

# Science, Boundaries, and Love

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### Abstract

In this paper I talk about the need for us to find and tell new stories about the world—about who we are, what kind of a world this is, and how it all holds together. I talk mostly about science, though it is really more about the worldview that is primarily informed these days by scientific views.

The goal of science as an enterprise is to help us to interpret and make sense of our experience of the world. In part at least, this is also exactly what each of the major religious traditions claims to do. And yet, at least as perceived by many scientists, and by defenders of some religious viewpoints, there is an obvious demarcation line between the two. In fact it can be felt as much more than a line—a fence perhaps that keeps things and people apart, or a rift, or even a chasm.

In this paper I want to look at this at the consequences of maintaining this division. It needs healing, because over time—over centuries and perhaps millennia—it has gradually become more and more of an open wound. But it won't heal until individually and collectively we feel it and see it and acknowledge it, and until we have learned to appreciate and care for what lies on both sides. Actually, I happen to believe that both science and religion will inevitably change as we heal the rift, though in this paper I address that issue indirectly rather than predicting exactly how they will change.

In a way the line between science and the spiritual splits our world. Of course it is hardly a new thing, and many people have been aware of it, since at least the time of William Blake. In turn it is associated with many other dualities, such as between heart and mind, between rationality and intuition, between masculine and feminine. Nevertheless we must be wary of naming the gap too quickly, and assuming that it's old hat. The only way to appreciate this fissure properly is to slowly come to know it directly and personally, in a way that is prior to labels and concepts. Simply by virtue of being here, in this world and in this society, we all carry it as a wound. So for each of us the task of coming to know it, attending to it and healing it is a personal one. The alternative is to ignore it and in doing so, to be weakened by it.

### Biography

*Educated at Harvard and Sussex universities, I have spent several decades in computer science and artificial intelligence research, and recently have been working also in complex systems. For the last ten years I have been a research scientist at the National Research Council of Canada, but am moving in May of 2004 to Tuscany as associate director of the Pari Center for New Learning (with which I have been informally associated for the last year).*

*In parallel with my work in computer and cognitive science, I was for a long time a student of Zen and Tibetan Buddhism, and have gained some familiarity with spiritual traditions from other parts of the world as well. In recent years (more in talks than in writing so far) I have been exploring what we can learn if we bring more than one of these perspectives to the table. In the process I have gradually become convinced that our worldview is in the midst of a shift whose depth and significance are hard to overestimate. Although a growing number of people are*

*devoting themselves to exploring the nature and implications of this change, the explorers are still for the most part lone individuals, and the field of exploration cannot yet really even be named. But it is to this exploration and to this adventure that, in moving to Tuscany, I am devoting myself full-time.*

I will begin this paper with a disclaimer: what I say here represents very much a work in progress; I am not yet doing justice to my topic. Also, in these explorations, I am deliberately adopting a more personal writing style than I have in the past, or than is common in the scientific traditions in which I have mostly worked. The personal stance is not merely stylistic—it is integral to some of what I want to say.

In the West, science and religion have come to be regarded as pretty separate enterprises, both by the public at large and by scientists and theologians. The very fact that we feel that we need to encourage dialogue between the two communities underscores how much separation there is. Over the last few centuries, it has slowly become almost standard to think of the two as concerned with different areas of experience. In fact a number of scientists, in particular, claim these days that the way to reconcile science and religion is to recognize that the two deal with entirely separate realms—say the realm of matter and the realm of spirit.

I want to argue against this dualism however. This is too easy a way of letting everyone off the hook, even if it can be an apparently comfortable way to live together. Dualisms of all kinds are dangerous in human hands, perhaps because they are too easily linked with some very basic biological defense mechanisms (roughly “in and safe, me, us” vs. “out and probably unsafe, not me, them”). The Buddhists and the Advaita Hindus are very sensitive to the deep implications of seeing the world from an intrinsically dualistic perspective, and the continental tradition in Western philosophy after Hegel has been conscious of the issues as well.

