** things, things that have already demonstrated that they are probably predictable. The Subjective Model only models that which has seemed to be predictable.

The **Objective Model**, on the other hand, is a model of the **rules of the universe**, or Reality, the universe independent of our perceptions of and beliefs about the universe, that is, independent of the Subjective Model. And science is the epitome of the development of the Objective Model, and makes the assumption that **everything** is following the rules of the universe, even if we don't know what those rules are.

Now it is true that science has concluded that parts of Reality act according to "chance," which means lack of predictability. But, as described above, that lack of predictability is lawful and predictable. One cannot predict the single event, but can predict the results of measuring a set of events involving the same kind of situation, such that a probability curve, a mathematical description (or model), is produced, and is presumed to be a model of some part of Reality. What is found upon experimentation or natural observation is that the results of multiple measurements when plotted form a **predictable** distribution curve. The observation of events occurring according to "chance" is in no way supportive of the idea that the rules of the universe are not always followed. The rules of the universe can indeed be modeled such as to produce the prediction that the results of certain experiments (measurements) will be consistent with the rules involved in things happening "by chance."

So we can see that **the concept of "free will" does not belong in the Objective Model**. "Will" is a subjective experience, within the Subjective Model, about which we can indeed have beliefs within the Subjective Model. And those beliefs within the Subjective Model, involving potential or actual prediction, may involve predictions as to what will happen when we do something, and even a belief that the feeling of intention will be followed by the intended act, but there is almost never a prediction as to the feeling of intention, or "will," itself. The feeling of intention itself is not believed, within the Subjective Model, to be something predictable, and as therefore always following some rules. It is just subjective experience. The Objective Model, on the other hand, is a model **of** the rules of the universe, of "Reality," that is, what exists independently of our experience of it or beliefs about it, and is assumed to be determined by those **rules of the universe**.

Let us go back to the **Subjective Model** (not the Mental Model, which is a sub-model of the Objective Model).

Now when we model, within the Subjective Model, this subjective experience that we call "decision-making" or "intention" or "will," we will develop **language** in behalf of this modeling. Let us look at some of the characteristics of that language.

Note that some words used in the Subjective Model related to the concept of "will," such as "strong" and "weak" and "power," used also in the Physical Model in relationship to "force," promote the impression that this concept of "will" fits easily into the Physical Model, and therefore into the Objective Model. When such thinking occurs, it produces the impression of a "physical world" in which a person is pushing back with his or her "will" against the rules of the universe, and thereby forcefully becoming "free" of those rules. Once again, introducing "entities" from subjective experience into the Physical Model, producing the Physico-Mental Model, results in a breakdown in modeling, at least if substantial demands are placed on the model, meaning that the Model is used in decision-making. And indeed I think this happens, with very significant negative results, as discussed later.

So what we have so far seen is that "intention," or "decision-making," or "choosing," or "willing" is a perfectly natural and normal and appropriate part of the Subjective Model, as part of situations that we experience, but that the concept of "free will" has no place in the **Physical Model**, the sub-model of the Objective Model of the "physical world."

But we still have that more difficult to describe situation produced by the **Mental Model**, the sub-model of the Objective Model of the "mental world."

Once again, using the Objective Model of the mental world, we most appropriately would say that the true meaning of "will" is **whatever it is that is happening in the brain** that corresponds to the subjective experience of making a decision. All of that initial uncertainty about what the decision will be, along with motivational states leading to wanting to do perhaps opposite things, and then the perceived act of choosing, and the recognition of the reasons for having done so—all of that is simply the action of the neurons in the brain according to the rules of the universe, whether we ever discover those rules completely or not. And yet once again we can simplify and study "decision-making," correlating reports of the subjective experience of **decision-making** (or other behaviors indicative of decision-making) either with reports of other "entities" in the mental world (such as beliefs) or with "entities" in the physical world (such as hormones, neurotransmitters, and imaged activities of parts of the brain).

If we correlate reports of **decision-making** (or other behavioral evidence of such decision-making) with things that are happening in the **brain**, we are using the Physical Model, and if we correlate such evidence of **decision-making** with reports of **thoughts and feelings**, we are using the Mental Model, both such models being a part of the Objective Model. We are talking about **the same events in Reality** (that which exists independently of our modeling of it), but are describing it with **different models**.

And remember that in the Mental Model, a sub-model within the Objective Model, "entities" such as "feelings" and "thoughts" are modeling shorthand for "whatever is occurring in the brain that corresponds to those processes." (It is easier to use the single word, rather than the whole phrase.) So such entities as "feelings" and "thoughts" in the Mental Model are created by definition, using the same words as are used within the Subjective Model. And the images used

to do that modeling, to correspond to those words, are the subjective experiences that we have that we have learned to label with those words.

The Mental Model is an effort to arrive at modeling that allows for as accurate prediction as possible. Thus, when studying "thoughts" and "feelings," we are attempting to develop a model of "Reality" that enables us to predict as accurately as possible. For instance, we say that when people "feel" a particular way, we can predict an increased likelihood that they will act in certain ways, in accordance with the rules of the universe having to do with brain function. And one of the ways that we can say people "feel" is the "feeling" of "intention" or "will."

Although it initially may have seemed that either "free will" or "determinism" is true, but not both, we can now see that both are valuable ways of modeling something about human experience and behavior. "Will" is an experience within subjective experience, and it can be talked about, including one's beliefs about it (within the Subjective Model), by linguistic modeling of that aspect of the Subjective Model. But we can also study that experience within the Mental Model of the Objective Model, learning what things reports of it are correlated with, what the reported experiencing of it is likely to be under certain circumstances, etc. And we can study it by studying what is going on in the nervous system when it is reportedly being experienced, using the Physical Model of the Objective Model. It is when we believe we can combine the Subjective Model and the Objective Model into one model, or the Physical Model and the Mental Model into one model (the Physico-Mental Model) that we run into trouble.

And this trouble coming from efforts to integrate two Models is obscured because of the problem we have already described regarding language and the fact that although the models have different languages, they may have the same words in both, those words having different meanings depending upon which Model they are being used in. Because the words are the same, there is a tendency toward lack of awareness that two different Models are being involved. In the Subjective Model, "will" is one's own experience that no one else can have. In the Mental Model, it is shorthand for whatever is going on in the brain when such experience is reported. And the term is simply not going to be found in the Physical Model.

So in the Physical Model, we can study the decision-making of the rat, learning increasingly accurately how the nervous system behaves in response to environmental situations (e.g., mazes, stimuli, etc.), whereas in the Mental Model we can study the role of one's religion (not currently a useful entity for the neurophysiologist) on one's decision-making. And in both cases, because we are still within the Objective Model, that decision-making is assumed to occur according to the rules of the universe, because that is the basic assumption of the Objective Model.

It is thus only within the Subjective Model that the concept of "free will" has any place, and there it is descriptive of the subjective experience that we all have at times.

But once again, we must realize that as long as the way we use our modeling actually works (makes life better by virtue of our being able to be more successful), inaccuracies in thinking and language use may not be significant. However, by the same token, if bad things happen because of such inaccuracies, then we need to develop the necessary understanding to correct that incorrect modeling.

So hopefully I have succeeded in describing how the "mind-body problem" and the "free will vs. determinism problem" are really pseudo-problems brought about by insufficient understanding of certain aspects of modeling and linguistics. The problem is brought about primarily by the attempt to integrate two incompatible models into one, either the integration of the Subjective Model with the Objective Model or the integration of the Mental Model with the Physical Model, such attempted integration not being very evident because of the use of the same words, with different meanings, in the two models.

