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Michael Friedjung's paper "Modern Physics and the Nature of the World" (April 1991 Network Newsletter) exemplifies that we are still trying to patch up modern science to somehow become adequate to handling the areas of concern to the Network. I believe it to be true that this can't be done – even with quantum physics, holographic mind metaphors, chaos theory, and all such trimmings. To achieve clarity we have to get to the heart of the matter -to the metaphysical foundations considered inviolate throughout the history of modern science.

I enclose two versions of yet another attempt to make this clear – a longer one and an abbreviated one. It seems to me that if we could get the question of the metaphysical foundations accepted as a valid and important question (which it is not at present), this might do more than any one thing to further the cause of the Network.

In your own work, you urge a "new science" in the form of a "complementary" science. It seems to me this may be a tactical way-station, but in the end a truly holistic science must be an "extended" science, with conventional science as a limited special case. However that is a secondary point; the main thing is to get the question legitimated.

A recent cartoon shows a woman driver attempting to deal with a police officer who has accosted her for driving the wrong way down a one-way street. "Officer," she says, "did it ever occur to you that maybe the sign is wrong?"

The scientific and medical communities have given a rather unfriendly reception to research in psi phenomena, dissociative states, altered states of consciousness, extraordinary healings, and other areas related to consciousness in some of its non-normal forms. This has been mainly because the meaning and significance people tended to attach to these experiences seemed to clash so directly with prevailing assumptions about the nature of scientific reality. But perhaps it is our "official" concept of reality that is wrong.

The broader challenge to the worldview of modern science

But it has not only been peoples other-states-of-consciousness and paranormal experiences that challenge the worldview of modern science. Among the areas where there are major failures of the prevailing scientific worldview to accommodate well substantiated evidence are the following:

1. The fundamental inquiry within physics into the **ultimate nature of things** does not appear to be convergent. The search for more fundamental particles seems to lead to still

more fundamental particles; the search for the ultimate reductionist explanations seems to point to a wholeness. It is a fundamental initial assumption of physics, which has influenced every other area of science, that ultimate reality consists of fundamental particles, separate from one another interacting through mechanisms (especially fields) which can be discovered and specified. But with Bell's theorem, quantum physics now displays an inherent contradiction; particles originally assumed separate turn out, apparently, to be connected.

2. There appears to be evidence for a fundamental **self-organising force in living systems**, from the smallest to the largest conceivable organisms, which remains unexplained by physical principles. Living systems exhibit a tendency toward self-organisation (eg homeostasis; intricate patterns in flowers, butterfly wings, etc); toward preservation of integrity (eg healing and regeneration; ontogenesis from a single fertilised egg to an adult organism); toward survival of the organism and the species (eg complex instinctual patterns for protection and reproduction). The evidences of a cumulative effect, over time, of this self-organising tendency in evolution cast doubt on the adequacy of the neo-Darwinist orthodoxy.
3. There is a persistent puzzle of “action at a distance” or **non-local causality**. This shows up, as we have already observed, in the far reaches of quantum physics. It also appears in the area which John Beloff calls “**meaningful coincidences**” (1977), referring to two or more events where there appears to be a meaningful connection although there is no physical connection. Here “meaningful” may refer either to the subjective judgement of the observer, or to a judgement based in historical data (as in the case of astrology or the I Ching). The term “meaningful coincidences” includes Carl Jung’s “synchronicity” (Peat, 1987) and the most of the range of the “paranormal.” Examples include apparently “telepathic” communication, seemingly clairvoyant “remote viewing,” and the “coincidence” between the act of prayer and the occurrence of the prayed-for, such as healing. Another example is the feeling if having a “guardian angel” when a person feels warned about a danger, or provided with a particularly fortuitous circumstance in life. A host of historical and anecdotal examples fall into the categories of “miracles” and psi phenomena”.
4. Our scientific knowledge about the universe appears to be incomplete in that there is no place in it for the **consciousness of the observer** – nor in general, for **volition** (“free will”) or any of the other attributes of consciousness,. Nobel laureate Roger Sperry (1987) insists that no science can be complete that does not include “downward causation”, from the higher level of consciousness to the lower, physico-chemical level.
5. One of the most challenging aspects of the consciousness puzzle is **the concept of the self**. The conscious self is ineluctably involved in observation; yet the science constructed from those observations contains no place for the self. Psychologist Gordon Allport wrote in 1955, in a little volume entitled *Becoming*, “For two generations, psychologists have tried every conceivable way of accounting for the integration, organisation and striving of the human person without having recourse to the postulate of a self.” The battle is still going on.
6. Related, but worthy of separate mention is the area of **altered states of consciousness**, including particularly those states traditionally sought out in a spiritual or mystical context.