What I want to do is not so much to deny that religion and science can happily coexist, as to say that especially science, but also much that we have inherited from our religious traditions, needs to be embraced in a much deeper, more comprehensive, more inclusive story about the nature of things—about who and what we are, what our relationship is to the universe—than we have ever been able to tell before. We need to acknowledge that with all we have learned through science, and with all that we are learning from the clash and merging of cultures that has now been taking place in a serious way for a hundred years, we are at least approaching being able to say things we have not said before, and to know things we have not known. Not only are we ready to do so, but it is imperative that we undertake this task of mending and re-weaving and strengthening our story of reality. For better or worse, we all act from what we understand, and if we do not deepen our understanding, we risk destroying ourselves out of our ignorance and blindness.

OK, this much is easy to say. The questions then are: what kind of comprehensive story? Are science and religion not already doing their best to tell and enrich such a story? Taking the second question first, I believe that although most practitioners probably believe that their disciplines are on the right track and are doing their best, in fact most are much more constrained by history and by largely unconscious beliefs than they realize, and that it is only by digging down through these that we can begin to see more clearly. On the other hand, I want to emphasize again that this process of digging and re-examining is a continuing labour—a personal as well as collective labour—in which the universe exhorts us all to participate.

I am arguing therefore not simply that science is or can be consistent with religious insights, nor that religious faith can be comfortable with scientific discovery, but that all of us should be engaged in a search for a broader account of what the world is, what it is to be a human being, what kind of relationship to the universe we find ourselves in. We're ready for a genuinely new

worldview, one that does justice to all that we've *all* learned over the past centuries and millennia, but that pulls them together into a coherent story that is adequate for a new world.

One might say "what do you mean—a new world"? What new world? What's wrong with the world we've got? Well it doesn't take much these days to see that there are plenty of dire problems with the world we have. And yet it is indefensible to simply pretend that our present world doesn't exist, and fantasize about different ones. Nevertheless a new world is in a very literal sense what a new worldview delivers to us. To see the world in a different way is to see a different world. To see the world in a radically different way is to live in a radically different world.

Such an assertion often seems counter-intuitive, or else a figure of speech or a metaphor. But the more I have studied experimental psychology, artificial intelligence (in its attempts to get computers to see the world the way we do), esoteric Buddhism and shamanism, and the more I have reflected on my own experiences and those of my friends, the more I am convinced that it is true in remarkably visceral ways. Teachers from many traditions have said that we construct our own reality. It's easy to take this as metaphorical, and can be extremely disconcerting to take it too literally. To take it literally seems to fly in the face of all the slow and patient work that science has done over the centuries, in building a systematic, consensus-based and apparently consistent model of reality. But here is an example of what I mean in saying that the over-arching story we must learn to tell has to do justice to all that we have learned. We have to understand how the scientific enterprise is valid, and how *at the same time* there is truth in the view that reality can be, in some very important sense, a personal and social construct. From the perspective of science—apart from certain interpretations of quantum mechanics—and indeed from that of the major Western religious traditions, the nature of reality is entirely independent of the way we construe it. If, at the other extreme, one adopts a purely social constructivist view (that reality is just what we believe it to be), then it becomes impossible to distinguish psychosis from sanity, or truth from falsehood. In my view, both of the extreme positions are dangerous. The scientific/Western-religious perspective licenses a kind of irresponsibility and powerlessness towards the state of the world (a shrug of "well, that's just the way things are", or "that's the way God made it", or "the world is a cruel and dangerous place, so I have to look out for myself"), and the social constructivist position encourages irresponsibility towards others ("she makes her reality, so it's not my problem"). Personally I have not yet found any single cultural tradition or ideology, that does full justice to the intuitions and discoveries and insights of the various different traditions that I do know about. But I'm convinced that an answer to this issue is part of what we're looking for. And we should also expect that the right answer will eventually be as grounded in consensus, as "obvious", as science is today.