And the "solution" to these problems is our Tripartite Model, involving the Subjective Model, the Objective Model (with its two main sub-Models, the Physical Model and the Mental Model), and Reality, this Tripartite Model being an improvement over the flawed Physico-Mental Model, in which these problems arise.

We need now to look at some of the results in our lives that occur because of these inaccurate modeling efforts, and what we can do to correct the negative effects of such defective modeling. But first we will need to look at a primary set of implications of our Tripartite Model.

GENERAL IMPLICATIONS OF THE TRIPARTITE MODEL

So in this presentation we have the Subjective Model, the Objective Model, and Reality, the meanings of those terms I am assuming you are now quite familiar with. And I am calling this total way of organizing our understanding the "Tripartite Model."

But we now need to make clear the extreme importance of the distinction between these Models, in practical terms.

What I am going to consider is most important to all of us is **the quality of our lives**. By this I mean only our wanting to have as much joy, contentment, and appreciation as possible and as little pain, suffering, disability, and early death as possible.

For you, I am talking about **the quality of your subjective experience**. Remember that you are your subjective experience and your whole world is your subjective experience. For you, your subjective experience is all that you have. And your modeling of that subjective experience, your development of your beliefs about all aspects of it, lead you to make decisions that affect the quality of your life, of that subjective experience. Your Subjective Model is all-important to you. For you, it is "existence," yours and that of everything in your life. In fact we know that if the quality of life for you became terrible enough, you would probably try to end it.

And we have seen that the beliefs you have about your subjective experience play a role in what you **decide to do** from moment to moment. And I don't believe it is necessary to clarify how strongly **dependent** the tendency to produce pain, suffering, disability, and even early death is **upon what those beliefs are**. Many mistakes, of course, are "minor," but we can easily, right now, imagine decisions that we could make that would make our lives horrible. Thankfully, almost all of us have learned to avoid making those mistakes, meaning that we have developed Subjective Model beliefs that are so accurate that decisions based upon them turn out not to be truly horrible. However, occasionally we fall victim to our own inaccurate beliefs, with results that can indeed be quite regrettable.

But as you know and now understand in the terms of this presentation, with its Tripartite Model, we humans have acquired abilities that have led to something that no other animals have (unless perhaps to a very, very rudimentary extent), and that is the set of beliefs that are a part of the Objective Model. And I am sure I do not have to repeat how important the Objective Model is to all of us, and how it has added enormously good (and of course enormously bad) capabilities to do what would seem like, to someone not having his or her part of the Objective Model, amazing miracles.

However, **there is no subjective experience within the Objective Model**. The contents and quality of the Objective Model definitely have an impact on your subjective experience, but the Objective Model is simply an additional set of models, acquired almost completely from what is learned from others. Its primary reason for existence, the main reason we work on it, is **in order to be able to predict much more accurately** than we can by using our Subjective Model beliefs. So it is simply an amazing **tool**, making us much, much more **capable**. Thus, it should be honored as perhaps our most important tool, even though, as we have noted, it certainly is not perfect. It is not perfect, but it is always ultimately headed in that direction, because any additions to it or changes within it are ones expected to produce "more perfect" predictions.

So the conclusion that we can draw from the above is that it is important to you, and to each and every one of us, that we **take care of** our Subjective Model and our Objective Model, doing whatever we can to enhance the accuracy of them. And doing so will have its effect not only on how we feel (and look forward to living) but also, through our behavior based upon those beliefs, how we impact the quality of life of others.

Both Models are important, and should be optimized.

And then there is **Reality**. Here it is important to recall that there is only one thing that we can attribute to it, only one "experiencing" of it, and that is the phenomenon of **predictability**. It is what makes the Subjective Model and the Objective Model possible. But all we have access to, all we can ever deal with, is our Subjective Model and our Objective Model, which will necessarily always be incomplete **Models** of that Reality. There will always be things to learn (and unlearn). This indeed should produce some degree of humility, manifested by always being open to discovery of inaccuracy of belief, whether within the Subjective Model or within the Objective Model. And what this means is that one of our most valuable activities is the **sharing and comparing of our beliefs**, and the conscientious effort to discover, if they are different, **why** they are different, so that those beliefs can move in the direction of **increasing accuracy**, as demonstrated by **increasing predictability**. That is our species' most important and defining attribute, **conscientiousness about learning**, especially about **how to treat ourselves and each other**.

(It is quite possible that you may be thinking, "Yes, all of this makes sense, but you have not explained why "existence" is such that the Tripartite Model is indeed the best Model, and more specifically, you have not explained why there is such a thing as subjective experience, upon which this whole presentation is built. My answer is first to refer you to the chapter on Causation and Explanation, and then to point out that whatever Model I proposed as such an explanation would still need another Model above it to explain it, and so on, so it seems that explanation has to arbitrarily stop somewhere. And regarding the wish for an explanation of the existence of subjective experience, I believe this is at least close to the wish for an explanation as to why there is something rather than nothing at all, this being an unanswerable question, since whatever explanation was given could be responded to with the question as to why that, in turn, was so. So I believe these questions are unanswerable, and that an effort at presentation of possible answers would contribute nothing to our knowledge, our capabilities, or the quality of our lives. If there is such an answer, I will defer the task of finding it to someone else. I believe the Tripartite Model is as far as we can go, and I will wait to be shown that I am incorrect.)

So I now wish to consider some of the problems our species faces that are intimately tied up with the "mind-body problem" and the "free will versus determinism problem," and to suggest some very important **practical implications** of these philosophical issues, usually deemed so esoteric.

This part of my presentation will be different.

What I have written up till now I believe, rightly or wrongly, should make sense and be acceptable to anyone who conscientiously reads it in the order written, not skimming it but really attempting to understand each sentence. It may well be that reading it two or three times and discussing it with others will be necessary to fully understand it, because I believe (from my own

experience) the ideas require opening up new, alternative pathways in the brain, something done only with difficulty. Nevertheless, I believe that what I have written is consistent with the rules of logic and the rules of evidence and is satisfactorily clear linguistically, and therefore should be acceptable to others. And in fact I believe it is understandable, with appropriate study and help, even by children in late elementary school.

What follows, however, is, I believe, a lot less certain. It represents my opinions. I do believe fairly strongly what follows, but I recognize that it is based upon very complex issues about the way the world is and what works best or would work best in that world, and I do not claim a lot of wisdom about the way the world is. For instance, my knowledge of history, politics, economics, and information technology is quite meager.

Nevertheless, the issues I wish to discuss are of enormous importance to the survival and wellbeing of our species, and they are related to the issues so far discussed. So at least I hope to raise awareness of the possibility of looking at things in certain ways that are not very common at all, but may have much to offer.

What I have so far discussed has been mostly **epistemology**. What I now intend to discuss is basically **ethics**, by which I am going to mean the study of what we **should** do. And as my **ultimate ethical principle**, used ultimately to **legitimate** (give a reason for the acceptance of) ethical propositions, rules of conduct, and other principles, I will be using only what I have referred to elsewhere as the "rational-ethical ultimate ethical principle" (REUEP), or perhaps better named the "Humanian ultimate ethical principle," after "Humanianity," a personal religious orientation (for everyone) that I advocate for elsewhere but will not be describing here. That ultimate ethical principle, already alluded to, is that:

We should do that which will promote not only the survival of our species but also the good life for everyone, now and in the future, the "good life" being defined here as "as much joy, contentment, and appreciation as possible and as little pain, suffering, disability, and early death (PSDED) as possible."

