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A NEW SCIENCE OF LIFE with RUPERT SHELDRAKE, Ph.D.

JEFFREY MISHLOVE, Ph.D.: Hello and welcome. With me today is Rupert Sheldrake, a biologist, author of *A New Science of Life* and also *The Presence of the Past*. Dr. Sheldrake is the creator of a new hypothesis of biological functioning, one which has been very controversial and very stimulating in the life sciences. Welcome.

RUPERT SHELDRAKE, Ph.D.: Thank you.

MISHLOVE: Let's begin by talking about the hypothesis of morphic resonance and morphic fields that you've developed as an alternative to mechanistic thinking in biology, and then, Rupert, we'll take a look at some of the philosophical implications of this new view.

SHELDRAKE: The hypothesis starts from the idea that the development of embryos -- the growth of a baby, for example, in the womb, or the growth of a tree from the seed -- that developmental biology depends on fields, organizing fields called morphic fields. The organization of behavior, like the instinct of a spider, for example, depends on similar morphic fields, organizing fields.

MISHLOVE: Rather than being limited simply to genetic processes.

SHELDRAKE: Yes, rather than just being in the genes. I think that genes are grossly overrated, and that a lot of inheritance depends on the memory which is carried within these organizing fields of organisms. This memory is a kind of cumulative memory, a kind of habit memory, which is built up through a kind of pool of species experience, depending on a process I call morphic resonance.

MISHLOVE: When you talk about these fields containing a memory, they almost begin to sound like the mind itself, in some funny way.

SHELDRAKE: Well, if they're like the mind, they're much more like the unconscious mind than the conscious mind, because we have to remember that in our own minds, a large part of the mind, as Freud and Jung and others have told us, is unconscious. And what Jung and his followers have emphasized is that we all not only have our own personal unconscious, but we tune in to or access the collective unconscious, which is a collective memory of the species. What I'm saying is very like that idea, but it's not confined to human beings, it's right through nature.

MISHLOVE: You know, you began developing your theory as a way of addressing the great unsolved problems of biology, and I suppose one of those unsolved problems is memory itself.

SHELDRAKE: Memory is indeed one of the great unsolved problems. How you or I remember what we did yesterday, or how we remember people's names, and how we recognize people -- all the ordinary facts of ordinary, day-to-day memory are profoundly mysterious. It's usually assumed that all these things are stored inside our brains as physical traces of some kind. Now, none of us has ever seen a physical trace inside our brains, and scientists who've spent many years looking for them inside the brains of people and especially rats and monkeys, have failed to find them too.

MISHLOVE: Now, I know Wilder Penfield found he could stimulate memories by putting electrodes on different parts of the brain, but as I recall he was never able to get the same memory twice that way.

SHELDRAKE: No. And you see, even if he could evoke memories by stimulating part of the brain, it doesn't prove they're stored there. For example, if I stimulate the tuning knob of your TV set and it tunes on to a different channel, it doesn't prove that all the programs on that other channel are stored inside the bit that I've stimulated, namely the tuning knob, and it could be that it's just simply part of the receiving or tuning system. I think the brain is like a tuning system, and that we tune in to our own memories by a process of morphic resonance, which I believe is a general process which happens throughout the whole of nature.

MISHLOVE: Let's define for our viewers what you mean when you use the terms morphic resonance or morphic fields. What does morphic mean to you in this sense?

SHELDRAKE: Morphic comes from the Greek word for form, morphe, and a morphic field is a field of form, or field of pattern or order or structure. Such fields organize not only the forms of living organisms, but also the forms of crystals, of molecules. Each kind of molecule, each protein, for example, has its own kind of morphic field -- a hemoglobin field, an insulin field; each kind of crystal, each kind of organism, and each kind of instinct or pattern of behavior. So these fields are the organizing fields of nature. There are many kinds of them, because there are many kinds of things and patterns in nature. And I think our own mental life depends on just this kind of field.

MISHLOVE: So in a sense what you seem to be suggesting is that your concept of the morphic field is a way of unifying the Jungian notion of the subconscious mind with all of nature.