Reviewing the nature of scientific inquiry

To understand what it means for science to be presented with such a broad challenge we need to review some basic aspects of scientific inquiry.

Quine's "theoretical network" argument.

W.V.O Quine, a major figure in recent philosophy of science, argued (1962) that the scientific explanation for any phenomenon is embedded in a theoretical network which involves multitudinous assumptions, including:

assumptions involved in "observations" of the phenomenon;

hypotheses about the context of the phenomenon;

underlying theoretical hypotheses;

"basic laws" of the pertinent area of science;

the accepted nature of scientific methodology;

epistemological assumptions underlying scientific inquiry;

ontological assumptions about the basic nature of reality

When there is an "anomaly", or a failure of observations to conform to scientific expectations, it means that *somewhere* in that network there is a falsity. There is no way to tell just where in the theoretical network the falsity lies. Thus in the face of an anomaly, we must consider revising any or all elements of the network – including, possibly, basic metaphysical assumptions.

When experience contradicts science, the science must be changed, but there is no infallible logic for determining exactly what to change in one's theory. We must, says Quine, give up any idea that we can use experience *either to confirm or to falsify* particular scientific hypotheses. A consequence of Quine's view is that even our epistemological convictions about how we acquire knowledge, and about the nature of explanation, justification, and confirmation, are subject to revision and correction.

It is precisely to that point which present-day scientific paradoxes seem to have brought us. Most scientists today would assert that science has moved away from the strict determinism, reductionism, positivism, and behaviourism of a half century ago. But it remains to be discerned what scientists are moving *toward*.

The metaphysical foundations of modern science.

Modern science is based on the metaphysical foundations of logical empiricism. The most important of these assumptions can be summarised as:

Objectivism: the assumption of an objective world which the observer can hold at a distance and study separately from himself;

Positivism: the assumption that the real world is what is physically measurable;

and

Reductionism: the assumption that we come to really understand a phenomenon through studying the behaviour of its elemental parts (eg fundamental particles).

To be sure, these underlying assumptions have been modified with the advent of quantum physics, particularly by the indeterminacy principle and the inherent statistical nature of measurement of the very small. What we want to suggest here is the possibility of an even more fundamental change – change at the level of underlying ontological and epistemological assumptions.

Underlying the above (modified) classical assumptions is *an ontological assumption* of separateness – separability of observer from observed, of man from nature, of mind from matter, of science from religion; ultimate explanations in terms of interactions between separate “fundamental particles” – and an *epistemological assumption* that our sole empirical basis for constructing a science is the data from our physical senses.

Scientists typically take these ontological and epistemological assumptions to be inviolate, to be an inherent and ineluctable part of the definition of science. But it is precisely here that we are likely to find the resolution of some of the most fundamental puzzles in science.

Toward a more holistic science

There is increasingly widespread agreement that science must somehow develop the ability to look at things more holistically. The “separateness” assumption that underlies modern science is in a way an artifact of the history of Western civilisation. In a more holistic view, where everything, including physical and mental, is connected to everything, a change in any part affects the whole. The familiar concepts of scientific causation apply only when a part of the whole can be sufficiently isolated from the rest that reductionistic causes appear to describe adequately why things behave as they do. In general, “causes” are *limited explanations that depend upon context*. In completely holistic view there are not “cause” and “effect”, only a whole system evolving.

Thus, “wholeness science” is naturally concerned with “downward causation” (Campbell, 1974; Sperry, 1987) as well as the reductionistic “upward causation” which presently dominates the scientific world. The presence of teleological factors in the biological realm presents no problem, once there is releasing of the insistence that biology be reducible to physics and chemistry. We observe teleology in ourselves; why not, then in the larger system of which we are a part?

The mistake of modern society has been to assume that ultimately, reductionistic “scientific” causes should explain everything. One should not expect reductionistic science to comprise an adequate worldview. The context of reductionistic science is the desire to gain control through manipulation of physical environment. Within that context its description of “causes” works amazingly well. Our problems arise when we change the context and attempt to elevate that kind of science to the level of a worldview. That is when we generate conflicts like “free will versus determinism” and “science versus religion.”