What I am calling attention to is that we humans are doing, and have always done, horrible things all over this planet, to ourselves personally, and to each other within our families, within our social groups and societies, and globally, things we don't **have** to do but do **anyway**. The amount of horror and tragedy is enormous, and yet we don't stop. I believe we **can** stop, but only when we **learn how** to do so. And I believe that some of the answers as to how to do so are tied to the very issues that have been clarified in this presentation. But it will be the task of you, the reader, to see if my ideas and recommendations, that I consider are **implications** of the Tripartite Model, merit further exploration.

Remember we have hopefully agreed on the importance of our own subjective experience. Well, all of us (except perhaps for some with certain neurological disorders) have a particular subjective experience when in the presence of another person. It is the result of a very primitive belief that there is another "entity" in our presence that is something beyond what we actually see (the other person's body). This phenomenon is actually partly perception and partly belief. (I mentioned in the first part of this presentation that sometimes there is no clear dividing line between what is perception and what is belief about that perception. This is probably a pretty good example.)

It is partly **perception** in that we **feel** differently because of it than we would feel if there was no human there. To capture this feeling, perhaps you can imagine a robot that looked fairly realistic but that you knew was just a robot. Perhaps it would even move fairly realistically, but you still knew that it was made only of plastic and metal. The experience would be substantially different than if you knew it was an "actual person."

But this is also a **belief**. If for instance you simply could not tell by looking at it which it was, your **belief** as to which it was would determine whether you would have this **experience** of "being in the presence of" a person. So this **feeling** is something that goes along with a **specific belief**.

So what I am focusing on is that **feeling**, which is indistinguishable under most circumstances from a perception. You see not just a body, but a "person." You "**feel**" that person's "**presence**."

That feeling includes rather hard-to-describe components such as that the person has an **awareness**, in turn, **of you**. And that feeling that that person is really present and aware of you is enormously increased by the experience of "**eye contact**."

The origin of this feeling may be in part the neurological capability of having it (for instance, the presence in the brain of a particular neuronal arrangement), but also in part what has been acquired very, very early in life, when the infant begins to have that basic recognition of "the other," probably most often "Mother," with whom the infant makes eye contact.

This ability to experience the other "person," and to have this intense subjective experience when making eye contact, is considered to be an extremely important capability, and when it is absent, an individual is considered to be quite impaired.

Now it is this experience of "**the other**" that I want to focus on.

There is a whole world of modeling that occurs around this basic subjective experience. This modeling is both within the Subjective Model and within the Objective Model. So let's look at this modeling.

Within the **Subjective Model**, there is the development of beliefs about the **state** of this "other." We "sense" (feel and believe) that the other is feeling certain things or has certain intentions. It is certainly true that the "mind" (what we are of course talking about) of the other person is believed to be in a particular state because of the movement of the eyebrows and eyelids, the muscles around the mouth and forehead, the position of the body, etc., but what we "**sense**" is not each of

those things separately but a certain state that we react to as a single "**entity**." We react to the other's "**state of mind**," not to his or her eyebrows. We are of course talking in part about the experiencing of "**empathy**." It is essentially the opposite of "dehumanization." The belief that the other person has a "mind" has been referred to as "theory of mind," but we are also talking about what **feels** like a **direct experiencing** of that mind when in the presence of that person, not just the effort to imagine what the other person is experiencing and to label it with words.

Now I am going to suggest that this "**sensing of the other**" is such a fundamental and vital part of subjective experience that it plays a major role in our lives and in our cultures, and is a factor in beliefs that actually have a major impact, both positive and negative, on our quality of life and our decision-making.

I believe that you will probably agree that this fundamental "experiencing" of the other's "presence" is probably a major component of the source of our beliefs about the concept of "**spirit**."

We sense that the other person has a "spirit." We believe that the other person has a "spirit" that is not completely identified with the body of that person. When a person dies in our presence, we tend to lose that feeling, that "perception," of his or her "spirit" or "presence." We are confronted with a "corpse," that is missing its "spirit." But it is not unusual to maintain the feeling that the "spirit" still persists, but with a less apparent location.

Obviously, there is a close connection between the meaning of "spirit" and that of "consciousness." But the meaning is not identical. We might "experience" the anesthetized person as "unconscious," but we would still "experience" that person differently than we would if we suddenly realized that he or she had just died.

Now this experience of the "spirit" of the other person is actually not always confined to the experiencing of humans. Pet owners will assure you that they sense the "spirit" of their pets (though they may not use that terminology). Sometimes this "sensing" is the "experience" of mutual understanding. "My cat understands me. We communicate." And this sort of reported **subjective experience** is referring to more than some conditioning of the animal to our commands and some "conclusion" that the pet owner is arriving at about what the pet must be "thinking."

Many pet owners will easily report that the attachment to their pets is equivalent to their attachment to humans, and the death of a pet can elicit the same amount of grieving that would occur in response to the death of a significant other human.

So some would say that of course their pet has a "spirit." And over the history of our species, I believe that it has been frequent that we have attributed "spirits" to other species. We probably do this a little less than we did a few thousand years ago, but we might question whether perhaps this phenomenon is fairly normal and natural, and whether perhaps there are things about how we have come to be as a part of "civilization" that have caused us to have less of this feeling about other species. Nevertheless, I believe that most of us will recognize a feeling of "presence" on the part of at least some other species.

If we are approached by a tiger, we sense that there is a "being" that is looking at us. And we also sense that this is perhaps a stronger spirit than that of other less ferocious species, and perhaps a stronger spirit than our own. So the "sensing" of the spirit may include a "sensing" of the "strength" of that spirit.

(Some people who have developed positive relationships with such animals sense that those animals love them. And when they are engaging in affectionate interaction with them, those people certainly are not feeling what they would be feeling if they were interacting with automatons.)

So it is not surprising that "primitive" people have related to other species not only on a somewhat equalitarian basis, that is, on the basis of one spirit to another, but also even in a deferential and respectful manner. And an extension of this phenomenon is the preferential and respectful treatment of certain non-human species within certain societies.

Now it is not that much of a leap for someone to feel that he or she is in the presence of a spirit that is **not associated with a currently perceived body**. When we are in the room with someone, we "sense" his or her presence. In fact, that may happen even though the person has, unknown to us, left the room. And, especially when a loved one has died, we sometimes experience the presence of that person's "spirit." Some of us carry on conversations, even if one-way, with loved ones who have died. This may happen especially upon visiting a cemetery.

So it is not surprising that our species has come to have beliefs about and subjectively experience "spirits" that are completely without any accompanying primary physical entity, and thus **can't be seen**. In fact, it is not at all surprising that we have developed the concept of ghosts, gods, goddesses, devils, and demons, both human and animal.

Children are known to believe that inanimate things may be alive and aware of them, a phenomenon called "animism." They have to unlearn such things as they grow older. So perhaps it is natural to have the feeling that parts of the non-animal world are aware of us and have intentions toward us, with our perhaps only fairly recently giving up such ideas, at least as adults. And even adults may be said to be experiencing the "spirits" of inanimate things, as, for instance, when some of us angrily throw a tool that seems to refuse to cooperate with our efforts to use it successfully.

And many of us have religious orientations that foster the "awareness" of "all existence," animate and inanimate, being permeated with something that is "alive," a world in which we are only temporarily walled off into our own personal subjective experience, awaiting the time when we will once again merge with "the universe," becoming "one with all that is."

So what I have been discussing is what I believe all of us can recognize as the concept of "**spirituality**." Spirituality is the "experiencing" of there being "consciousness," or something similar to it, in at least some of those things that are a part of our subjective experience that we do not consider to be part of the "self."

