

Dr. Redwood Interviews Beverly Rubik, Ph.D. "Frontier Science"

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Beverly Rubik is a leading spokesperson for research in consciousness studies, subtle energies, and alternative and complementary medicine, frontier areas that challenge the dominant biomedical paradigm.

Trained as a biophysicist at the University of California at Berkeley (Ph.D., 1979), she conducted postdoctoral research and supervised graduate student research at Lawrence Berkeley Laboratory while also serving as a faculty member at San Francisco State University from 1979 to 1988. In 1988 Dr. Rubik relocated to Philadelphia to become founding director of the *Center for Frontier Sciences* at Temple University. The Center facilitated global information exchange, networking, and education on frontier issues of science and medicine. Two important *foci* of the Center were alternative -complementary medicine and the matter-mind-spirit interrelationship. The Center was the first of its kind in the world linked to a major university and spawned sister centers at the University of Guadalajara, Mexico and the University of Milano, Italy. A journal, *Frontier Perspectives*, was founded in 1990 by Rubik and was published and distributed semi-annually to over 3,500 affiliates of the Center in 58 countries.

In late 1995 Dr. Rubik left Temple University to continue her work as an independent scholar and consultant and founded the *Institute for Frontier Science*, a nonprofit corporation. She is presently writing a book on the frontiers of science and medicine. An anthology of her writings, *Life at the Edge of Science*, was published in 1996. Rubik is also a consultant for corporations involved in the nutrition and bioelectromagnetic industries, lectures widely at universities and conferences in the United States and abroad, and has served as Visiting Assistant Professor of Medicine at the University of Arizona at Tucson, in the integrative medicine program under Dr. Andrew Weil and as an adjunct faculty member at Union Institute, California Institute for Human Science.

From 1992 to 1994, Dr. Rubik served as a member of the Advisory Panel to the National Institutes of Health (NIH) Office of Alternative Medicine and was Panel Chair on Bioelectromagnetics. She presently serves on the editorial board of several journals, including the *Alternative Health Practitioner*; *Alternative Therapies in Health and Medicine*; and the *Journal of Complementary Therapies in Medicine* (UK). She is a member of the advisory board of the *Journal of Subtle Energies* and the *European Journal of Classical Homeopathy*. She also serves as an advisory board member to the John Templeton Foundation and the Society for Scientific Exploration, and has served the MacArthur Foundation as a nominator of fellows.

In this interview with Dr. Daniel Redwood, Dr. Rubik discusses the limitations of the mechanistic worldview underlying conventional medicine and the emerging research that may constitute the basis of a more inclusive paradigm. In particular, she feels it essential that health researchers and practitioners consider the role of energy flows in living systems rather than limiting their purview to molecular biochemistry. Moreover, she believes the new paradigm must take into account recent research on the role of the mind in healing (including healing at a distance).

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DANIEL REDWOOD: You are trained as a biophysicist, but are best known as a proponent of "frontier science." What is frontier science, and what led you in this direction?

BEVERLY RUBIK: It's a term used to differentiate it from mainstream science, which is most academic science, and also to differentiate it from fringe science, which is very unconventional stuff. Frontier science is science that is outside of the mainstream but has a significant number of scholars asking questions within its domain. Topics such as consciousness studies and the science underlying alternative medicine are examples of what I call frontier science.

REDWOOD: What do you see as the primary features of the dominant scientific paradigm, and how does frontier science challenge it?

RUBIK: The dominant biomedical or biological paradigm is where life is viewed mainly as a bag of biomolecules, and a human being is a collection of organs, tissues, and other things that it can be reduced to. In that paradigm, the whole is considered the sum of its parts. It's also a mechanistic or materialistic worldview. For example, in the dominant paradigm consciousness is nothing but brain processes or the results of brain processes. Some of its chief features are materialism, reductionism, and fragmentation.

REDWOOD: What are the problems with that paradigm?

RUBIK: I don't think that a molecular view of life is sufficient for understanding holistic medicine or the whole human being.

REDWOOD: What other factors need to be included to create a larger or more applicable paradigm?

RUBIK: We need to consider energy flows in biology, the subtle energies that can't really be reduced to molecules. A good example is acupuncture. I'm aware that some features of acupuncture have been reduced to molecules, such as the analgesic effects that have purportedly been explained in terms of endorphin release. But the nonlocality of acupuncture, and why stimulating at the crown of the head might cure hemorrhoids, is beyond anybody's comprehension from a molecular view. The specificity of that point for hemorrhoids and other points on the body for other internal organs certainly challenge it.