The “wholeness science needed to deal more adequately with consciousness related phenomena would be based on (a) *an ontological assumption of oneness, wholeness, interconnectedness of everything*, and (b) *an epistemological assumption that we contact reality in not one, but two ways*. One of these is through physical sense data – which form the basis of

normal science. The other is through being ourselves part of the oneness – through deep intuitive “inner knowing”. In other words, our encountering of reality comprises an *objective* aspect – being aware of, and giving meaning to, the messages from our physical senses – and a *subjective* aspect in an intuitive, aesthetic, spiritual, noetic and mystical sense. (It should not escape our notice that an intuitive and aesthetic factor already enters into normal science in various ways – for example, the aesthetic factor already enters into normal science in various ways – for example, the aesthetic principle of “elegance”; the “principle of parsimony” in choosing between alternative explanations).

Once we recognise the non-necessity of the separateness assumption, there is no reason to assume the biological and cognitive sciences can be reduced to the physical sciences (materialistic, reductionistic, deterministic), let alone to physics. The biological sciences involve more holistic concepts (eg organism, function of an organ) which have no counterparts at the physical sciences level. Similarly, there is no reason to assume that the characteristics of consciousness are reducible to biology. In other words, while theory reduction (as, for example, the laws of optics explained through electromagnetic theory) will be welcomed whenever it proves to be possible, it is not a dogma of “extended” science that it must be, in general, possible.

Starting from the holistic assumption, there is no separation of observer from observed. “Action at a distance” does not pose a particular problem. Volition, other states of consciousness, teleological influences, “meaningful coincidences,” etc are not “anomalous”. Neither do consciousness, and the concept of the self, present any fundamental problem to the extended science.

To re-emphasise the point, within “extended” or “wholeness” science none of present “hard” science is invalidated in the limited domains where it was generated. Certain aspects of the unity that is the Whole will continue to be quite profitably studied by means of “separateness science”. That kind of science, however, would – as only part of a more extended science – no longer have the authority to insist that we are here, solely through random causes, in a meaningless universe; more that our consciousness is “merely” the chemical and physical processes of the brain.

“Wholeness science would include and emphasise more participative kinds of methodologies; it would assume that, whereas we learn certain kinds of things by distancing ourselves from the subject studied, we get another kind of knowledge from intuitively “becoming one with” the subject. In the latter case, the experience of observing brings about sensitisation and other changes in the observer. Thus a willingness to be transformed himself or herself is an essential characteristic of the participatory scientist. The anthropologist who would see clearly a culture other than her own must allow that experience to change her so that the new culture is seen through new eyes, not eyes conditioned by her own culture. The psychotherapist who would see clearly his client must have worked through his own neuroses that would otherwise warp perception. The social scientist who would use a participative approach to understanding and guiding organisational arrangements and processes will almost certainly be changed through his/her involvement. The scientist who would study meditative processes and those “other states of consciousness” so treasured in the various spiritual traditions has to be willing to go through the deep changes that will make him or her a competent observer.

Comparison of two sciences.

The sort of “wholeness science” being described is summarised in the table below. I believe that the time is ripe to insist on a re-examination of the metaphysical foundations of modern science. Until this is done, research on consciousness-related phenomena will continue to miss the mark because it will continue to be distorted by the misguided attempt to fit it into a basically reductionistic and positivistic framework.