What I have been presenting is what I believe we can see as a **normal and natural part** of the Subjective Model, subjective experience and beliefs about that experience. When spirituality, as here described, is totally absent, serious disorder is present.

On the other hand, we know that there is mental illness in which a person has this experience far beyond what is normal, and is considered to be delusional. There are people who, as a part of their mental illness, "experience" the "presence" of (often malignant) entities that are watching them, and perhaps even putting thoughts in their minds or taking thoughts out of their minds. It is probably true that we are much more prone to think about "delusions" than we were a few thousand years ago, when we probably took the word of those reporting such experiences. And we can ask why we are more prone now to think about the possibility that such phenomena are examples of "delusional ideation," as opposed to the acceptance of such phenomena as manifestations of spirits (good and evil). Let us explore that issue.

What we have been talking about is only subjective experience and the Subjective Model. But what we have developed to such an enormous extent only fairly recently is the **Objective Model**, with its epitome, the **sciences**.

We have seen that the Objective Model is an effort to model "Reality" (that which exists independently of our perceiving it or thinking about it) with accurate beliefs, such that accurate predictions can be utilized in decision-making, and it is based upon the effort to learn the basic **rules of the universe**. Although the Mental Model (a model within the Objective Model) does indeed deal with subjective experience, it is really, as we have seen, a shorthand approach to understanding most accurately whatever it is in the brain that is associated with reports of the experiencing of entities of subjective experience (thoughts, feelings, perceptions, etc.). From the standpoint of the Objective Model, mental entities are models of whatever occurs in the brain when such entities are manifest in subjective experience.

So if we are going to attempt to model spirituality within the Objective Model, we must realize that we can only be talking about whatever is going on in the brain when the individual has the subjective experience of the "presence" of the other, or the "spirit" of the other, whether we make reference to that brain or not.

To clarify this further, let us again use our thought experiment described earlier. With our imagined advanced technology, let us assume that we are able to recreate the exact state of the brain in an individual shortly after the brain has been in that state. So we have the individual interact with the other person such that he or she will have that subjective experience of the "presence" or "spirit" of the other person, and then shortly afterward either remove the other person and reduplicate the state of the individual's brain or keep the other person there but anesthetize or kill the brain of the individual. Under which circumstance would the experiencing of the "presence" or "spirit" of the other person be reproduced? Where is that "spirit," then? Is it not in the individual's brain? Of course, as has been discussed, we know that **that subjective experience is dependent upon the brain**. So the entity that is being modeled in the Objective Model is a particular network of activated neurons in the individual's brain, not something that exists "in" the body of the other person, even though that is the way it **seems**, that is, is **modeled within the Subjective Model**.

So what this means is that something that is very important and perhaps essential to the mental health and quality of life of the individual is something that is a part of the Subjective Model, but not the Objective Model. Spirituality can be **studied** in the **Objective Model** by studying the brain, but it can be **lived** only within the **Subjective Model**. Science will not deal with

spirituality or spirits other than to study the phenomena as activities of the brain that is "experiencing" them, but that does not have anything to do with the value (positive or negative) of the having of the subjective experiences of spirituality.

Science will indeed be able to study the **correlation** of reports of the kind and degree of spirituality on the reported quality of life of the individual and on the likelihood of living well physically and mentally.

So my opinion, already stated and implied, is that spirituality is quite important. But also, it is **completely personal**, in that it obviously **can vary**, as has been described, from one person to another. There is no appropriateness or feasibility of "requiring" others to have a particular spirituality.

However, there are implications for oneself and for others of the nature of the spirituality of a person. There is even the possibility of **good spirituality and bad spirituality**, and a reason why it would be important to know the difference and work toward promoting good spirituality in the self and everyone. So we will look at some practical implications of this idea.

So I would also say that there can be **good spirituality** and **bad spirituality**. Bad spirituality would be any spirituality that leads to otherwise unnecessary pain, suffering, disability, and/or early death (PSDED). Good spirituality would be any spirituality that leads to joy, contentment, and appreciation without PSDED. And I am referring to PSDED of anyone, now and in the future. So a spirituality that leads to the PSDED of self and/or others, now or later, would be bad spirituality according to my values. Spirituality contributed to the motivation of those who flew into the World Trade Center (entailing belief in a God that was approving of the act). My assumption is that those who were doing so felt themselves to be in the presence of a very pleased deity. And because that behavior produced enormous PSDED, there would, in my value system, be something bad about that spirituality.

Many people have a spirituality that includes the feeling of being watched by an invisible entity and being either approved of or disapproved of by that entity. That entity is often currently referred to as "God." So if that entity is seen as (believed to be) approving of and wishing for our inflicting PSDED on each other (or ourselves), then according to my values that spirituality would be bad spirituality.

Now a currently arising approach to preventing bad spirituality is to take a stand against spirituality in any form, and the way that this is done is to point out that science has not demonstrated the presence of spirits, that of God or of anyone or anything else. But the problem is that science is purely an extension of the Objective Model, whereas spirituality is a phenomenon only of the Subjective Model. Let's elaborate upon this idea.

Remember that we identified "will" as being a certain subjective experience (of "intention," etc.) and beliefs about that subjective experience that do not make use of the "rules of the universe" the way the Objective Model does. Beliefs about the rules of the universe come primarily from the Objective Model, mostly from what we have heard from others. Our moment-by-moment decision-making does not generally have anything to do with a "universe," but instead this chair, or this person, or this food, etc. There is the "feeling"/"belief" that I am deciding, and also the "feeling"/"belief" that this other person (or animal, or even occasionally inanimate object) is deciding what to do moment by moment, perhaps with regard to interacting with me or having an effect (good or bad) on me.

So the concept of "free will" is part of the experiencing of "spirit." And science does not have as a part of it "free will," because the concept ignores the "rules of the universe," the learning of which is the fundamental and total nature of science. There is nothing within the Subjective Model that even suggests that **everything** is basically predictable, that is, is following certain rules, whether we know what those rules are or not. Such an idea is irrelevant and useless in the Subjective Model, where we know we "have to be prepared for anything." This is the very opposite of the foundation of the Objective Model, which consists of the basic belief that everything follows certain rules, and that the more we discover them, the more we will be able to do, and the fact that we obviously don't yet know them all, and will never be able to predict everything perfectly, in no way implies that we should stop trying.

And so **spirituality is outside the realm of the sciences**, except insofar as certain sciences might study spirituality by, for instance, correlating reports of spirituality, or certain kinds of

spirituality, with things about the world, including the reported quality of life and the observed effect on the group, society, or species, as well as on certain processes in the brain. There is no way for science to "prove or disprove" the "existence of God," or even find evidence for or against such existence, such "existence" being essentially a component of the Subjective Model, including subjective experience. We know that some people accept all that science comes up with regarding how things work in the universe, but then add that it is God that has decided to make things be that way, rather than some other way. But note that such a belief adds no additional ability to predict anything, and so such belief does not belong within scientific explanation (modeling) nor have any effect on scientific explanation.

So, **what should be our basic orientation toward spirituality?**

First, we can say that spirituality of some sort is normal and natural, and probably necessary for good mental health and an optimal quality of life. Therefore, the having of some sort of spirituality, in itself, should not be a reason to be criticized.

Second, if we remember that subjective experience is all that we ever have, and that there is no way of saying that one person's subjective experience is the same as another's, spirituality is completely personal. One person's spirituality may be quite different from another's. (One can gain some impression of this of course from the linguistic modeling by a person of his or her own Subjective Model beliefs about his or her spirituality, but one's imagination with regard to what such linguistic modeling, or "description," actually means for that person is just that, one's own imagination.)