What kind of quest is the search for a new worldview? Well, a worldview is not exactly a theory. It is more like a metaphysics, although I don't believe that philosophers can shoulder the whole task of creating a new worldview. The new story should robustly support, and be informed by, the careful analytical thinking of the philosophical community. But this also needs to be a story that can be taught to children; that can capture their imagination and sustain their exploration and growth as well as underpinning future scientific research and spiritual awareness.

I want to try to suggest how it might be that science, with all of its evident success and its brilliance, could somehow still be failing to provide us with an adequate worldview. To begin with, we noted above that some people say that science fields questions about the material

world, and religion takes the questions about spirit, so neatly dividing up responsibility for reality. But if we try to stop for a moment at a level prior to the separation of matter and spirit, we can say that both science and religion lay claim to providing the stories and the explanations that will allow us to make sense of our experiences in the world. Science is nothing if not a description of reality, and every religious tradition, in fact every indigenous culture, incorporates a description of reality as well. These descriptions, perhaps expounded in the form of stories, are what each culture teaches its children. (I will return a little later to what is taught to children as a possible index to a larger story).

Science sometimes operates as if there were a line circumscribing its domain. For example, most scientists feel that questions of ethics and politics are outside such a boundary line, even if they also feel that they and other scientists as individuals should concern themselves with these questions. But there is also a strong sense within the scientific community that all meaningful questions about the nature of reality lie inside any such line, or equivalently, that the scientific description of the world is "closed" in the way that mathematicians use this word—that if a question about reality can be validly posed, the answer to that question is still within the domain of science.

Now I've worked in scientific research most of my life, and although I started by believing that the scientific description of reality was closed in this sense, I have slowly become less and less convinced that this is true—at least if "science" refers to the way that science is currently practiced and understood. The area in which this has become clearest to me is cognitive science and its sister or family member, artificial intelligence. Artificial intelligence began in the late sixties with huge promise, was a very exciting field and attracted some very bright people. There were widespread predictions that within ten or fifteen years we would have computers that could talk to us and carry on normal conversations, robots that would be as flexible and versatile as human servants, and that it was quite likely that we humans would soon be surpassed in intelligence by our own creations. I was drawn into the field myself and very much enjoyed the research enterprise towards these goals, working particularly in the area of getting computers to understand human language and the representation of knowledge. But as the decades went by it gradually became even more intriguing to realize that as a community we were signally failing to deliver on those original goals. For me, one of the pennies dropped while I was listening to talks at the European Conference on Artificial Intelligence in 1996, and realizing that most of what I was hearing, from new groups of young researchers, was uncannily and eerily similar to what we had all been saying 25 years earlier. I began to realize how remarkably little progress we had made. Of course the standard story was that we had discovered that the problems were a lot harder than we initially realized, and that as a field we were still making steady progress. But it was interesting to note that public faith in (or fear of) AI was slowly falling, and attendance at AI conferences fell pretty steadily through the nineties. I am now strongly convinced that the real issue lies much deeper than our initial under-estimation of cognitive complexity. The full story requires too much detail to address in this paper, but I will summarize some of the main points briefly here.

First of all, the implicit, unstated model of what it is to be a human being that underlies essentially all research in artificial intelligence and cognitive science, is far too impoverished. In a certain sense AI has been trying to reproduce what we think a human being is, but since our

intuitions about that, derived from our general scientific/cultural stance, are seriously wide of the mark, we are doomed to failure<sup>1</sup>.

