

The Meaning of Life, the Universe and Everything:  
A Naturalistic Approach  
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## OBJECTIVE

This talk addresses the question of the meaning of life, the universe and everything from a naturalistic perspective.

## NATURALISM AS A PROGRAM

Before proceeding to the main question, I'd like to spend a few moments discussing the approach. Naturalism may denote either a philosophical program or a philosophical position.

As a program, the naturalist approach is to formulate answers to all questions using only the theoretical commitments required by the natural sciences. And here, by natural sciences, I mean the hard sciences: physics, chemistry, biology and physiology and neurophysiology. In particular, the intention is to exclude commitments made by the "soft" sciences: psychology, anthropology, sociology, as well as any theoretical commitments to non-natural or supernatural entities.

As a position, naturalism denies that there is anything other than what the natural sciences say there is.

As a program, naturalism attempts to limit the resources used for explanation to what is given by the natural sciences, to see how far we can get in our explanations without invoking the soft sciences or non-natural or supernatural explanations.

It would be perfectly reasonable of the most devout supernaturalist to participate in a naturalistic program. Her intentions would be to see at what point the supernatural would need to be invoked as an explanatory principle. The positional naturalist, on the other hand, participates in order to find the limits of what can be explained period.

This talk takes the programmatic approach and does not assume the truth of naturalism as a position.

## THE MEANING OF "MEANING"

Turning to the main question of the meaning of life, the universe and everything, we find something remarkably curious. The meaning of the word "meaning" in this context can mean, variously:

1. the goal or purpose of life,
2. the direction of life, or
3. the function or role of life in the universe.

It turns out that the answers are quite different, depending on the sense of “meaning” being used.

To illustrate the difficulty we face here, I would like to relate part of the plot of a group of works by Douglas Adams, collectively referred to as “The Hitchhiker’s Guide to the Galaxy”.

In the Guide, Adams reveals that, a long, long time ago, almost 17.5 million years, in fact, a race of pan-dimensional beings wanted to know that answer to the meaning of life, the universe and everything. In pursuit of the answer, they built a gigantic computer called “Deep Thought” and when “Deep Thought” was completed, they posed the problem: “What is the answer to life, the universe and everything?”

Deep Thought thought for a very long time (about 7.5 million years, in fact). And when, at last, it had the answer, it called on the pan-dimensional beings to assemble. Deep Thought announced that the answer to life, the universe and everything was 42.

The pan-dimensional beings stared at each other for a long time. Finally, one of them said: “42? 42? How can the answer to life, the universe and everything be 42?” Again, they stared at each other for quite a long time. Finally, one of them said, “Wait a minute, if 42 is the answer, what is the question?” Again, they stared at each other. And, finally, one of them said “I know, let’s ask Deep Thought what the question is; then we’ll know what the answer means”. So they asked Deep Thought what the question was. But this time, Deep Thought did not think for a very long time. Instead, it replied straightaway, “I’m not smart enough to figure out the question – I can, however, give you instructions for building a computer which is smart enough to figure out the question”.

The pan-dimensional beings set about straightaway building their new computer. It was not only a very large computer but it incorporated living, sentient beings as part of its computational matrix. Now the computer was, of course, the entire planet Earth. And human beings were among the living, sentient beings incorporated as part of its computational matrix. Now the Earth thought for a very long time and human beings were constantly worrying about the meaning of life, the universe and everything. After 10 million years, the Earth was close to finding an answer.

Unfortunately, a bureaucratic race of beings, called the Vogons, who believed that they owned the entire universe, determined that they should put a hyperspace bypass through the Earth. Just about the time the question became clear to a few human beings, the Vogons arrived and destroyed the Earth. And the pan-dimensional beings did not get their answer.

The moral of this story is that you need to be clear about what the question is before you can understand what the answer is. If the answer seems wrong, it may be because the question is being asked is, itself, wrong. There are in fact a large number of ways a question can be wrong. Consider, for example, the following questions:

- How many sides does a circle have?
- Is the present king of France bald?
- Are you still beating your wife?

There are many ways that a question can go wrong, most of them having to do with one or more assumptions made by the question. The proper response to such questions is not to attempt to answer them, but, to deny their assumptions. “How many sides does a circle have?” commits what is called a category mistake, circles do not have sides and the proper response is just that: circles are not the kind of thing which has sides. “Is the present king of France bald?” commits an existential mistake. “Are you still beating your wife?” commits (hopefully) a factual mistake. And the proper response is, depending on your circumstances, I’m not married, I am married, but not to a woman, or just I didn’t and I don’t.