SHELDRAKE: Yes. I don't use the word mind, in fact, because it leads immediately to controversies, people saying, "What do you mean by mind?" But I think that through this morphic field theory of organization in nature, we can come to have a new understanding of the nature of the mind -- what would in the end be a field theory of the mind.

MISHLOVE: That's really intriguing. How do you view creativity, then, and -- well, let's start with creativity -- some of the other aspects of the human process?

SHELDRAKE: Well, I'd rather put it in a broad, sort of natural framework, because creativity is not confined to people, of course. The evolutionary process shows us that the whole of life, over long periods of time, has involved a great creative process.

MISHLOVE: I suppose a new species is an example of creativity.

SHELDRAKE: A new species, a new instinct, all new forms of life. And of course there are millions of them that have come into being throughout the course of history on this earth.

MISHLOVE: And you're suggesting, then, that it's not merely random mutation and natural selection, but something more creative underlying this process.

SHELDRAKE: Well, I think there are two processes at work. One is the principle of habit based on morphic fields. Through established patterns of activity, the more often they're repeated, they become more probable. So nature is essentially habit-forming, and all aspects of nature, I think, are based on the principle of habit. Indeed, I'd go so far as to say that what we call the laws of nature are more like the habits of nature. So I think habit is one principle. The habits of animals and plants are what give them their habits of growth and their habits of behaving, or instincts. Now, at the same time there's a principle of creativity, because if things all remained in grooves of

habit nothing would ever change. So I think that right through the whole of nature, and then coming back to ourselves, we see these two principles at work -- the principle of habit, whereby things through repetition become more and more probable to happen again, and at the same time more unconscious. Our own habits are largely unconscious, and the great majority of our behavior is determined by these unconscious habits. For example, my speaking English is an unconscious habit. I don't have to think how to form each word, or what each word means. If I'm speaking a language I don't know very well, like Telegu, a South Indian language I know slightly, I have to think a lot to try and recall the words. It's not habitual; I'm not fluent. So habit underlies a lot of our activity, but at the same time there's a kind of openness to the new, which is where creativity comes in. And creativity essentially involves the appearance of new patterns or new forms or new structures, or what I would call new morphic fields. For example, at one time there were no bicycles. Now there are millions of them in the world, and at some stage somebody invented the bicycle. For the first time, the bicycle was made. For the first time, somebody rode a bicycle. Before that, there hadn't been a habit of bicycle riding. Now tens and hundreds of millions of people in the world have the habit of bicycle riding, and I think precisely because so many people have that habit, it's easier for everybody else to learn to ride bicycles, on average, by morphic resonance from this habitual activity.

MISHLOVE: In other words, there is now a morphic resonance, or morphic field, for bicycle making and bicycle riding.

SHELDRAKE: Yes.

MISHLOVE: And it must embrace the whole planet in a way that didn't exist at one time.

SHELDRAKE: Yes, a hundred years ago, or certainly two hundred years ago, it was undreamt of, it hadn't even been dreamed of. Now it's everywhere. So at a certain stage there was a creative step when the first bicycle was invented, the first bicycle was ridden, and the whole of this came into being. So there's an example of how what started as a creative step -- and whoever thought of it must have been very aware of what they were trying to do -- then becomes a kind of habit. When anyone rides a bicycle, they're usually not thinking of how they ride it, working out which muscles to use; it just happens automatically.

MISHLOVE: Your emphasis on the notion of habit is intriguing to me. You were telling me earlier that, say, in the nineteenth century the mechanistic biologists who were trying to reduce all of biology to some kind of material, machine-like phenomenon, also felt quite comfortable thinking of human beings as different from biological creation -- we could be divine, we could have a soul, but the rest of nature was like a machine. And what you seem to be saying is we are very much like the rest of nature, but nature itself isn't really a machine, either. Nature partakes of some of the same soulful quality that we have.