Third, although spirituality is basically a good thing, it, like anything, can be "disordered" or "diseased" or "unhealthy" or non-optimal. Therefore, it makes sense to devote some attention to **optimizing one's spirituality**.

And how does one do that? We learn to improve our lives drastically beyond that which is normal and natural by our ability to "objectify." We linguistically model our Subjective Model, and thereby are able to share and compare our Subjective Model with others, leading to the attainment by our species, and by each of us to a certain extent, of the Objective Model, and ultimately the sciences. So we can identify those aspects or characteristics of spirituality that lead to PSDED, and work toward changing those. And are there fairly common examples of such aspects of spirituality that indeed promote PSDED?

Through our use of the Objective Model, we have come to realize that there are aspects of our species which, although they have served well for the survival of our species, just as for other species, are not good for promoting the good life for everyone, now and in the future.

One of the most important of such aspects is our tendency toward the establishment of dominance hierarchies on the basis of hostility and aggression. This is no different from what is true of chimps. But we are beginning, just beginning, to realize the huge amount of PSDED that is caused by our living this way, and are moving toward using methods of social cohesion and cooperation that are based upon different basic principles than dominance through "force" (induction of PSDED in others) by those most powerful. Democracy is an example. (And perhaps we can do even better with democracy in the future than we currently do, there being much awareness of imperfection in how we do things now.)

So it is not surprising that our spirituality sometimes takes on such negative properties. It is not surprising that some of our religions include a spirituality that has us feel like there is a God that is vengeful and punitive, and that advocates the same for us, and even sends us to war. (My strong impression is that such a God-experience is an extension of the experiencing of one's parents, as will be further discussed below.) Such spirituality is associated with PSDED, and in fact has been associated with incredible amounts of it. Thus, insofar as we wish to reduce human-induced PSDED as much as possible, it becomes apparent that there is room for **improvement** in at least some religions, and in spirituality in general.

So it is through our use of the Objective Model that we can do some work within our Subjective Model that may have benefit with regard to our own subjective experience and with regard to the quality of life of our species in general.

Changes in our beliefs about our subjective experience result in changes in our subjective experience. We have noted how beliefs about subjective experience can alter the subjective experience by, for instance, adding certain feelings to that subjective experience. What we believe sometimes determines how we feel, so what we believe about an experience determines what we feel about that experience, and that feeling is activated with the experience, becoming a part of that experience, this occurring at a deep level within the brain.

So, if we develop the ability to change our beliefs about our subjective experience, we should expect our subjective experience to change, that is, to feel different. An example would be that of no longer fearing doing something or being in the presence of something. We come to **learn** (believe) that a situation is not dangerous, so we come to **experience** the situation as not dangerous.

And this raises the general question as to whether we can and should be attentive, within ourselves individually and within us as a species, to the **quality** of our spirituality. If we have any ability to determine at least to some extent the quality of our spirituality, then I believe this may be one of the most important efforts we can engage in.

What this means, as an example, is that it is possible that changing one's belief in an angry, vengeful, punitive God into a belief in a loving, understanding, and encouraging God, may have a beneficial effect on one's feelings, mental health, and/or contribution to the world. But we need to look more closely at the "God model."

Let us, then, look more closely at the concept of "God."

(Let us remember that the concept of "God" has no place in the attempt to model Reality "objectively," independently of the Subjective Model, especially using the rules of logic and the rules of evidence, that ultimately give us the scientific methods.)

The concept of "God" is one way of organizing one's Subjective Model, and thus impacting one's subjective experience, for the purpose of optimizing one's quality of life and ability to function, including being able to make the world a better place for others. It generally entails some concept of **superiority** and/or **perfection**, and it is a manifestation of our ability to have **aspirations**, to look beyond our present achievements to something valued even more highly. Having the subjective experience of the "presence" of God is often accompanied by the feeling of **approval and/or disapproval** in addition to the feeling of being under some sort of **supervision** by someone who **cares** what we do.

One can imagine that these feelings are an extension (re-experiencing) of similar feelings we have had as very young (and also not so young) children toward those who have parented us. There is at least the possibility that the experience most of us have had in relationship to actual parents, that is, the states of mind (states of the brain) that our parents have induced in us repeatedly, at times become reproduced in the absence of a person, just as they may later be reproduced in relationship to a leader or a psychotherapist, or perhaps (though not so much anymore) in relationship to another species. We are talking about a "state of mind" that may exist independently of one's immediate situation.

I believe this aspect of spirituality can be good or bad. For instance, if the states of mind associated with feeling the "presence of God" are primarily negative (causing irrational guilt, inferiority, self-loathing, etc.) or are primarily such as to cause the individual to feel approved of for behavior that causes PSDED, then, according to my values, that spirituality would be bad. But my observation is that some individuals do indeed have a better quality of life and contribute more to making the world a better place by virtue of the feeling of having a "relationship with God." And my impression is that such individuals are more likely to experience "God" as loving and understanding, rather than angry, judgmental, and punitive.

And there is the suggestion that **good spirituality** may tend to result in part from **good parenting**, by which I mean parenting that is successful in producing good self-esteem and productive citizenship. And my own (controversial) opinion is that such an outcome is most likely to result from non-punitive child rearing assisted by intensive training in child rearing in general, that is based upon methods that do not purposely induce pain or other discomfort in children as a way to bring about change in behavior.

And we therefore need, I believe, to be aware that as we rear our children, we are molding their spirituality, their basic ways of experiencing "the other," especially the supervising "other," resulting in how they will be experiencing others in their lives and also how they will be experiencing their "gods," if they have them. As stated, I personally believe in child rearing that does not punish, but instead skillfully rewards, teaches, and models for identification. I believe that children should never purposely be made to feel bad, or to feel bad about themselves. I

believe, contrary to what almost everyone else believes, that we can indeed rear children successfully in this manner, if we are properly trained (because such child rearing does not come naturally). Children are going to have much to feel bad about anyway, because of the way life is, with all of its unpredictability and risks and accidents, but we need to be their allies and coaches in their difficult process of adapting to a frequently painful world. I would predict that children who are reared non-punitively will have as their God a loving, understanding, encouraging God that wants us to treat each other well.

So this raises the general question as to whether we should be concerned about the development of spirituality in other people. On the one hand, as I have said, spirituality is a very individual thing, with lots of ways of manifesting itself, but perhaps we can also learn from each other. And that seems to be what is happening, as people specifically involve themselves in various spiritual practices under the supervision of others and/or make a point of listening to and understanding the spirituality of others. So how we develop our spirituality may be an important question, and it would be the kind of question that our religions should be of help with, making use of the findings of science with regard to the correlations between various kinds of spirituality and the various indicators of quality of life (for the individual and for society).

But one important overall conclusion, it seems to me, is that we should not be critical of (and even kill) individuals because they do not have a God or gods, or the right God. Instead, we should recognize that there are all sorts of ways of "being spiritual" in a good sense, and that what counts is how the individual's spirituality affects how he or she treats himself or herself and others. Atheists and theists should feel comfortable sharing their ways of arriving at how to live life, and thereby learn some things from each other.

There is a specific issue that is to a fair extent related to the concept of a deity, namely, the concept of an "**afterlife**."