There are correct responses to these questions but no correct answers. And in this talk today, we’ll discover more “wrong questions”.

So, what might the real question be? Is it:

1. what is the goal or purpose of life, the universe and everything?
2. what is the direction of life, the universe and everything? or
3. what is the function or role of life in the universe and everything?

Let’s consider each of these in turn.

## WHAT IS THE GOAL OR PURPOSE OF LIFE, THE UNIVERSE AND EVERYTHING?

From a naturalistic point of view, the answer to this question is provided by physics.

One standard characterization of physics is that it is the science of energy and its transformations.

However, the characterization of physics as the science of energy and its transformations leaves out half of what physics is. The other half turns out to be important to the question at hand. To understand what is left out, it is necessary to first understand the philosophical distinction between a substantial cause and formal cause. These two causes are causes of things, rather than causes of events. If we consider a thing, say, a penny, then it has a substantial cause, which is the copper substance of which it is made and a formal cause, which is the shape of the penny. If the thing were made of silver, it would not be a penny, because the substantial cause of a penny is copper; if the thing was in the shape of a dime, then, even if it were made of copper, it would not be a penny. A penny must have both the substance of a penny and the form of a penny.

How is this relevant to the proper characterization of physics? To say that physics is the science of energy is to focus on the substantial causes studied by physics. But

physics also studies formal causes and this it calls “order”. The desired characterization is that physics is the science of both energy and order and their transformations. Now the branch of physics which provides an answer to the question of the goal of the universe is the science of thermodynamics, which originally was the science of heat, hence the name “thermodynamics”, but which now has more general applicability, that is, it applies to energy in all its forms, not just heat.

Thermodynamics provides two measures of order, or rather, one measure of order and one measure of disorder. The measure of the disorder of a system is called its “entropy” whereas the measure of the order of a system is called its “information”. Entropy and information are inverse measures; that is, when entropy increases, information decreases and when information increases, entropy decreases.

But the concept of information used by physics is not our ordinary concept of information. In physics, the information content of a system is something quantifiable and measurable. The ordinary concept of information is qualitative, as in good and bad information, but it is not quantifiable or measurable. However, the physical concept of information used by physics is similar, but more general, than the concept of information used in computer science. It may seem strange to think of a glass containing water and an ice cube as containing more information than a glass containing water at all the same temperature but, for thermodynamics, not only does it contain more information, but it contains quantifiably and measurably more.

Now the concepts of entropy and information play a central role in the laws of thermodynamics.

To understand the laws, you must first understand the difference between a closed and an open system. A closed system is a system in which energy neither enters nor leaves. The universe is an example of a closed system. An open system is a system in which energy enters or leaves or flows through. The earth is an example of an open system. Energy enters the earth through the sunlight falling on it and then radiates it as heat into empty space. So energy flows through the earth.

Now the first law of thermodynamics is that, in any closed system, no event can cause the total entropy of the system to decrease, or, in terms of information, no event can cause the total information of the system to increase. The first law is sometimes paraphrased as “you can’t win”. The second law of thermodynamics is that in any closed system, no event can cause the total entropy of the system to remain the same, or, in terms of information, no event can cause the total information of the system to remain the same. The second law is sometimes paraphrased as “you can’t break even”. Now, if you can’t win and you can’t break even, you can only lose.

The implication for the universe is that everything that happens increases its disorder and, after a sufficient amount of time, disorder will increase to its maximum and nothing new will happen. At the point at which this happens, the temperature of the universe

will drop to absolute zero, which is the temperature at which all molecular motions ceases. This is the so-called “heat death” of the universe.

This then is the answer provided by thermodynamics to the question of the meaning or purpose of the universe, understood as its final goal: it is to die a very cold death.

(It should be noted that some theorists postulate that following the heat death, there will be a gravitational collapse resulting in a “big crunch” and which will return order to the universe. However, even if this is true, it does us no good; because all information derived in this cycle of the universe will be lost and the universe as we know it effectively ends.)

But this answer does not really seem to provide the meaning or purpose of the universe. And it is because it is an answer to the wrong question. The final state of the universe does not provide its meaning.

