An Interview with Francisco Varela

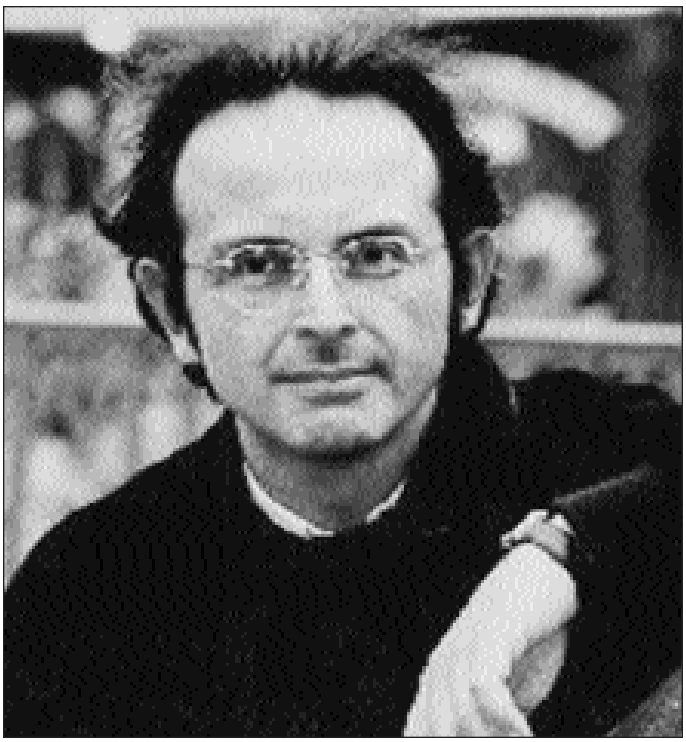
Casey Walker: In Ethical Know-How: Action, Wisdom, and Cognition *you write, "Ethics is closer to wisdom than to reason, closer to understanding what is good than to correctly adjudicating particular situations." Will you describe the difference in ethical expertise between wisdom as "know-how" and reason as "know-what," and how that difference is critical to evaluating engineering technologies?*

Francsico Varela: The distinction between knowing how and knowing what is both ancient and new. It is ancient as it comes through two traditions in philosophy-one being Aristotelian practice, or *praxi*s, and the other being Platonic ideals, or *theoria*. These traditions land us in the 20th and 21st centuries in a funny position, if you want, between the theoretical capacity to manipulate–to act on the world with some idea or conceptual pre-assumption–and the capacity to act in the world with attention to being, with knowing how to be or "being there" as the basic condition of life. Being there is precisely the Aristotelian tradition, which means turning our attention to being as the way of pre-eminent value, rather than focusing our attention on the conceptually idealized mental ideas that tend to dominate the world. Today we are playing out the same old tunes, with the exception that now we're playing with explosive technologies and weapons in our hands. The consequences of domination are definitely and critically amplified.

Yet there is no question that it would be silly to consider these two ways as contradictory, as exclusive, and as a question of either/or. There is no question that humans engage in everyday life by constantly mixing and alternating between the two. The key is to understand that *what we learn while attending to experience radically motivates and defines our actions*. In the more recent tradition in science, the controlling or idealized side of us wants to focus on observation toward manipulation rather than on insight toward being with, which is where the ethical part comes in. Ethics means here a recollection of the entire realm of life that is often obscured by the power acquired over it.

That said, I don't want to demonize the part of science that is also a brilliant part of being human. Also, in terms of moral behavior, one does need rules as well as know-how because otherwise we wouldn't have social norms under law. We cannot organize a society purely on the basis of know-how. But in an important way our sense of know-how, which leads to wisdom, should be the basis for laws and reasoned decisions. Wisdom should lead to law–a law that is not wise is a bad law.

Human engineering, like every scientific technology (atomic energy and other equally dramatic examples), is bound exactly by the same problem of whether it is essentially grounded in the constant and ongoing rediscovery of being, or not. Today, of course, that grounding cannot be a moral cry or stance, because such a cry or stance does absolutely no service to anybody. The only way to be grounded in a living world is to actually do it: to cultivate the tools and practices from which any person can learn the wisdom to be found in living. This is the only way we will learn greater respect and tolerance for, and achieve greater participation in the world around us. It is not going to come



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His interests have centered on the biological mechanisms of cognitive phenomena and human consciousness, and has contributed 200 articles on these matters in international scientific journals. He is the author of a dozen books and the editor of eight collections, many of them translated into several languages, such as The Embodied Mind *(MIT Press, 1992), and more recently* Naturalizing Phenomenology: Contemporary Issues in Phenomenology and Cognitive Science *(Stanford University Press, 1999) and* The View from Within: First-person Methods in the Study of Consciousness, *(Imprint Academic, London, 1999).*

otherwise, by some kind of exemplary contagion.