SHELDRAKE: Yes. I think the nineteenth century typically involved a very species-ist view -- that we could be alive and have minds, and in fact science itself depended on the possession of human consciousness by scientists, and scientists were conscious, rational beings, and other people were as well, to various extents. Most scientists thought that none of them were as rational as scientists. But nevertheless, the rest of nature was seen as completely inanimate, devoid of psyche or mind. Whereas what I would say is that we have much more in common with the rest of nature, because the rest of nature is alive, as we are. So this is a view which would see nature as essentially alive, and the principles of memory and habit, which we know from our own experience, I think are general principles that operate throughout the whole of nature.

MISHLOVE: You also have an interesting trick I think I picked up in your writing, and that is that whereas the mechanistic reductionists would like to reduce all of nature, all of life, to some kind of basic -- I suppose if they had their way -- down to physics, down to molecules colliding, physicists have now come to a point where they realize that the very basics of physics is in the mind of the observer itself, which suggests, and I think your theory gets at it, that there is something very mindlike underlying all of biology, all of physics.

SHELDRAKE: Yes, I think there is, and I think the question is to find out how mindlike it is. If we could begin to work out just in what way it was mindlike, we might come to a better understanding of our own minds and the way they are related to our bodies, because right now nobody has the faintest idea how the mind's related to the body. Descartes in the seventeenth century thought that it interacted with the brain in the pineal gland, and all that's happened in the last three hundred years is it's moved a couple of inches to the cerebral cortex, and most people now would think the mind in some way is associated with the cerebral cortex. Some people would say it doesn't do anything, it's just like a kind of phosphorescence around the nerve endings. Others would say it interacts with the cerebral cortex, but they couldn't say how. Others would say, well, maybe it does it by interfering with quantum processes in the brain. But I think that if we see that these mental processes are like what I'd call morphic fields, they're organizing structures or patterns which organize brain activity, and that such fields also organize the development of embryos, the development of our bodies in the first place, and work throughout the whole of nature, that which is mindlike in nature becomes easier to relate to our own minds. And as I said earlier, the important part, most of it, is more like our unconscious minds than our conscious ones. It would be a mistake, I think, to say that the whole of nature is conscious, because the whole of our own activity isn't conscious. The vast majority of our behavior is not.

MISHLOVE: Well, one of the stimulating things that your theory has done is it's caused us to look once again at the issue of the inheritance of acquired characteristics, which was, I think, until recently, a taboo topic that you've reopened. But it almost seems as if what your theory would reopen as well is the whole notion of magic, and that is that by concentrating on a certain image one can create that; it can become real. Many magical traditions, and even modern traditions like the power of positive thinking, work along these lines, and it would seem to be consistent with your notion of morphic fields.

SHELDRAKE: Yes, well, it is like magic. I mean, morphic resonance, the influence of like upon like, works across time and space. And in that sense it is like magic; there's nothing in between, and yet this influence passes. But what we have to see is that for the last three hundred years physics and science in general have been domesticating magic, and what was magic yesterday becomes science today. If you think of it -- and we don't usually think of it because we're so used to it -- Newton's idea, which is the very basis of mechanistic science, that every particle of matter affects every other particle of matter in the universe through empty space -- the idea of gravitation and attraction --

MISHLOVE: Action at a distance.

SHELDRAKE: Action at a distance -- is magic; it's a kind of magic. And before Newton, the only people who'd suggested the influences of distant planets and so on, on the earth, were the astrologers.

MISHLOVE: Newton was rather embarrassed by this. He saw this as a big unsolved problem in his own theory.

SHELDRAKE: Yes, and indeed no one really solved it, and Einstein came along much later and said, well, it's not action at a distance through empty space; it's action at a distance through fields, gravitational fields. And so fields have now become the medium of interconnection at a distance. Fields have become the medium of magic, as it were. And nowhere is that more clearly seen than in television. I mean, two hundred years ago it would have been pure magic that people could have seen us on a television screen, far away from where we're talking. It's the kind of thing that's talked about in the ancient books of the Hindus -- the idea of seeing things at a distance. And yet today we don't even think twice about it.

MISHLOVE: You wrote *A New Science of Life* while you were living in an ashram in India. You obviously have deep spiritual interests as well as deep scientific interests, and I wonder, do you see these things converging?