REDWOOD: Why do you think conventional medicine became so focused on the biochemical, molecular level as opposed to the other possibilities?

RUBIK: I think it's pretty obvious. We have a pharmaceutical industry that has grown up in the last 50 years that has been highly profitable and somewhat successful in dealing with acute diseases. So the approach has been to look for magic bullets in medicine. That approach works well with acute diseases, but it does not work for chronic degenerative disease. So we see the failure of that approach. Also, conventional medicine has failed to treat the whole person. It tends to reduce the person to their diagnosis, to the disease. In hospitals, people are even referred to as their disease [i.e. the pancreatic cancer in room 205]. Increasingly, people are upset at this. Patients want to be treated as whole persons, whose minds and spirits have something to do with their healing.

There's a body of evidence from frontier science that leads us to believe that mind is more than brain function, because conscious intention and prayer operating over even long distances can have beneficial effects on people. There have been experiments on distant healing and prayer, showing that people can have effects on other people as well as on microorganisms. I myself have conducted some of these experiments.

REDWOOD: What are some of the important studies in the field?

RUBIK: There was a recent study that came out of California Pacific Medical Center, published in December 1998 in the Western Medical Journal. It was a study on AIDS patients who were treated over long distances by various types of spiritual healers with different religious orientations. The healers were not acquainted with the patients. They simply had the name of the patient. The outcome of that study, which went on for some weeks, was that those patients who were prayed for, unlike the control group, had fewer infections and better prognoses. I don't think there were any deaths in the prayed-for group as opposed to the control group. These were pretty advanced AIDS patients, so deaths would have been expected in both groups. This study is just one example. There are experiments on microbes that I began doing 20 years ago, which showed that consciousness can have beneficial effects on the growth and motility of simple cells, which probably don't have consciousness as we do. So there's something more going on beyond the placebo effect, which might result from believing that you're being prayed for.

REDWOOD: How do you think that works? How does that connection, that effect, occur?

RUBIK: For local healing, where people hold their hands near test tubes of cells, or around patients, there may be a different mechanism than in distant-healing experiments. Let me first talk about local healing, with which I've had the most experience. It's possible that there may be an energy emission (even if it's a very low level energy that the human body emits). That information may be extremely coherent and meaningful to the receiver, able to alter their energetics and promote healing. In the distant-healing experiments, we can't invoke energy as an explanation because the weak energy field around the body would dissipate greatly over distance. So we have to consider other possibilities.

REDWOOD: Such as?

RUBIK: We talk about mind in frontier physics as if it were a nonlocal phenomenon, a la Bell's Theorem. In other words, in the quantum world everything is fundamentally interconnected. And mind has this property that when intention is applied it can be highly specific toward another person, even on the other side of the planet, and effects can be seen. We really don't fundamentally understand consciousness, but we can make an analogy to the world of quantum mechanics since we see evidence of this nonlocality in the realm of particles. In other words, if particles were once connected and later become separated from each other, they remain correlated even if they're on opposite ends of the universe. Humans apparently have the same kind of holistic interconnectedness that remains. We don't understand consciousness, but we can invoke the possibility of nonlocality from quantum physics. Perhaps it is how prayer and intention to heal work successfully over long distance. Again, these phenomena are not fully explained by science as we know it. I would say the experimental evidence is certainly strong, but our theories are weak.

REDWOOD: Does the lack of a well-developed theory to explain these measured effects cause

difficulty in allowing the data to be broadly accepted? That is, if you've got the clinical data showing that the effect is there but you don't yet have an acceptable theory to explain it, does this cause political problems in allowing people who might otherwise accept the clinical data to accept it?

RUBIK: Yes, but it's even worse in this case, because it's not just observations lacking a theory, but something deeply challenging a whole paradigm, and even the foundations of science. If consciousness can interact with physical or material reality, that challenges one of the premises of science itself--that mind is passive and can only observe nature. So it's much deeper than the lack of a theory. Certainly the lack of an appropriate theory is part of the fear and loathing that some people feel about this topic, but the deeper problem is that it seriously challenges the foundations of science.

REDWOOD: What kinds of experiments do you think could move this process forward, to catalyze a paradigm shift?

RUBIK: First of all, no single study can catalyze a paradigm shift. According to the history and sociology of science, there is a growing body of data that challenges the paradigm that's swept under the rug, and when the heap of data gets so big that you can't hide it under the rug, it gives birth to a new paradigm.