#### WHAT IS THE DIRECTION OF THE UNIVERSE?

After all, we do not suppose that the purpose or goal of an individual human life is to die. Rather, we are more likely to accept that the purpose or goal of an individual life is to accomplish certain tasks before death. Can it be that the universe has certain tasks to accomplish before it dies? That it is headed in a certain direction?

It is important to recognize, at this point, that we have given up trying to answer the question of the goal or purpose of the universe. For there to be a goal or purpose, there would need to be a purpose-giver, an intelligence outside the universe which gives to it its purpose. This is exactly what the naturalist program disallows. Instead, it substitutes the question of whether the universe has a direction. Here the answer is that the direction of the universe is determined by natural law and not by any supernatural agency.

Again, It is thermodynamics which provides the answer to this question - and the answer is a rather remarkable one. Although it predicts the total order of a closed system decreases with each event, it predicts that the total order of an open system will increase as energy flows through it. Although the total order of the closed system which contains an open system decreases, the open system increases its own order by exporting disorder through the energy flow and into the rest of the closed system. And here are the tasks that the universe is accomplishing: in each of its open systems, it is increasing order, increasing information. This points up an important fact: although energy cannot be created or destroyed, order can be created and can be destroyed.

What exactly happens in each open system depends on the contents of the system as well as the type and quantity of energy flowing through it. Let's take, as an example, the open system we know best – the earth. The key content of the earth is a rich mix of hydrogen, oxygen and carbon atoms.

We can follow the steps by which the unordered earth becomes more ordered. Each step uses what order there was in the previous step to create a new level of order. This is a twelve step program, but not like some other twelve step programs with which some of you may be familiar.

## THE UNIVERSE'S TWELVE STEP PROGRAM

### STEP 1: THE ATOMS OF HYDROGEN, OXYGEN AND CARBON COMBINE TO PRODUCE STABLE HYDROCARBON MOLECULES, OF GREATER AND GREATER COMPLEXITY.

These assemblies occur due to random collisions and electrical attractions between the atoms and molecules, driven by the flow of energy through the system.

### STEP 2: THE FIRST COMPLEX HYDROCARBON MOLECULES BECOME THE FIRST LEVEL OF REPLICATORS, THE GENES.

The concept of a replicator was introduced by the sociobiologist, Edward Wilson, and further elaborated by his student, Richard Dawkins. Dawkins popularized the concept in his book, "The Selfish Gene".

The concept of a replicator is a generalization of the concept of a gene. A replicator is any structure which, given suitable raw materials, constructs duplicates of itself. A gene is the simplest hydrocarbon replicator. Other types of replicators are possible, as we shall see. These simplest hydrocarbon replicators still exist and are called viruses. A virus is an isolated and naked gene and nothing more.

After they appear, the simple replicators compete for raw materials and those who are the most efficient create the most copies of themselves. So the simple replicators find themselves in a competition for raw materials. At some point, some of the replicators regard other replicators as raw materials and the next level of competition is begun.

Note however what it is that is surviving, it is the pattern or the form of the replicator. An individual replicator may or may not survive and may, in fact, be destroyed in the replication process or just through other hazards in the environment. The important thing is that the pattern or form survives, not that the individual replicator survives.

### STEP 3: THE ISOLATED REPLICATORS JOIN TOGETHER TO FORM COMPLEX REPLICATORS, THE PROTO-CHROMOSOMES.

Sometimes being strung together with other genes provided more opportunities for replication. Where such strings offer these advantages, these strings increase at the expense of others. These strings of genes are the precursors of chromosomes, we might call them proto-chromosomes.

Now, Wilson and Dawkins apply the Darwinian principle of survival of the fittest at the level of the gene, rather than at the level of the species, as Darwin had done. Applying the principle of survival of the fittest at the gene level leads to some rather different predictions than applying it at the species level. When the same gene exists in different combinations, it survives if any of the combinations survive. It is known, for example, that human beings and chimpanzees share 95% of the same genes. So, if either human beings or chimpanzees survive, the 95% survive and it is only the 5% which are different which are at risk in any competition between human beings and chimpanzees.

This means however that the competition moves to a higher level of complexity or order, to the level of the proto-chromosome.