SHELDRAKE: Well, I do. I think, you see, that the gulf between science and religion that we've had for the last three hundred years in the West is largely owing to the mechanistic world view, which led to a complete transformation of our view of nature. Before the seventeenth century, the standard view in Europe, the standard Christian view, was that nature is alive, nature is animate, animals have souls. The very word anima, the Latin word for soul, is the basis of our word animal; it means beings with souls. Plants had souls; the whole earth had a soul; planets had souls, or spirits, or intelligences. So everyone until the seventeenth century was living in a living universe, and the Christian God was a living God who made a living world. The seventeenth-century revolution turned the world into a great machine, and God then, in the view of Protestant theologians especially, became the world- machine-making God; he became the great mechanic of the universe. And then, by the beginning of the nineteenth century, many people said, well, we can get rid of this kind of god, and just have a mechanical universe without God. And the basis of the controversies has really been

rooted in this mechanistic world view. If we go back to the idea of nature as a living organism, the whole of nature as being alive, and ourselves as living beings within a living world, a living world that has many levels of organization from molecules, atoms, cells, the whole planet, the solar system, the galaxy, the whole universe -- at every level there's a kind of integrity, a wholeness that's more than the sum of the parts -- then we can think about the relation between science and religion in a new light, a different way than has been possible for the last three hundred years.

MISHLOVE: In other words, by using this notion of levels, or hierarchies of meaning, perhaps, one can hold in one's mind a kind of a materialistic world view which would not be inconsistent with thinking about human creativity and even a divine influence as well.

SHELDRAKE: Well, I wouldn't call it a materialistic world view. I'd call it a world view that understands nature as composed of organisms at different levels of complexity -- a molecule being one kind of organism, a cell another; a tissue, an organ, ourselves, and whole societies one could also see as organisms. Yes, I think it's a view where we can have science that's a proper science that incorporates the findings of the last three hundred years of mechanistic science, but which opens up whole new frontiers to experimentation. It's not going to be a matter of blind faith, I think, this new kind of science, if it happens, but a genuine empirical inquiry that will take us further.

MISHLOVE: I almost get the sense that the perspective which you're advocating is one which may at some future point be seen as a synthesis of the current conflict we have between religious fundamentalists on the one hand, and the evolutionists on the other, because you seem to be agreeing with the fundamentalists that our view of evolution is really incomplete and needs to be expanded, needs to incorporate some sense of mind, perhaps even a sense of the divine.

SHELDRAKE: Yes, I think both sides have a point. I mean, the materialistic, neo-Darwinian theory of evolution says that evolution is entirely blind and purposeless and governed by blind laws, happening by blind chance, and that it's all just a kind of accident, whereas the other view says that there is a purpose, there is a mind behind the whole of nature, but then ties it to a literal interpretation of the book of Genesis. Of course there have been many people who've rejected both those extremes, and the best known in recent years, of course, is Teilhard de Chardin, the French Jesuit philosopher who said that yes indeed, evolution is going on, and evolution is being drawn towards a future goal, the omega point, and so there's both a purpose and a kind of mind behind and within the evolutionary process, and there's evolution. He didn't have to say you either have God, or you have evolution. I think there are many people who would like to have a view of evolution which permits both.

MISHLOVE: And I gather you're in substantial agreement with Teilhard.

SHELDRAKE: I am, yes. But I think that when thinking about this, one has to think what kind of god or what kind of spiritual guiding principle one is thinking of. And the kind of god that for many people has become incredible is the machine-making God of the seventeenth century, where God stands totally outside the universe, thinks up the mathematical laws of nature, and creates the universe like a great machine. I think that that kind of god is, or will be, as obsolete as the mechanistic world picture that went with it, and any new conception of God we develop or come towards, I think, would at the same time be closer to much older conceptions of God -- not only in the Christian, but in other religious traditions, as a living, creative source of a living, creative world.

MISHLOVE: In other words, you might draw some inspiration from the Biblical phrase that God created us in his image. And as you look deeply into nature and see these morphic resonances, that must be for you part of your own image of God.

SHELDRAKE: Oh, what a difficult question.