The types of experiments that I've been involved in are key in promoting this shift. There's only one conscious entity involved, the researcher, or in some cases also a healer. But the recipients of the healing are cells, which are not conscious like people are. They don't know about the nature of the experiment. If cells respond in such an experiment where healers are laying hands on them, or talking to them, or communicating with them across distances, then there is a pretty strong bet that consciousness is interacting with a physical reality. Whereas if people are involved, such as in the AIDS experiment I mentioned, and they are told that they might be in the prayed-for group, or that they might not be, they may have high expectations, such as, "Gee, someone's praying for me, I feel better already." So there's the placebo effect at work, and not necessarily direct physical intervention by another conscious being.

REDWOOD: Is the electromagnetic field of the body involved in human health? Can there be external influences that impact upon it negatively and thereby cause disease?

RUBIK: I think that both are true. We have some epidemiological evidence that humans, especially children, placed in schools or homes around power lines, have higher incidences of leukemia, lymphoma, and brain tumors. There were also reports about ten years ago that pregnant women sleeping under electric blankets (at least the older ones) had higher rates of miscarriages and birth defects in their offspring. It's not so clear for adults, however. The electropollution from our environment poses yet another stressor on our lives. The way stressors act upon us is that one plus one plus one may equal nine, and then you snap and get sick.

So it's very hard to point the finger to say bioelectromagnetics directly causes a particular tumor. It's not so simple, unfortunately. Our bodily systems don't work linearly; they're more like chaotic systems. They can absorb stress, they're somewhat resilient, but they get to the point where there's only so much stress they can take, and then they break. So the causal relationship is not clear. It's not like classical mechanics and physics, because once again, I'm considering these things from a new paradigm perspective, not from naïve, simple causality. Everybody would like simple causal relations in

medicine, but unfortunately, it's not so clear-cut. For chronic degeneration, it's impossible to point to a single cause. This is also true of electromagnetic influences "causing" disease.

I'm certain, however, that the evidence for the other side of the coin--electromagnetic medicine--is clearer. There are many devices on the market, some of them FDA approved and most of them not, that can enhance or accelerate healing, lift mood, and can help broken bones heal faster.

REDWOOD: Why do you think they are not more widely used?

RUBIK: That's a puzzling question, especially when they're FDA approved. For example, the bone healing device has been on the market for about 20 years is FDA approved and is used in only about 20 percent of the cases for which its use is indicated. It's probably because doctors don't learn about the possibilities of using them. They're focusing mainly on chemistry, biochemistry, and drugs, and very little on physics, electromagnetics, and other ways of healing. So it's simply not within the scope of the dominant biomedical paradigm. And I don't think doctors have teams of salesmen pushing electromagnetic medical devices like they have drug salesmen knocking on their doors.

REDWOOD: Do you have an opinion on the therapeutic use of magnets?

RUBIK: I do. I've seen some studies and I'm impressed that the anecdotal reports I've heard all over the place are bearing true in clinical trials in terms of pain relief and reduction of inflammation. I once sprained an ankle and used some magnets obtained from an Oriental health shop in San Francisco. I had some amazing results with the swelling going down quickly and the pain disappearing. It's hard to say how the magnets work on the body. From physics, there's the Hall Effect, whereby if you have charged particles in a stream moving near a magnet, they will be altered in their flow because of the magnetic field. This might explain changes in the flow of blood and lymph, which contain a lot of charged proteins, ions, etc., and that may explain why swelling, pain, and inflammation are reduced.

REDWOOD: What questions is complementary and alternative medicine (CAM) posing that conventional medicine may have the most difficulty answering?

RUBIK: Most people are using multiple modalities of CAM for a chronic condition. That is, they may be taking dietary supplements, doing biofeedback, going for acupuncture treatments, and practicing relaxation techniques. These may be acting synergistically, and they may also be tailored for the individuality of the patient. Conventional medicine uses more standardized procedures, largely ignoring patient individuality. So, here we see one major clash between conventional medicine and CAM: standardized scientific approach vs. individualized treatment. Secondly, in CAM, optimization of self-healing is the goal; whereas conventional medicine throws out any self-healing response and maintains that the cure is something contributed by the drug or other medical intervention. What this means is that the gold-standard of conventional medicine, the controlled clinical trial, is much less meaningful as a test for CAM, since it does not address individuality of patients, nor does it respect self-healing.

REDWOOD: What are your views on parapsychology research?

RUBIK: In parapsychology research, they're using old paradigm methodology to look at these phenomena, which I think are elusive and largely confined to particular life contexts. Experiments can't

capture the richness of those contexts or maintain them. I have been interested in this area for a long time, but I soon learned the difficulty in creating experiments with meaningful contexts for people to get high scores repeatedly.