Which is why your arguments in Ethical Know-How *for attention to the cognitive processes of learning "how to be" are extremely significant. But before we turn to those processes, will you describe how cognitive science evolved from its view of the mind as an information processing system to its view of the mind as a system of embodiment?*

The discipline of the study of the human mind–cognitive science–was born after WW II. At that time, the dominant tradition in the West held that the human mind and its processes had to do with logic, with being, as Descartes would say, "clear and distinct." This tradition, from Descartes through the entire rationalist tradition–which is very strong in the Anglo-Saxon world–led early cognitive scientists to ask : How can we understand clear ideas chaining into one another to produce very coherent principles?

At roughly the same time, the computer was invented. The principle of a computer's logical "symbol manipulation" was just perfect–it seemed the perfect way of couching what the human mind was all about. Such was the origin of cognitive science, and it became known as the cognitive tradition. People picked it all up very intuitively. Remember how people used to say the mind was a computer? That the mind was software and the body was hardware? Ridiculous.

The problem is that such a view was in fact intuitive within the context of its moment in the history of the West. In particular, the moral tradition of principle, of "know what," was very strong in the United States, as derived from the British philosophy of mind. Even today, the tremendous power and influence of moral principles in the United States, as they are seen from outside and particularly from Europe, seem extraordinarily oversized. Not surprisingly, the entire continental philosophy in Europe, or at least most of it, is based on a non-normative basis in which the traditions of intuition and aesthetics and existentialism could be born.

Thus the dominant, scientific mind that formed in cognitive science shortly after the war, and particularly in the United States, took the next thirty years to crack under the weight of shortcomings in research. As people looked into cognitive neuroscience, they found that neither perception nor movement nor memory nor emotion could be addressed on a basis of logic. People were attempting to corner the human mind with basic principles of reasoning and categorization, which are, of course, rather poor. So people began to re-evaluate what had been done and began to tilt the balance more and more toward "embodied cognitive science," as it is now called, and was expressed in the book I co-authored with Evan Thompson and Eleanor Rosch, *The Embodied Mind*, and by others, including Andy Clark in his recent book, *Being There: Putting Brain, Body, and World Together Again*.

We are just now becoming aware of the limitations of taking the mind at a purely abstract level, and we see all the difficulties that have to be coped with in the real, hardcore issues of human life–the emotional disturbances in a child, the violence in our lives, and so forth. It's always fascinating to me that there's a rightness of time for the return of these ideas. We have to remember that many of these ideas were present at the beginning of the twentieth century in America with William James. In fact, William James was completely forgotten until people recently began rediscovering the depths of what he said.

So many of the questions raised by human engineering force us to question our basis for understanding what a human being is, how the human mind and body actually work, and how a life can or cannot be engineered.

Yes. In fact, with genetic engineering we can see the exact same conceptual tension that we saw with early cognitivism. Cognitive science saw the mind as a collection of programs and symbol manipulations, just as genetic engineers see life as a collection of genes ready for programming and arranging. All life has come to be seen as programs that can be adjusted and conditioned to whatever we imagine we need.

Without the possibility of sensorimotor coupling activity in the world, our cognitive systems would in a very important sense become solipsistic ghosts. Which brings us precisely to the idea that cognitive structures are in fact the substance of experience. And that, furthermore, it is only this substance of experience that motivates–and also constrains–our conceptual understanding and rational thought.

Now we're beginning to learn–in parallel, as it so happens with the embodied mind–that life is wholly embodied. The principle of life is not in its genetic components and building blocks but the entire situatedness of an organism. An organism has genes in the same way brains have concepts, but neither has meaning as life. We must think of organisms as both integrated units and as beings within a tremendous network of historical, environmental relationships. Of that, we know virtually nothing yet.

This is where the principle of respect for life joins with a kind of scientific honesty concerning all that we don't know. It's exactly the same question of when, how, and whether we can achieve a re-understanding of molecular biology and genetic engineering in the same way that is happening quickly, thank God, with respect to mind; that is, the parallel rediscovery of the essential organism-centered understanding of life.