MISHLOVE: I realize it's very presumptuous of me, but I wonder if you wouldn't mind --

SHELDRAKE: Well, I think that, if you like, the interplay of habit and creativity, which we see within ourselves, is in a sense an interplay of what's fixed and what's changeable, and I think that in many traditions there have been images of the ultimate which have involved both those principles. In the Christian doctrine of the trinity, the fixed is the logos, the second person of the trinity; the changeable is the spirit, which is free-flowing, like the wind. And the two together are included within the third, the ground of both.

MISHLOVE: Sort of like yin and yang, or order and chaos.

SHELDRAKE: It's like yin and yang. Yin and yang, you see, are two principles, but it's actually a trinity, because the circle that encloses them both makes the yin and yang, the duality, part of a greater whole. It's, if you like, the third principle, the circle around the yin and yang. So whenever you have a kind of duality of principles, as we see everywhere in nature, it's full of dualities -- form and energy, positive and negative in electricity, and so on -- wherever you have these kinds of dualities, and wherever we find them in ourselves, the resolution is usually to be found in some higher unity which contains and includes both.

MISHLOVE: The ground of existence, so to speak.

SHELDRAKE: Yes. And insofar as one could say that we're made in the image of God, I think it's in that kind of sense that we're made in the image of God, not in the kind of crude sense that God looks like you or me, or actually looks like a person. And I don't think it's ever really been understood that way by serious theologians.

MISHLOVE: But you know, your concept of the morphic field, of morphic resonance, really intrigues me, because as I believe you've pointed out earlier, it's a great mystery to us what fields are at all, and it almost seems like to understand the mystery of what a morphic resonance would be, would be comparable to understanding the mystery of God.

SHELDRAKE: I think it would be more comparable to understanding the mystery of creation, or the world we live in, because the essential feature of morphic resonance is this kind of memory in nature and this kind of habit. Now, it's not clear to what extent memory and habit are inherent in the nature of God. This leads one into very deep and theological waters. But there have been, throughout the whole history of theological thought in the West, ideas which would say that within God is the world soul, the anima mundi, which is that, if you like, in modern terms it would be the field of the universe -- the universal field, the primal unified field, which modern physicists are talking about all the time. It's the primal field that was there at the beginning of the big bang which gave rise to the other fields of nature.

MISHLOVE: The ground underlying all of creation.

SHELDRAKE: The ground underlying all of creation. Now, within that, I think, the principle of memory and habit are operative -- what one could say is the ground of that ground. If one wants to find the ground to that ground, which would be God in traditional terms, it probably goes beyond any adequate concept we can form. But the ground of this universe, which would be the primal field of the universe, and all the energy inherent within it, and all the creativity latent within it, I think, would include this principle of memory or habit which I'm talking about.

MISHLOVE: You seem to be suggesting, then, that what we call the laws of the universe, which we sometimes believe are inviolable and extend indefinitely and permanently, that these laws are in effect memories and habits that have evolved as if the universe itself were an organism.

SHELDRAKE: Exactly that, yes. And the conventional view, you see, would be that the laws of nature -- eternal, omnipotent, omniscient, universal, and so on -- they're derived in fact from the seventeenth-century idea that the laws of nature were made up by God and existed within his mind. When people, those who did, got rid of the idea of the mind of God from nature, they were left with eternal laws which still had most of the properties of God. And even the most hard-nosed, mechanistic scientist

actually believes implicitly in the existence of these universal, timeless laws that are beyond time and space, present everywhere and always. Now, there's no reason at all for thinking that's the case.

MISHLOVE: There's no getting away from God, it would seem.

SHELDRAKE: Well, God here is replaced by laws, but they have most of the same mysterious properties.

MISHLOVE: Rupert, we're out of time. I'm going to have to cut you short here. It's been a real pleasure having you with me --

SHELDRAKE: It's a pleasure to be here.

MISHLOVE: -- discussing this range of subjects, from the development of an organism and its habits, to conceiving of the entire universe as an organism. Thank you very much for being with me.

SHELDRAKE: My pleasure.

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