A good part of the reason for this systematic failure lies in science's, and our culture's, concern with description, and in particular with objective description. Consistent with the view, dating back to at least Descartes, that there is an objective reality "out there" that is independent of our thinking about it, cognitive science and cognitive psychology (and in fact much philosophy as well) have taken human beings too as things that are "out there", treating as suspect any promptings from the obvious fact that we also know human beings directly, from very personal experience. That which we seem to be aware of only directly, is, oddly enough, placed outside the line that circumscribes the domain of science (I say "oddly enough", because it is as if what is truly inside is actually placed even farther outside the pale than the rest of reality, including the most distant stars and galaxies). And what is placed outside the pale gradually becomes, by force of habit, less and less attended to. I noted earlier that science tends to admit as valid (for its investigation) only questions that can be formulated within its domain. But there is a subtle tendency for other questions and other observations to be regarded as not really valid at all, as peripheral to what is of central importance. This becomes much more than a methodological issue in the end. What is labeled as invalid for science becomes invalidated psychologically, and we end up denying and losing crucial parts of ourselves. And this happens to each one of us in a society dominated by science. If we're lucky, we eventually begin to realize how much we have lost touch with, and can begin the long and arduous process of going in search of what we have lost.

In its Cartesian concern with description, which is essentially a mental and largely linguistic activity, scientific research attracts and develops people who have excellent analytical minds. The scientific description of reality is a celebration of the power of the human intellect. But it is all too easy to be a good, even brilliant, scientist and to be correspondingly undeveloped in areas of the heart, of intuition, of knowing through the body, of other kinds of awareness. There are many who find even such expressions meaningless or vaguely subversive, leading to worries about loss of appreciation of what science is, about the rise of superstitious and uncritical thinking. In my own personal evolution, I used to be as suspicious of all of this kind of thinking as the most hard-headed skeptical scientist (or at least nearly so!). I too had, and still have, a fence beyond which I label ideas and people as flakey. But I slowly came to realize that that fence was in part a fence for my own psychological protection. Eventually, slowly and cautiously, I gathered the courage to look over that fence, and to realize that I had unwittingly excluded many wise people from my consideration, especially people from other cultures and sub-cultures. I had to learn that it was OK, and in fact immensely enriching, to move that fence outward here and there, and to admit and begin to talk to people who were saying things that didn't make sense to me, even though they appeared to be intelligent.

This, it seems to me, is the process of widening the story we can tell. It's hard work, in two ways. The first way that it is hard is that it is a very personal journey. It involves learning about, and remembering, who we are as complex individual beings, including learning about the ways in which we are wounded and did not even realize it. (So healing is an extremely

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<sup>1</sup> A standard response to this is to say "Well, let's just sharpen our intuitions, and we'll achieve great success". The trouble with this approach is that I think we don't even know how to begin to computationally model a full human being. Currently I can't even imagine what such a model would look like.

important part of the process). But it is also hard in the way that science is hard—it involves reconciling what we discover with what we thought we already knew, and collectively telling new stories that weave everything together.

This process can appear to be self-centered. Indeed it must be self-centered in some ways, especially to begin with, because it must involve looking at what is apparently within. But as many sages have discovered, by looking within we also find, again, the whole universe that we had thought was “out there”, in a form that may be at least as good if not a better basis for consensus than the external. By the same token, as we heal ourselves, we heal the world and help to heal those around us.

In this process, one of the things we rediscover is love. Love is something that is extraordinarily important for all of us. It is also something about which science has almost nothing to say. It embarrasses us a little, because our experience of love is very intimate and personal. But there are those who say that love is the very basis of the universe. If there is some sense in which this is true, should it not be part of some future science?

Much of what we learn in this process in fact needs new language to be adequately expressed. Even a word like “love” is problematic, since we all think we know what we mean by it, and yet I know my own appreciation of it has evolved a great deal in the last few years, and I’ve observed that my friends (especially my intellectual friends!) have widely varying notions of it. We have to learn to appreciate the awareness that comes out of silence and other kinds of practice. We have to learn that some of the most valuable kinds of knowing (dreams as one example?), precede language. If we can cultivate these kinds of awareness, and allow them their place and their freedom, we can then approach them gently, and with respect, with linguistic paintbrush in hand, as poets do. And *then* we can tell new stories for our children, truer than ever before, that grow out of who we have become.