I recommend Steven Rose's book *Lifelines*, which is an impassioned defense of an organism-centered view of life as opposed to the selfish gene or genetic determination view of life. The organismic view is beginning to make sense. Twenty years ago, it was considered to be fluffy thinking, but Steven Rose is now regarded as one of the most brilliant

biologists in England.

Will you explain how cognition occurs as an enactive process–how the embodied mind works?

Yes. This process is important to understand because it takes us away from the established idea that we perceive and act like computers, or that our cognitive system is simply an input/output system that processes information sitting entirely outside of ourselves. To the contrary, we find that there is a mutual engagement between any organism or person and the environment, an imbrication. It is very much the case that the structures of our cognition are called forth and established through processes of perception and action, or sensorimotor couplings.

In *Ethical Know-How* I wanted to emphasize the corporeal specificity of the enactive approach to cognition. For example, we see that a perceiver does not construct his or her reality, but that what counts to a perceiver is in fact inseparable from his or her cognitive structure. To make this easier to understand, we can refer to the classic perceptual experiment done by Held and Hein in which two groups of kittens were raised in the dark. One group of kittens was placed in a basket carriage and rode passively while the other group of kittens actively pulled them across the floor. Which kittens learned to "see" in the dark? When all the kittens were released after several weeks of training, the passively carried kittens stumbled around as if they were blind and the active ones walked about normally.

Similarly, in another experiment, blind persons learned to see images through video cameras that were designed to translate images onto their skin with prickling electronic sensations. After a few hours of directing the camera's "gaze" and receiving sensations, the blind persons who were actively "looking" were able to visualize those images projected out into space, but the blind persons who sat in passive receipt of the same stimuli could only feel those sensations on their skin. Here is the point: Subjects could only learn to "see" visual images projected into space when they were actively directing the camera *in the effort to see*–not when they remained passive and motionless. Here we can say that *whatever is encountered in the environment must be valued (or discounted) and interacted with (or ignored) if it is to be incorporated (or not) in our cognitive system*.

Another point is that our environment is like the neural music of our cognitive system and we could not live without our own constant coupling with it. In other words, without the possibility of sensorimotor coupling activity in the world, our cognitive systems would in a very important sense become solipsistic ghosts. Which brings us precisely to the idea that cognitive structures are in fact the substance of experience. And that, furthermore, it is only this substance of experience that motivates–and also constrains–our conceptual understanding and rational thought.

This takes us a very long way from the idea that being there is simple or reflexive or passive or somehow coincidental to deliberation and analysis. It is only because our sense of being there is incorporated or embodied in ourselves that it is immediately transparent, stable, and grounded, that we can rely upon it instinctively or spontaneously–and that we can deliberate and analyze as we do. Even more obviously, the yield–the ability to act–from a sense of being there cannot be fabricated.

How would you respond to someone who says that we will become more perceptive and thus more conscious, if we heighten our sensory capacities with superhuman abilities to hear, see, smell, touch, or move? Isn't it wrong to think that sensory or perceptual capacities are located in a single place and can be outfitted for a superior or post-biological human?

Yes, that's the point. You can have all kinds of philosophical or moral objections to these ideas, but independent of those, there's still the basic scientific objection that we cannot afford to misunderstand: Simply amplifying a sense organ does not mean you are going to perceive more. Perception is a matter of how a certain harmony of coupling is created between certain structures–the eyes we have and what, exactly, the physical world can offer as possibilities. It's not the case that visual objects are simply sitting out there waiting to be discovered and that the new, super-outfitted eye is going to see more, or that with infrared seeing equipment engineered into the eye, we will suddenly see the infrared! There is a fundamental principle of co-creation of sense between an organism and the world.

Yes, you could manipulate and tinker with the constitution of a human being or an animal. That doesn't mean you know what it is you're going to come up with. You can change or build any shape you want. That is not to say it is going to work very well if you leave the network of traffic as it is. That's just a total fallacy. To use Whitehead's expression, it's a *fallacy of misplaced concreteness*. Somehow, the whole field of emergent properties and complex systems is just beginning to make a dent into this purely component approach, the approach of genetic engineering.