ASSUMPTIONS, COROLLARIES AND CHARACTERISTICS OF TWO SCIENCES: A COMPARISON

Separateness Science

1. Basic ontological assumption:
The universe is made up, ultimately of fundamental particles and quanta which are separate from one another except insofar as there are specifiable connections (such as fields).
2. A scientific explanation of a phenomenon (understanding of causes in a scientific sense) consists in relating the phenomenon to more general and fundamental relations or “scientific laws.” The ultimate scientific explanation would be in terms of the motions and interactions of the fundamental particles and quanta involved. (This desideratum is approached, for example, in thermodynamics or physical optics).
3. All scientific knowledge is ultimately based on data obtained through the physical senses. Such information is, then, ultimately quantifiable.
4. The truest information about the objective reality is obtained through the observer being as detached as possible. There is an ultimate limit to objectivity, in that there is inevitably some “observer effect” in any observation.
5. The universe is scientifically understood to be ultimately deterministic.
6. The material universe evolved to its present state from the “Big Bang” by random physical process and, after the advent of life, mutation and natural selection. Consciousness (whatever it is) is a product of material evolution.
7. There is no evidence for mysterious “drives” or “purposes in evolution. What appears as a “survival instinct” is merely the result of natural selection; any organisms that did not have such drive were selected out. There is no scientific evidence for anything in the universe resembling “purpose” or “design”. The biological sciences use teleological language for convenience, but what it really means is that those structures and behaviours that contribute to survival survived.
8. The wide range of more-or-less commonly experienced phenomena known as “meaningful coincidences” (including the great preponderance of so-called “anomalous” phenomena)- where two or more events appear to be meaningfully connected, but there is no discernible physical connection -must ultimately be shown either to have a physical connection or to be, in fact, merely coincidence.
9. Non-normal states of consciousness, dissociation, etc are phenomena to be studied largely in the context of the pathological, in terms of their effects on behaviour.
10. The explanations of ontogenesis, morphogenesis, regeneration, and related biological phenomena are to be sought in terms of coded “instructions” in the genes and similar mechanisms.

Wholeness Science

1. Basic ontological assumption:

The universe is basically a single whole within which every part is connected to every other part. The wholeness includes every aspect accessible to human awareness – the physical world as discerned through our physical senses, and all the contents of consciousness.

2. Pragmatically useful scientific explanations enhance understandings of phenomena by relating them to other phenomena and relationships. Since things are so interconnected that a change in any one can affect all, then any accounting for cause is within a specific context, for a specific purpose. The search for ultimate reductionistic cause is futile; they are not cause and effect, but rather than the evolution of a whole system. Order is observed in the physical world, but it is never free from the possibility of “downward causation” (from consciousness “down” to the physical).
3. Reality is contacted basically in two ways. One is through physical sense data. The other is inner, through being ourselves part of the oneness – through a deep intuitive “inner knowing”. Our encountering of reality is not limited to being aware of, and giving meaning to, the messages from our physical senses (sometimes referred to as “objective”), but includes also a subjective aspect in an intuitive, aesthetic spiritual, noetic and mystical sense).
4. Understanding comes, not from being detached, objective, analytical, coldly clinical, but rather from identifying with the observed, becoming one with it. (This is not to deny the usefulness of objective knowledge, but only the recognition that it leads to a partial understanding).
5. The concept of a completely deterministic universe (even in a statistical sense, as in quantum physics) stems from the “separateness” assumption there is no reason to expect it to be borne out in experience
6. There is no a priori reason to assume that “scientific laws” are invariant; rather, it seems more plausible that they, too, are evolving. Hence extrapolation to the “Big Bang” may be suspect. Evidence seems to point to consciousness either evolving along with, or being prior to, the material world.
7. Since we humans are part of the whole, and experience “drives” or “urges” such as survival, belongingness, achievement, and selfactualisation, there is no a priori justification for assuming these are not characteristics of the whole. Similarly, since we experience purpose and “values”, there is no valid justification for assuming these are not also characteristics of the whole. In other words, the universe may be genuinely, not just apparently, telic.
8. “Meaningful coincidences” are not to be explained, but rather apparent separateness. In other words, the question is not “How can we explain apparent telepathic communication?” but rather, “How can we explain why our minds are not cluttered by all that information in other minds?” Not “How can we explain apparent psychokinetic phenomena?” but rather, “How should we best understand why our minds have such a limited effect in the physical world?”
9. The entire spectrum of states of consciousness are of interest. These include “religious experiences”; experiences of “mystical” states of consciousness, of “other dimensions of reality.” These experiences have been at the heart of all cultures, including our own. They

- have been among the main sources of the deepest value commitments; they may be an important investigative tool, a “window” to other dimensions of reality.
10. The ultimate explanations of ontogenesis, morphogenesis, regeneration, and related biological phenomena will probably turn out to have to include something in consciousness analogous to “image” or “idea”.

References

Campbell, Donald T. (1974), “Downward Causation’ in Hierarchically Organised Biological Systems,” **Studies in the Philosophy of Biology**, eds. F. Ayala & T. Dobzhansky. Berkeley: University of California Press.

Quine, W.V.O. (1962), **From a Logical Point of View** (2nd ed.). Cambridge, Massachusetts: Harvard University Press.

Sperry, Roger W. (1987), “Structure & Significance of the Consciousness Revolution, **The Journal of Mind & Behaviour**, vol.8 no.1; Winter 1987.