It is obvious that many, many people achieve enormous comfort from the belief that there is an afterlife. But there are also many people who do not feel the necessity of such belief in order to feel as okay as possible about ultimate death. And there are also many people who suffer **more** because of having the belief that there is an afterlife, because of what they believe it will probably be like, especially if believed determined by an unempathic, judgmental, punitive, wrathful deity.

It is well-recognized, I believe, that if there is no afterlife, then a person who has believed that there is one will be no worse off.

Within the Physical Model, there is no place for an "afterlife," especially since "life" does not mean "consciousness" in that Model.

So, in general, we have been considering the likelihood that we can optimize our spirituality.

For an individual to organize his or her Subjective Model such as to greatly increase his or her quality of life and ability therefore to make the world around him or her a better place seems sensible. But, as noted, the details of that organization are important. So to the extent that an individual or a group believes that there is "some choice as to what to believe," that is, how to live within one's Subjective Model, it makes sense to give such options substantial thought.

And again, I believe a person who does indeed attempt such organization of his or her Subjective Model, should not be criticized simply because his or her way is different than the way some other persons organize their Subjective Models. What should be important, instead, is what kind of person the person is, how he or she treats self and others, and contributes to making the world a better place.

So, for instance, the "belief in an afterlife," in and of itself, should be a matter of **personal choice**, with the recognition by everyone that this particular "belief" says nothing at all about the goodness of that person, nor should the presence or absence of a "belief in an afterlife," in and of itself, be maintained as a requirement for social acceptability.

And, "belief in" God and/or an afterlife, in and of itself, should remain a personal choice, free of social coercion, I believe.

IMPLICATIONS: RELIGION

So we are now considering some perhaps new ways of thinking of religion and spirituality.

Science helps us create an extremely accurate model of Reality, enabling us to do amazing things (both constructive and destructive). Religion helps us to arrive at conclusions as to what we should and should not do (our **ethical** beliefs). And among the things we should do, I believe, are those things designed to optimize our spirituality. And religion can make use of science in that effort.   Spirituality is a part of our Subjective Model, but through our Objective Model, we have the ability to influence, and therefore to improve, our spirituality. What I advocate is that we optimize our spirituality such as to promote not only the survival of our species but also the good life for everyone, now and in the future, the "good life" meaning, as I am using the term, as much joy, contentment, and appreciation as possible and as little pain, suffering, disability, and early death (PSDED) as possible.

Spirituality is a part of our basic way of being, just as is our possession of hands. With our hands we can do good things and bad things, and that is true of our spirituality also, I would contend.

So what we have looked at is the possibility that attention to spirituality has the potential for changing ourselves in drastic ways, such that we become, as a species, far better than we have ever been able to be so far.

All of this suggests that spirituality is to some extent essential to a good quality of life and can even be unusually beneficial to self and others, but that spirituality cannot automatically be regarded as all good for everyone.

Spirituality is highly personal. Some of us would be prone to say that we did not "believe in" spirituality, even though, using the meanings in this discussion, they would be having the normal experiences that could be called "spirituality." They would be referring to their understanding that the sciences had not demonstrated the existence of "spirits" of any sort, and that belief in the existence of such entities would constitute belief in the "supernatural." It should be evident from what I have so far written that there is no basis for praise or criticism for either a stated belief in spirituality or a stated criticism of it. The acid test, so to speak, is the quality of life of the individual and the quality of life of others who are affected by that individual's behavior. And there is no evidence that a stated belief or unbelief in spirituality is automatically associated with beneficial or harmful behavior. On the other hand, there is some evidence that having an accurate understanding of ourselves and each other can indeed be beneficial to us all. And there is evidence, I believe, that our sharing and comparing of our ideas, including our religious ideas, can indeed lead to self-improvement and the progress of our species toward a better life.

Our religions, of course, have characteristically dealt with issues related to spirituality, but their concerns have gone beyond such issues, namely, ethics in general, that is, what we should and should not do. Religions have been hindered, however, by the lack of understanding that spirituality, including Subjective Model beliefs about "God," do not have to be in conflict with the findings of science. It has been the belief that the religions can come up with Objective Model beliefs, about "Reality," that are as good as or better than those of science, that has held the religions back from performing their appropriate role.

If "existential beliefs" means beliefs about how Reality is, was, and will be, and "ethical beliefs" means beliefs about what we should and should not do, then we can see **science as the appropriate social activity to optimize our existential beliefs** and **religion as the appropriate social activity to optimize our ethical beliefs**. And we certainly can see both as necessary, because one without the other would be dangerous. But also, both bad science and bad religion are in themselves dangerous.

So science and religion should be equal partners, each operating within its own sphere of activity, but always with effective communication between each other and effective cooperation with each other, in behalf of making the world a better place. And I believe that the understanding offered here of the "mind-body problem" and the "free will vs. determinism problem" should aid in that development.

IMPLICATIONS: SUPERVISION AND PUNISHMENT

Closely related, I believe, to considerations about spirituality are our thoughts about non-optimal **behavior** of adults, including dangerous behavior, and what should be our response, as a society, mediated through "government," to such behavior when it occurs. And I believe our very basic ideas about child rearing are intimately connected to this issue.

Let us note that we have **an almost universal approach to non-optimal behavior**, at least beyond certain limits, namely: **"Bad behavior should be punished."**

It almost never occurs to us that **this assumption might be incorrect**.

But we do try to make a judgment as to whether the individual "knew what he was doing and knew that it was wrong." And we also give some consideration to whether the impulse to do it was "irresistible." Notice that we are using concepts related to the concept of "free will."

When we work together to establish a social structure that operates to maximize the "good life" (defined above) for everyone, we are using the Objective Model. The concept of "free will," as we have seen, has no place in the Objective Model. Instead, what we are concerned with is "what works," that is, what societal procedures actually do maximize the good life for everyone, now and in the future.

So there should be, and I predict ultimately will be, a **re-evaluation** of that almost universal belief that "bad behavior should be punished."

We obviously believe that it **works**.   But we should also look around and ask **how well** it works.

We must remember that we have never, so far, operated according to a view, held by everyone, that we should not engage in punishment.

There have been limited attempts to substitute "rehabilitation" for punishment, but this has always been within the broader context of a culture that expects some sort of punishment (purposely induced suffering) to accompany such programs or approaches. And when such approaches have been contemplated, concepts such as that of "coddling criminals" have arisen in response.

But as we contemplate where we are going as a species, and what we want to accomplish, serious thought should be given to this basic assumption (of the necessity of punishment).

And right along with assessment of our assumptions about this societal approach to the response to adult non-optimal behavior should be an assessment, I believe, as noted above, of our basic assumptions about child rearing.

Now this in no way means that we can do away with **supervision** (of adults or children). We know that non-optimal behavior is a part of our repertoire, simply on the basis that we have a basic animal nature that makes likely some naturally occurring behaviors that are non-optimal, combined with the predictable lack of perfection of skills in modifying our naturally occurring tendencies.

So if some of us adults have, as a result of biological or experiential factors, a tendency to engage in serious non-optimal behavior, then certainly we must have methods in our "government" that protect both such individuals and others from the consequences of such behavior, i.e., from the behavior itself.

So to take an extreme example, there will undoubtedly be individuals who are dangerous to others, and therefore should be quarantined for as long as that is so.

But note that such quarantine does **not** imply in any way that we should make such individuals **suffer**. We have begun to be concerned about the quality of life for other species that we know have to be supervised to prevent harmful behavior. So even though we keep lions in cages or other enclosures, we try to make them comfortable.