We have to be extremely careful because of the tremendous economic incentives–the huge profits to be made from getting genetically engineered products and services onto the market. It creates a kind of scientific and theoretical blindness in which one forgets the entire network of interrelated processes we're just beginning to understand. To jump the gun in the field of engineering life is just very, very blind. Hence, the morally questionable ground. I'm not speaking to a romantic idea and saying, "Let's leave nature as it is." I don't see why some things can't change. But change means that we take the whole phenomenon into account and not just the first little curlicues that we can get our fingers into in such an impossibly infantile way!

If we engineer ourselves, the biotic, and the abiotic world to manifest intents and purposes that are ignorant of the network of interrelated processes, might there be a point at which we violate the living context that calls life–and human cognition–forward? Is it possible to condemn the physical basis for ethical know-how?

That's a tough one. I'm not so sure, because I don't particularly believe in an ultimate anything. I do believe in the fact that actuality is very, very deep indeed. When the constitutions of two beings are tremendously interrelated, I am

violating their interdependency by acting on any single being in a one-sided manner. Now, whether that is forever and unchanging, I am not sure. After all, we have changed at a very slow pace and in ways in which such constraints have been taken into account by evolution itself.

The problem is acting in an ignorant way by being in a hurry and by being very blind to the consequences of what we are doing. In the end, I'm not particularly a defender of some kind of inviolability in the sense that things have some kind of primordial quality or original purpose or principle. I'm much more of a Buddhist. In the end, everything is quite empty of quality, and manifestations are infinite. There is nothing to hold onto, but we must respect complexity itself: the depth of actuality rather than the holiness of origin.

Yet in the depth of actuality lies the kind of essential being referred to in Ethical Know-How*–the ethical unconscious. If the practice of wisdom is the practice of essential being, and essential being is discovered in the substance of experience, couldn't we imagine a biological or physical violability? Isn't it possible or even likely that we may engineer the world in ways that radically shape or undercut the possibilities of experience?*

That is definitely a good point. However, let me do a counterpoint. Since the very beginning, both animals and humans have had the drive to survive and have transformed their environments in order to do so. We build houses, learn agriculture, transform mountains into mines, build artifacts- so you can say the act of transforming nature to harmonize and coordinate life for everybody is a perfectly concrete and existential thing. Now, it's true that technology amplifies that-but only amplifies it, it doesn't invent it. Where are we going to draw the line?

I imagine there are critical thresholds.

Yes.

I came across an article written for the Waldorf schools in England that summarizes studies out of the Gesellschaft fur Psychologie and the University of Turbingen showing "adaptive changes" in contemporary human brains. In urban and highly mediated environments, there appears to be less and less time for brains to synthesize dissonance, which appears to cause less and less consciousness of what is being perceived. For example, the article says: "Fifteen years ago, Germans could distinguish 300,000 sounds. Today, on average, they only make it to 180,000. Many children stagnate at 100,000. That is enough for hip hop and rap music, but it is insufficient for the subtleties of a classical symphony." Does this kind of adaptation and constriction of perception ring true to you–does it cause you to question the kind of cognition and know-how made possible by some environments?

I'm not at all familiar with these studies, but it seems very difficult to believe that no major adaptations in the human organism have occurred given the kind of urban context in which many of us–indeed most of us–end up living. We can also bring data concerning emotional adaptation to this same argument. It is quite clear that a change has occurred in the way emotions are handled by urban people as opposed to how they are handled by people who are not highly urbanized. It is known to ethologists that mammals become increasingly aggressive when living in crowded conditions. Surely such studies cannot be directly transposed to humans, but they are indicative.

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We are just beginning to appreciate how incredibly plastic we human beings are in our ability to change. Recent studies showing that the human frontal lobe constantly receives new neurons had all of us sitting on the edge of our chairs! This means that the frontal lobe, with its capacity for abstract reasoning, for planning, for seeing one's own life in a longer time frame, and so on, is developing all the time. Since human beings change constantly, how could we not change if we go from a rural to an urban environment? And if so, the kind of daily life we lead will signficantly shape who we are even at the structural level.

It seems obvious that there could be a threshold at which we so unwittingly manipulate our biology or the biology around us that we could extinguish the difference between ourselves and our environment to the point that we create a world of "solipsistic ghosts."

I think that's absolutely the point. That's why I say we should really always make the cultivation of wisdom the basis of our being here. If we start with the appreciation of being as it is, then practical action–how we act in the world with our theoretical knowledge–will have the kind of prudence that it needs to have.