STEP 4: THE COMPLEX REPLICATORS REPLICATE MORE TYPES OF HYDROCARBON MOLECULES THAN JUST THEMSELVES AND, IN DOING SO, COAT THEMSELVES WITH HELPER MOLECULES AND PROTECTIVE MOLECULES. THE ORGANIC CELLS.

The helper and protective molecules aid the replicators in their competition with other replicators. The proto-chromosomes become true chromosomes and they, together with their wrapper molecules, become cells.

This means however that the competition moves to an again higher level of complexity or order, to the level of the single cell.

STEP 5: THE CELLS FORM COLONIES OF CELLS OF THE SAME TYPE, MULTI-CELL ORGANISMS.

At some point, colonies of cells are formed and gain an advantage over single cells and the competition again moves to an even higher level of complexity, that of the uniform, multi-celled organism.

STEP 6: CELLS IN THE COLONY DIFFERENTIATE INTO DIFFERENT TYPES OF CELLS WHICH PERFORM DIFFERENT, SPECIALIZED FUNCTIONS, DIFFERENTIATED CELL ORGANISMS.

Competition now moves to the level of differentiated multi-celled organisms.

STEP 7: SOME OF THE DIFFERENTIATED CELLS ACQUIRE THE ABILITY TO PROCESS INFORMATION ABOUT THE EXTERNAL ENVIRONMENT (PERCEPTION) AND TO STORE A REPRESENTATION OF THE WORLD AS IT IS (UNDERSTANDING). THESE ARE ORGANISMS WITH PASSIVE AWARENESS.

At this point, something new is created in the order of things. This new thing which is created is *awareness*, which did not exist before in the universe. For the first time the universe contains a representation of itself, however limited, and, as such, an

awareness of itself, however limited. It may be that plants have such awareness, though it is not obvious what advantage it offers them.

This is also the introduction of the *information processor*, a structure which processes a stream of information and uses it to construct a representation of the world. The representation of the world is *understanding*.

STEP 8: SOME OF THESE ORGANISMS ACQUIRE THE ABILITY TO MOVE TOWARD CERTAIN FEATURES CONTAINED IN THEIR REPRESENTATION OF THE WORLD AS IT IS. THESE ARE ORGANISMS WITH ACTIVE, BUT INSTINCTIVE, AWARENESS.

With the appearance of active but instinctive awareness, competition again moves to a new level. For organisms which can represent the world as it is and which have an instinct to move toward their raw materials have an obvious advantage over passive organisms.

Now the competition moves to the level of quality of representation and quality of instinct. Those organisms with the best representation or the best instincts survive.

STEP 9: SOME OF THESE ORGANISMS ACQUIRE THE ABILITY TO REPRESENT THE WORLD NOT ONLY AS IT IS BUT AS IT COULD BE TOGETHER WITH THE ABILITY TO SELECT BETWEEN THE POSSIBILITIES AND TO PLAN AN EXECUTE PROCEDURES TO REALIZE THE SELECTED POSSIBILITY. THESE ARE ORGANISMS WITH ACTIVE, VOLITIONAL AWARENESS, THESE ARE ORGANISMS WHICH CAN ACT AND CHOOSE.

The appearance of active, volitional awareness requires the simultaneous appearance of several information structures. Some of these structures have to do with the representations of the world. Such structures correspond to what, in computer science, would be called data.

Once one representation of the world is available, it becomes possible to have multiple representations of the world:

- one of these is of the world as it is, which includes the representation of *space* and *objects* in the space,
- another world representation is the world as it will be, which includes the representation of *time* and sequence in time,
- and the last, are representations of the world as it could be, which includes the representation of *possibility*.

But having multiple representations is not useful if there is not some means to select between them and to act on that selections.

To have volitional awareness, an organism must also have information structures which correspond to what, in computer science, would be called programs. The programs required are:

- envisioning possibilities, which creates the representation of the world as it could be from the representation of the world as it is,
- choice of goal, which uses criteria to select amongst the options for a goal,
- envisioning courses of action,
- choice of means, which uses criteria to select amongst the options for action,
- skills, which use the portions of the organism under voluntary control to accomplish a course of action.

With volitional awareness comes something else new: *value*. Instinctive awareness is about “that”; volitional awareness requires a “this” rather than “that”. Once there is a “this” rather than “that”, something new has appeared: a judgment that this is more valuable than that. Value cannot exist until there is volitional awareness and every choice of volitional awareness creates new value.