And why does this idea, namely, that of making "criminals" as comfortable as possible, lead to such an outcry from most people? I would maintain that it is because of motivation that has nothing at all to do with helping such individuals develop the skills that would make them no longer a danger to others and has nothing at all to do with preventing them from repeating such behavior, should the attainment of such skills be impossible. That other motivation, I believe, quite obviously is **revenge**. We very much believe in revenge, at all levels of social interaction, from interpersonal to international. We may use euphemisms as we describe what we are doing, because we sort of know that revenge often obviously causes bad things to become worse. So we use words like "justice," and talk of how the bad things that are happening to such individuals are simply their "getting what they deserve," "the consequences of their behavior." (It is not we that are deciding to make the person suffer, but instead the person himself or herself, we say. Our hands are clean.)

Revenge, behavior motivated by anger with the goal of causing PSDED, is indeed a part of our basic animal nature. It promotes survival of the species, but certainly does not promote a good quality of life for everyone.

Needless to say, those people who have been injured or otherwise "wronged" certainly cannot help but have anger toward those who are responsible, but that does not mean that such motivation should be acted upon in the form of revenge. That remains a separate question. (And we do know, of course, that some wronged individuals truly seem to be able to restructure their beliefs such as to no longer experience that anger, such restructuring perhaps being referred to as "forgiveness," a phenomenon that we vaguely recognize indeed has some value.)

And it should not be overlooked that one possible motivation causing behavior injurious to others is that of chronic anger, induced by having been exposed to highly punitive child rearing and/or the bullying that children engage in to do to others what has been done to them within their own experience of being reared.

(By the way, when I speak of punishment of children, I do not just mean formal, or even specifically physical, punishment, but also informal punishment that includes all the ways of speaking to the child, and non-verbal ways of communicating to the child, that deliberately cause the child to feel bad.)

Our current, punitive, approach to non-optimal behavior is such as to cause individuals to have a very great urge to hide such behavior, including especially "lying to stay out of trouble." This results in much lost opportunity to obtain help from others in overcoming such tendencies.

Of course, we should recognize that we humans have not yet developed well-understood and highly reliable methods of changing behavior, especially of adults. But I would maintain that our automatic acceptance of the necessity for punishment actually undermines our obtaining of that knowledge.

Nevertheless, we have indeed experimented with, and have even come to value to some extent, such approaches in certain limited areas. An example would be the effort to provide (non-punitive) psychotherapy for children who are manifesting "behavior problems."

Now let us again note the role that the concept of "**free will**" plays in our natural tendency to **punish**.

If a person is believed to have engaged in the non-optimal behavior "of his or her own free will," then we are especially reluctant to abandon the idea of punishment (revenge). But if the individual were considered to have done what he or she did, for example, as part of a temporal lobe seizure, we would tend to lose our anger toward the individual and give up the idea of punishment. We might still consider even quarantine, with evaluation of the evidence of benefit of treatment before allowing the individual free movement among the rest of us. But we would not want the individual to experience unnecessary suffering.

Yet, the most effective **methods** of reducing the likelihood of repetition of non-optimal behavior, or of reducing the risk of such behavior, are going to be ascertained, not by how we **feel** about the behavior and the individual, but by the **procedures** we have developed within the **Objective Model** for developing **accurate beliefs**, on the basis of which we can **accurately predict** that the likelihood of such behavior will be reduced by those methods. (And these procedures are the ones used in the **sciences**, following the rules of logic and the rules of evidence.)

And the development of such methods (of reducing non-optimal behavior) is most certainly going to involve an understanding of how the brain works, even if our methods of studying how the brain works make use of shorthand models of what is occurring in the brain, namely, "mental entities" within the Mental Model.

We do have to realize that the issue of **whether punishment is effective or not**, or whether certain kinds of punishment, in certain kinds of situations, are effective, or the best possible approach, is a matter for **scientific study**. My belief that punishment, in general, makes things worse, is subject to scientific study. I may be wrong. But the answer should be obtained by scientific study, not by my feelings or those of even the majority of society (or the consensus of society, since it is still possible for everyone to be wrong). Nevertheless, we should note that probably the vast majority of people have the opinion that the answer is "obvious."

So my point of this discussion about the issue of "personal responsibility" is to demonstrate again that the "mind-body problem," including especially the "free will vs. determinism problem," is highly relevant to some of our most serious and basic problems as a species. Our placing "free will" within the Objective Model, where it does not belong, is done, perhaps even most often, as a

way of gratifying our wish for revenge. And if revenge, in the form of something called "punishment" or "justice" or "consequencing," etc., really does make the world a better place, then of course that's what we should do. To me, the opposite seems obvious.

There has been unending debate about two issues that may not be considered obviously to be related, but I think are. There is the question as to when, if ever, abortion should be undertaken, and there is the question as to how we should treat other species, sometimes referred to as the issue of "animal rights."

My observation is that in these debates people talk past each other, maintaining Objective Model beliefs that are related to the "mind-body problem," without ever addressing those beliefs directly (because, I believe, of the recognition that so far there has been no accepted solution to the "mind-body problem").

The abortion debate often seems to hinge mostly on some concept having to do with when "**life**" begins (as indicated in the phrase "pro-life"). I have not seen anyone define "life," however. Instead, there seems to be a mixture of the concept of "life" and "spirit." So the embryo is pictured by some as having something extra (beyond its cells) instilled in it, namely, its "spirit." And as we have seen, this concept of "spirit" is closely connected to the concept of "mind," though usually not identical with it. As far as I can tell, this is what is being referred to by "life."

Within the **Physical Model**, there is the scientific model of "**life**" that considers the term "life" to be an "entity" **by definition only**, since the assumption is made that the development from what we consider inanimate matter to "living" matter is a gradually developing process according to the rules of the universe, such that the line between that which is not life and that which is life can only **arbitrarily** be drawn, **by definition only**. And this model does not then add into the physical world another entity, called "spirit," attached to or existing within this living matter.

Within the **Mental Model**, as we have seen, there is an entity, "**mind**," that exists **by definition only**, and is the "container" for all of the mental "entities," such as "feelings," "thoughts," "memories," etc. We have seen that when this entity, "mind," is introduced into the Physical Model, producing the flawed Physico-Mental Model, then the pseudo-problem develops as to when this entity appeared in the history of the universe. And the same problem is produced when this entity being considered is referred to as "spirit." And it appears even more significantly when the question is asked as to when "mind" or "spirit" enters the body of an animal, especially a human.

In all the debates about abortion, I have not heard this issue conscientiously discussed and understood.

There is also a question that I have not seen dealt with in any public discussions of "animal rights," namely, the question as to what animals, other than humans, have "minds" and/or "spirits."

We have a certain amount of ambivalence and confusion in this area. There are certain animals that are considered to have "rights," and others that don't. And this varies from culture to culture. There are very few cultures that assign "rights" to insects or fish. But certainly many cultures assign "rights," in one way or another, to animals that are used as pets. There is much ambivalence and inconsistency regarding how to treat the animals that we eat, or kill to use their body parts, or use for experiments.

The relevant issues seem to be whether the animal has a "spirit" ("soul"), whether the animal has a "mind," and whether the animal can **suffer** or not. I believe these same issues are involved in the abortion debate. But because people can't come to an agreement regarding these issues, the debates seem just to involve saying the same things over and over, without responding to what the other side is saying. And I believe there is much suffering produced by the decisions in this area.