We have a very clear example of this every day in medicine. Without doubt, we need medicine to address human concerns. Yet, for example, in the domain of transplants, some would say that exchanging organs violates the sacred integrity of life. Well, transplants are violations only if they are done in the belief that simply keeping the person alive is all that counts. If there is a more empathic and wisdom-based practice, on the other hand, then transplantation will exist only as one possible remedy that will not dominate all criteria by which a person's life, death, and medical treatment is evaluated. Similarly for genetic engineering. We're back to that absolutely essential need to continue to understand and produce wisdom, to create human action based on prudence instead of hubris–but without falling into the temptation of saying that nothing should be touched.

And yet, if we are going to be able to grow any bodily tissue, cure any disease, fix the damages of any accident, or eliminate any effects of aging, as some scientists in the United States claim, and if we

understand know-how as the incorporation of experience, wouldn't our sense of "being there" be forever changed?

I think the question has to be asked the other way around. A sense of being/not being is based precisely on a kind of projection of knowing–which is critical when we talk about exchanging organs or securing an infinite supply of parts to keep a body alive. It is something done from the experience of already knowing what it is to be alive, not the other way around.

We don't walk around the world finding livers and hearts and embryos with the expectation of being more alive than we already are. We pay attention to the livers and hearts because we ourselves are mortal beings, and because we have the experience of mortality. Now, that experience of mortality and fragility is not going to go away.

The only antidote to misuse of technologies is to cultivate understanding and trust that, in the end, the essential meaning of mortality, which is what motivates people to develop transplantations and other techniques, will be sufficiently present. This understanding will put these techniques at the service of discovering being as opposed to the literal, infantile wish for a liver. A liver doesn't have any existence in itself. It is only because I am alive and I have a mind that I find a liver, and not a chair or a stump. In a sense, we always come back to the same loop.

Yet I wonder if we do sufficiently regard our mortality, or what Ernest Becker calls the "lived truth of creation," when we're culturally predisposed to dominating creation–to devoting our science, technologies, and medical services to transcending the fragility of our bodies in the pursuit of immortality. We see an exaggerated form of this in Extropians and other transhumanists working toward "ultrahumans," and a "postbiological" era for humanity. What makes you think people will become more, not less, conscious of the lived truth of being alive?

Well, it's funny. I have a much more–I wouldn't say optimistic–but a more gripping sense that our basic, human nature strives toward a realization of being. Who we are, and the experience of being who we are, is so impossible to set down into a quality that it is also a kind of luminous non-being. Each of us is thirsty for a kind of return home-that funny non-home-and it is that thirst that I trust in our nature. Human beings don't have to be forced into realization, they yearn for it. Given the chance, they wake up and say, *That's good. That's interesting.* Which directs us to the work of propagating access, propagating examples, propagating the multiple doors of being here.

We place our trust not in the goodness or the badness of people, but in something much more pragmatic–in our capacity to actualize being the moment we touch it. To me, that's the real "golden touch" of King Midas: We can turn to anything, and if we touch it, it turns to gold. This can happen to the worst genetic engineer or the blindest of the ecological transgressors.

Which brings us to your current work–how to study first-person consciousness. Will you speak to challenges addressed in your book The View From Within *and in your current research?*

One of the main projects of the book I co-edited with Jonathan Shear, *The View From Within: First-Person Approaches to the Study of Consciousness*, was to see how ethical know-how evokes the practice of human learning as it concerns one's own experience. What is the work to be done in first person? What is it to have a practice of experience? If we can understand this, it will open us up to the pragmatics of how transformation, or the discovery of being, actually occurs.

Here the practice of meditation is instructive because it enables us to cultivate the most basic processes of perception. Instead of trying to get to some mental state, the Buddhist tradition tells us to pay attention to what our bodies do: when we chop wood, we just chop wood; when we drink, we just drink; and when we sleep, we just sleep. The gesture is to liberate or let go of the mental chitchat and hyperactivity of concepts, presuppositions, judgments, and so on that fill our minds and obstruct our experience of being. When we suspend our minds and focus on being, we experience a certain opening, and it is here in this opening that ethical know-how becomes seamlessly transparent. Right action manifests out of that opening because there is much more of a grounded sense of being right on the dot of any situation.