Another way of describing this creation is as the creation of appreciation. “Appreciation” can mean enjoyment. Here, however, I mean it in the sense of a jeweller appreciating a gem. When the jeweller appreciates a gem, she assigns to it a value. In this this sense, the universe is creating *appreciation*.

**STEP 10: ORGANISMS WITH ACTIVE, VOLITIONAL AWARENESS ACQUIRE THE ABILITY TO COMMUNICATE REPRESENTATIONS TO OTHER AWARENESSES. A SECOND LEVEL OF REPLICATORS, THE MEMES, IS CREATED.**

At some point, individuals with volitional awareness begin to communicate their representations (that is, their ideas) to each other. When communicated, the idea is replicated in the individual receiving the communication. Richard Dawkins calls the most elementary of these representations “memes”, in analogy with genes. These “memes” are replicators but not at the same level as genes, they exist at an entirely new level of complexity. In computer science, genes exist at the level of organic hardware whereas memes exist at the level of organic software.

Once this level of complexity exists, a new level of contest begins: the contest of ideas, the war of memes.

**STEP 11: THE SECOND LEVEL OF REPLICATOR FORM MORE AND MORE COMPLEX COLLECTIONS CALLED SYSTEMS OF BELIEF.**

Like genes, the memes form collections. These collections are systems of belief. The systems of belief can be myths, religions, cultures, scientific theories or simply individual credos. But just like the collections of genes, the collections of memes compete against each other for survival.

Their competition can occur at a much faster rate than the competition between the gene collections. After all, an individual may undergo many changes in their system of belief over their lifetime and cannot change their genes at all.

STEP 12: THE COLLECTION OF VOLITIONAL AWARENESSES ORGANIZES ITSELF INTO FUNCTIONAL WORK ROLES AND EXTENDS ITS POWER THROUGH THE INVENTION OF MACHINES, WHICH ARE USED TO MULTIPLY BOTH PHYSICAL AND COMPUTATIONAL POWER AND ALSO ENCASES ITSELF IN VARIOUS TYPES OF FUNCTIONAL STRUCTURES (HOMES, OFFICES, SCHOOLS, HOSPITALS, CITIES). COMMUNITY, SOCIETY, CIVILIZATION ARE CREATED.

This again is a higher level of order than that of the awarenesses themselves: it is the level of *societies* or *civilizations*. It exists above the level of individual awareness.

## THE TWELVE STEPS SUMMARIZED

At each step, the level of complexity increases, each level using the materials furnished by the previous level. This then is the answer to whether the universe has a direction. In its open systems, the universe unfolds a complexity of order, creating along the way, awareness, appreciation, understanding and the ability to improve. It creates, in fact, a part of itself which is aware of the whole, appreciates the whole, attempts to understand the whole and improve the whole.

## OTHER QUESTIONS OF MEANING

I turn now to a series of questions.

What then is the meaning of life? Or rather, what is the meaning of human life and of communicating volitional awareness in general? This question is best understood in terms of the role played by such awareness in the scheme of the universe rather than any purpose or direction for life. The universe does not have one direction and human life another direction on top of that. Instead human life plays a role within the direction of the universe.

It is role played by volitional awareness to give purpose. With the creation of volitional awareness, the universe creates purpose givers, in the true sense of "purpose". This is not meaning or purpose in the sense of a direction. This is the creation of a choice of this rather than that. The this is assigned a higher value than the that and is thereby assigned a purpose. The this and the that are appreciated.

In the sense of true purpose, human life and volitional awareness in general does not have a meaning, it gives meaning to everything it appreciates.

But being the giver of meaning is true of all volitional awareness. Human beings, however, are more: they are communicating volitional awarenesses. Adding the ability to communicate ideas enables the contest of ideas. Communicating awareness can

- develop original new ideas,
- acquire other ideas through communication with other awareness,
- combine old and new ideas in new ways,
- test the new ideas against experience,
- communicate the test results to others.

Awareness provides understanding of the world as it is; volitional awareness provides an understanding of the world as it is, will be and could be; communicating volitional awareness provides a means to test understanding; it provides a test of truth.

And finally, participation in the communities which communication makes possible provides more opportunities to specialize and try diverse experiments and thus to more thoroughly test understanding than the opportunities offered to isolated awareness.