In other words, the dominant parapsychology paradigm requires you to do repetitions over and over again. You do many repetitions so you can calculate statistics. But by that time fatigue has set in, the person is bored, and their overall score is low. If you average all the data together, you get something statistically significant, but humanly insignificant. That's one of the difficulties of the old "repeat and replicate" inquiries with a lot of data points.

REDWOOD: What's a good alternative methodology?

RUBIK: Trying to design an experiment that has a meaningful outcome, that has high social value rather than just some number crunching. Parapsychology research often involves number guessing, card guessing, remote viewing of targets, and similar tasks. Unless there's money being given away for correct answers, such as at a casino, it's not very meaningful to the participants. It doesn't have any survival value for life. Whereas for example, if a doctor had some tough cases, say, in radiology, such as ambiguous mammograms that would require the women to go for further lab tests--if a medical intuitive or psychic diagnostician could successfully diagnose these people, that would have high social value. Moreover, it would be extremely helpful to both the doctor and the patient. So I think that would be an interesting experiment, to test medical intuitives. To set up something with radiologists and women who have ambiguous first-level mammograms, with follow-through to see if something like that would work. If it did, this might add a dimension of diagnosis that could assist radiologists or other doctors in interpreting the status of these women before they go on for surgical biopsies.

REDWOOD: Aside from issues of politics and money, do you feel that it is significantly harder to study these frontier science areas than it is to do biomolecular research? Is it more difficult to create a good methodology?

RUBIK: I certainly think it's challenging to create a new methodology. "Difficult" is a tricky word, because for some people in science, like myself, frontier science is my calling. So I don't find it more difficult. By contrast, I would find it rather difficult and boring to do molecular biological tinkering. So to me this is so fascinating that it's not hard work. It requires some cleverness, but science is much about developing appropriate methodologies. In order to do so, sometimes we have to go places where no one has gone before.

REDWOOD: What projects are you most focused on these days?

RUBIK: I have a rather eclectic career of writing, lecturing, consulting, and research. I'm consulting in part for corporations involved in holistic or alternative health care, from the nutrition industry to the bioelectromagnetic industry. I give many public lectures; for example, I'm giving a seminar in December 1999 at Stanford University at their complementary medicine center, and I give presentations around the US and abroad. I have a new appointment as Visiting Assistant Professor of Medicine at the University of Arizona at Tucson, in the program in integrative medicine under Dr. Andrew Weil. So I'm going to be working more closely with them, next year especially. I'm gearing up to go to Tucson, where I hope to engage in some research and give seminars to the medical fellows there.

I'm an adjunct faculty member at a number of schools, for example, Union Institute, California Institute for Human Science, and the University of Creation Spirituality. Typically these programs involve distant learners who come in for a week or two for an intensive class, and then continue their studies at home. I'm also conducting research through the Institute for Frontier Science. We have a microscope, and I'm performing live blood analysis observing the effects of intention on blood, as well as studying certain energy medicine modalities. I'm looking in particular at white cell chemotaxis, the movement of white cells.

REDWOOD: Do you have a book in the works?

RUBIK: Yes, but I don't have a title yet. Many people have asked me to explain my energy view of life. It's not just about energy, but also about the organizing field of mind-body and information. One of the problems we face in moving toward integrative medicine in the West is the Cartesian split between mind and body, and the resulting splits between the various fields of complementary medicine, such as energy medicine and mind-body medicine.

Let me say a bit more about that. I'm involved in a committee formed under MITI, Japan's Ministry of International Trade and Industry. As I understand the concept of qi (or ki, as it's called in Japanese), it's not just energy. It's really an intelligent energy, with consciousness attached to it. In other words, in Eastern philosophy, they never suffered a Cartesian split. So when they're thinking about an energy field around the body, it's not just physical electromagnetic or biophotonic fields, it's imbued with mind. It's something much more profound and not quite part of Western science. Not yet, that is.

So one problem we face in the West is our split between the energy view of the body and the mind-body view. And all the biology of mind-body interactions, and mind-body medicine--these have become distinct areas of pursuit. But in the Orient, it's all one. It's beautifully one. One of my goals is to develop a concept in science that would bring together energy and consciousness. I've sometimes referred to it as "intelligent information." We need to recover the wholeness of mind and body in our thinking in the West, and in our medicine. It doesn't help to have energy medicine over here, subtle energy over here, and then mind-body interactions over here, with the various experts never talking to one another, especially as we try to move forward with a concept of integrative medicine and a view of the whole person in biology. We don't have a good grasp of these things in science, because Western science has been based on fragmentation of concepts, fundamentally. We need to put Humpty Dumpty together again!