So let's say a woman becomes pregnant. Now we know that there is probably a **wide range of responses** to that fact, perhaps especially related to how the pregnancy occurred. What tends to happen, **to a greater or lesser extent**, is that the woman (and perhaps also the father of the embryo or fetus, and even perhaps other family members) develop the phenomenon that has been discussed earlier, regarding "spirituality." These individuals develop that same feeling toward this entity growing in the womb that has been developed toward other people, present and absent, and other species, and even occasionally to inanimate entities, as has been described above. The embryo, or fetus, is thought of as not only a collection of cells that can be studied by the biologist, but also as that collection of cells plus a "spirit," or "soul," and ultimately a "mind." This is how this pregnancy is subjectively experienced and consequently modeled (believed to be) within the Subjective Model.

So if something fatal happens to that embryo or fetus, then one can expect, **to a greater or lesser extent**, the same kinds of reactions that occur if an adult human that one is close to, or even an adored pet, dies.

Now in the first part of this presentation, we saw that from the standpoint of the Objective Model this "spirit" actually **exists in the brain of the person having such reactions, not in the entity that has died**. And there is some recognition of this fact, in that people will talk about, as an **existing** entity, "the person he or she **could have** become," implying accurately that such "becoming" had **not yet occurred**. What produces an unanswerable set of problems is the attempt to place this "spirit" into the Objective Model of Reality (that which exists independently of any perception of it or beliefs about it), as if it were actually somehow there and attached to the collection of cells the biologist studies. Remember, within the Mental Model, even if we are talking about "consciousness" (or "mind"), the collection of mental entities associated with that person's brain, we are using shorthand for "whatever exists in the brain that corresponds to the reported subjective experiencing of those mental "entities" ("feelings," thoughts," etc.).

So there may or may not be reason to avoid abortion on the basis of spirituality, but it would have to do with the **spirituality of the mother** (or others involved), **not the embryo or fetus**. The suffering of the **pregnant woman**, now and in the future, will depend to a great extent on her own **idiosyncratic** way of experiencing the awareness of being pregnant. One could readily imagine more suffering by virtue of **having** an abortion or by virtue of **not having** it. And who is in a **better position** to have an accurate belief about such predicted suffering than **she herself**? There may turn out to be exceptions to this principle, but it seems to me that they would have to be exceptions for specific reasons. So, to me, it seems obvious that as a general principle it should be the pregnant woman who decides.

Note that there have been attempts to decide exactly **when** this "spirit" appears as an attachment to the embryo or fetus. Although there have been proposed answers, such as "at conception," there has been little or no debate about the issue, because, I believe, of the awareness that there is

no answer that can be legitimated by any other criterion than how the having of such a belief affects the feelings of the believer. There is no way of coming up with an answer in the Objective Model, other than **by definition only** (in the Mental Model). In other words, it is **purely arbitrary** as to when the spirit can be said to become attached to the embryo or fetus. There is no objective criterion that can be scientifically ascertained, because the entity exists by definition only. ("Has the egg been fertilized? Yes? Then by definition it has a spirit.")

Now the issue of "**suffering**" is substantially **different**. "Suffering" is connected to the concept of "consciousness." That is why we anesthetize people for surgery, assuming that if they are "unconscious," that is, displaying none of the behavior we have come to associate with suffering, then they are probably not suffering. So we are talking about the Mental Model, with its entities associated with reports of suffering and certain other behaviors that are the equivalent in our modeling to such reports.

It is important to note that suffering, within the Objective Model, is assumed to be a process within the brain, and dependent upon the brain functioning relatively normally. Anesthesia is a good example of this dependence upon normal brain function, as is any kind of unconsciousness produced by abnormal brain function. Non-dreaming sleep and coma may be other examples.

But it is therefore important to note that other animals than humans probably can suffer, and indeed their behavior under circumstances that cause ourselves to suffer indicates similar suffering on their part.

So the question then becomes: At what point in the development of the embryo/fetus does **suffering** become possible by virtue of **brain development**?

Now if we use the criterion that abortion must occur before the embryo/fetus has the capacity to suffer, by virtue of brain development, then we are attempting to adhere to some ethical principle that says we should avoid causing needless suffering. If we do that, then, since the mechanism for suffering is in the brains of other animals, we would have to avoid needless suffering of other animals, unless we decide not to care about them. So we are now back to the "animal rights" issue.

Some, however, introduce another "entity" into the discussion, namely, the "soul." As we have already discussed, this concept is almost identical with the concept of "spirit." However, my impression is that many people believe that the "soul" is an entity that is attached only to human bodies. In that case, an ethical rule can be constructed that applies only to the human embryo/fetus, and therefore the issue of what is done to the human embryo/fetus is entirely separable from the issue of what is done to non-human animals.

This way of disregarding the suffering of other animals would seem to be the same phenomenon as dehumanization when applied to humans. We have ways of deciding what living things we do not have to have empathy for.

The same way of disregarding the suffering of other animals is produced by saying that all animals have souls, but that the human soul is somehow different from the souls of all other animals. However, there has never, as far as I know, been any general agreement regarding any

of these ideas regarding the concept of the "soul." I believe that it is fairly clear that this entity, the "soul," is an entity **by definition only**.

And does the entity have utility? It certainly does for those advocating certain positions regarding abortion, but the problem is that those who advocate other positions regarding abortion do not necessarily accept the definition of the entity.

My impression is that people mostly stay away from the issue as to whether there is a soul or not, perhaps out of fear that they will be regarded as inferior by virtue of lack of agreement with that which is considered obvious by a large portion of society. (A form of disparagement of an individual is the statement that he or she "has no soul.")

The most important question, it seems to me, is **what kind of person do you want to be**? What kind of spirituality (whether you call it that or not) do you wish to have? **How concerned about suffering do you wish to be?**

CONCLUDING REMARKS

I hope that I have been successful in calling attention to the importance of these "philosophical" problems that most people have probably not heard of and that most people who have heard of them have tended to regard just as curiosities not worth spending much time thinking about.

If indeed the proper understanding of these problems can contribute to our making our lives drastically different, perhaps drastically better than they ever have been, then each and every one of us should try to understand this set of problems as much as possible. My effort has been to help in that process.

In order for us to have a good life, or even survive as a species, we have to **work together**, to **cooperate**. Such cooperation is dependent upon **agreement** with regard to **what should be done**. What should be done, in order to have a good life and even survive as a species, is that which will lead to certain **specifically desired outcomes** of behavior. In order to achieve those specifically desired outcomes of behavior, the **beliefs** upon which that behavior are dependent must be as **accurate** as possible, to avoid making **mistakes**. In addition, because we are talking about our working together, there must be, as much as possible, **agreement** with regard to those accurate beliefs. The **conscientious, cooperative search for the most accurate beliefs** is I believe the most important thing that we can do. I cannot imagine otherwise. So we are talking about both **agreement** and **accuracy of what we agree to**.

All of the above leads me to the inevitable conclusion that the presence of **unsolved problems** that prevent our coming to agreement about important issues is a situation of **utmost importance** to address.

I have attempted to clarify the nature of one of these unsolved problems, and have attempted to provide a solution that I believe everyone should be able to accept. And then I have shown why I believe that this particular unsolved problem has contributed to some specific issues about which we have shown an inability to agree, with consequent pain, suffering, disability, and early death.

In general, our **tendency to divide up into groups** (as large as nations) according to the having of certain beliefs, about which we cannot agree because of the presence of unsolved problems such as the one I have discussed in this presentation, and then **to fight and kill each other**, or at least to find it easy **to reject empathy for each other and to dehumanize each other**, is one of our worst tendencies, if we want to have good quality of life. We need to do the opposite.

So I hope that as many people as possible will conscientiously read and attempt to understand this presentation, and will find that it is a highly useful contribution to our effort to have better lives, worth advocating for.