### WHAT IS THE MEANING OF AN INDIVIDUAL HUMAN LIFE?

At this point, you may note that this answer provides an answer to the role with the universe of human life in general, but it does not tell you the meaning of your life or of any individual human life.

But what then is meaning of an individual human life? Again the answer is in the role played by that life. The meaning of an individual human life is the new ideas it creates, the new combinations of ideas it creates, what it appreciates, what tests it makes of ideas, what it does to make the universe what it could be and what ideas it passes on to others. The sum of all these things is the meaning of an individual life. So, the meaning of each individual life will be different from the meaning of every other.

Does this mean that every life is equally meaningful? In terms of the contest of ideas, the answer is no. The universe will select the good ideas and discard the bad. We are enablers of the contest of ideas. We choose what ideas to adopt and to test but we do not get to choose whether we are right or wrong, successes or failures. Natural law will determine that.

Nor is there a guarantee of success. If we make the wrong choices, the universe will stop this experiment and begin another – and it will be one which does not include us.

### WHAT IS THE MEANING OF EVERYTHING?

At this point you may note that I have provided an answer to the questions of the meaning of life and the meaning of the universe but have not explained the meaning of everything.

To explain what the meaning of everything is, I first have to tell you what everything is. After all, aren't the universe and everything the same thing? The answer is no. The universe is everything that is, was or will be. But the absolute everything is everything that could be, could have been or might yet be. The universe is the totality of what is

actual; the absolute everything is the totality of all possibilities; it includes not only everything that is but everything that can be imagined.

You may now want to know where this absolute everything is. One answer is that it is right here, in the universe, but enfolded, waiting to be unfolded by the operation of natural law. Possibilities exist as enfolded actualities within the universe.

But another, and I think a better answer, is that the absolute everything is natural law itself. Natural law is not a thing within the universe but it is the form of every thing and every configuration of things as well as the form of everything that happens and everything that can happen, that is, the form of all possible change. In one sense, it is the form of the universe; but in another sense, it is the form of all possible universes. For natural law does not merely specify what will happen given what it is; it also specifies what happens if things are other than what they are and also all the other ways that things can be otherwise. In this is the answer then, the absolute everything is everywhere and everywhen and the universe is but one of the possibilities which exists within it.

Finally, my preferred answer is that the enfolded energy of the universe is the substantial cause of the absolute everything whereas natural law is the formal cause of the absolute everything.

What then is the meaning of the absolute everything? The role played by the absolute everything is to define everything that could be. Our most important collective task is to understand natural law and the enfolded possibilities, so that we can choose a possibility which preserves our experiment. It is our guide to discarding dangerous ideas which lead to the disruption of any of the webs of order. The web of life is but one of the webs of order. There are twelve. We cannot afford to damage any of the webs, for, as you have already seen, it is the lower level webs which make possible and sustain the upper.

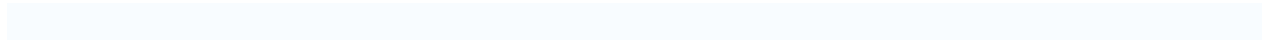
## CONCLUSION

This concludes the basic outline of this naturalistic program. You may find these answers satisfying or not. If you find them satisfying, you may choose to be a positional naturalist. If not, you may choose to embark on a supernaturalist program. In either case, I hope it is clear what the present limits of a naturalist program are.

There is more to be said but no more time to say it. If there are additional questions, I will attempt to answer them in the discussion session to follow or answer personally otherwise. I thank you for your kind attention today.

## BENEDICTION

For this then is the blessing of the universe: to be a part of that part which is aware of the whole, which appreciates the whole, which attempts to understand and improve the whole. This is the blessing of the universe. But with this blessing comes an awesome responsibility: if this opportunity is wasted, if we are not aware, appreciative, attempting to understand and improve, then all value is lost; the universe is for nothing. This, then, is the blessing and the responsibility. Blessed be; responsible be; amen.



## SUGGESTED READINGS

**What is Life?** Erwin Schrodinger

**The Selfish Gene** Richard Dawkins

**The Extended Phenotype** Richard Dawkins

**The River that Flows Uphill** William H. Calvin

**Neurophilosophy** P. S. Churchland

**Scientific Realism and the Plasticity of Mind** Paul M. Churchland

**Matter and Consciousness** Paul M. Churchland

**Consciousness Explained** Daniel C. Dennett