Right action is embodied; it is situated. It requires, of course, the capacity to be reflective, so it is not just the sensorimotor coupling that any animal can do. Only human beings can turn back and say, Let me reflect on my own activity and engage in the gesture of letting go. Let me attend to the actual situation. Let me be open to all the other sentient beings here and to the whole network of my environment. We can see quite clearly that talk, or books, or rules alone will not engender non-egocentric concerns and ethically developed persons.

Will you speak to the difficulty of developing a science for this process?

Let me say first that while studying right action is an important goal, the very center of renewed interest in the scientific study of consciousness is simply to understand how the mind can work altogether and how consciousness works, which is before the mind engages in any sort of ethical training. To get to the conclusion that one's own description can come only from the experience side of cognition is an intrinsic part of the work. But that doesn't necessarily imply that scientists will first study how changes are made when one practices meditation. We start with simple things, such as how to study the capacity to attend, or the capacity to observe emotions rising and subsiding in particular situations. We are at the stage of having to look at very basic things–first-order things.

In *The View From Within*, the spiritual traditions actually help us because they provide us with evidence that the tools of phenomenological description are possible and available. Right now, I am working to develop these tools and descriptions so that we can actually show them in complete instances with case studies.

To do this, we are bringing together third- and first-person accounts that offer enormous insight into particular men-

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tal capacities. For example, in one area of research we're asking subjects to do a very simple thing–a perceptual task of seeing in three dimensions with a 3-D random dots game. In the past, when we worked with subjects and studied their brains for perceptual processes, we typically had only the conclusions we could draw from our own empirical observations of the brain's activity. Now, most of our subjects are very highly trained to do phenomenological descriptions. In fact, one is a very advanced Buddhist practitioner. One thing we see is that trained people have very good strategies, including the ability to put their minds at rest in a particular position that enables them to perform and to observe. This ability to rest, this stability of mind, is in sharp contrast to the constantly wobbling mind of ordinary people.

We exploit our subjects' capacity to put their minds at rest by asking exactly how any particular perception occurred during each presentation of the 3-D stimulus. We get extraordinary descriptions. At the end, we use each subject's description to classify our own observations of empirical data. We discover we have entirely different brain responses, depending upon what the subject's experience is. And yet it is only the subject's report that allows us to actually say which particular measure should go in which particular class. This is an example of really boot-strapping our understanding of consciousness–that we can read third-person brain data as it is completely modified by phenomenological experience, and, in turn, that the third-person data allows us to understand the specifics of what a mental state can possibly be. That, to me, is a very modest enterprise, but one that needs to be established through many good case studies before the scientific community can go through it. That is my strategy–to open this field–and all my effort is geared to it.

As much as I'd like to think people will have lasting epiphanies about "being there" and spontaneously apply ethical know-how in relation to deep technologies, it's also obvious that this hasn't and won't happen passively. There is an important question here of competency.

Yes. Furthermore, unless there is a practice–and a repetitive, recurrent practice–the ability to achieve a stable mind does not develop. Achieving that competence is not an immediate given. It is astounding, really, that people don't understand that, since they understand it for all kinds of other competencies, such as sports. If we don't practice sports, everybody knows we cannot perform the kinds of feats performed by skilled athletes. We're all given bodies and minds that can do so many, many things, but if they're not trained, they're not trained. There is no reason to expect that the kind of mental precision and understanding we are talking about will simply happen spontaneously. It just doesn't.

Again, my position is not to attack technology per se but to go back to the source of why technology can turn sour or destructive, which is a lack of understanding on the part of the people who use it. One of the great discoveries in the Buddhist tradition is that if, through a process of self-examination, we are able to suspend habitual patterns and judgments, we reach an openness that makes us much more responsive to what is around us and allows us to be touched, to care, and to act with compassion. That, to me, is the only answer to the negative consequences of technology. The use of technology must be informed first by the rediscovery of being and the values that accompany *praxis*, or transformation. The real solution, therefore, is going to come from introducing all that can be known about human transformation at all levels-at schools, at businesses, in public services, and so on. Out of that, right action will come forth in its proper context.

Again, we see that right action cannot come from beliefs in ultimate foundations or out of received wisdom. To grasp the process of transformation and its pragmatics, I believe the western mind have to have a strong interface with science. When we have meetings with the Dalai Lama, he is totally convinced of that too. An ambitious undertaking!

Originally published in *Wild Duck Review* Vol. VI No.1 on "The End of Human Nature?"

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