Confronting Reality

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Abstract

Confronting reality will take on a new meaning in the global renaissance that will begin to unfold during the next century. We can no longer avoid facing up to the profound challenges, in our confrontations with nature, with science and technology, and with different modes of knowledge operating in European as well as non-European cultures. Beyond comparative studies, what is needed is a deep reflection on the many tacit assumptions that underlie each mode of knowledge. We have to inspect roots, not fruits. This requires a willingness to start from scratch, each time a more basic layer of understanding is uncovered. Examples of such willingness can be found in the works of two true beginners, the early twentieth-century philosophers Husserl and Nishida. They can inspire us to do in our days what they did in theirs: to start from experience, radically and directly, while at the same time striving for theoretical consistency.

1. Introduction

As a European astrophysicist, living and working in the U.S., and speaking now at a philosophy conference in Japan, I find myself involved in three confrontations. The first, and easiest to deal with, is the confrontation with the cultural differences between Europe, America and Japan. The second and more tricky confrontation is that between science and philosophy. The third and most baffling one is the confrontation between the human researcher and the world that is being studied.

What is baffling about the third is the fact that it can be done at all. When you look at leaves blowing in the wind, clouds blowing across the sky, rocks tumbling in a stream, there are all kind of regularities to be seen. Little eddies in the water that remain for a while before dissolving, groups of leaves sharing similar patterns in the way they fall down, being carried by the same gust of wind. But by and large, the totality of all these bewildering motions does not seem within human grasp. Who could have guessed, a mere five hundred years ago, that now all of this can be described so accurately, at least in principle, as a temporal unfolding that follows from relatively simple physical laws? I will start with this question in section 2.

Why does nature reveal her secrets to us in mathematical form? Does this imply that nature really is mathematical, in a deep sense? Should we conclude, with Pythagoras, that reality at bottom consists of numbers? Or is this mathematical side of nature just one of her many facets? Or are we perhaps not dealing with anything fundamental at all, and is the mathematical structure that we decipher in nature only a mirror of the particular way we have learned to look at and deal with nature? And what about the body and mind of the human subject, can all that be reduced to or at least accounted for by a purely physical description? With these questions we enter the domain of philosophy, thereby inviting the second type of confrontation, that between scientists and philosophers. I will address these questions in section 3.

The first type of confrontation that I mentioned above, that between the world views of different cultures, is one that has the potential to play a very constructive role in the face of the other two confrontations. Problems that have arisen within science itself, as well as in the philosophy, sociology and anthropology of science, all can be seen in a new light when we compare the various roots of rationality in different cultures. Such a comparison is unavoidable, I will argue, and will be part of a global renaissance. I will sketch these views in section 4.

Faced with these challenges, how shall we take our first steps? It would be great to have some pointers, however imperfect, for interesting new directions. In my opinion, Husserl and Nishida are perfect examples of admittedly imperfect new initiatives. Both were true beginners, always ready to go back to scratch whenever necessary, and always eager to focus on the phenomena themselves. Starting from experience, from pure appearance itself, they have laid down some of the first tiles of a global market place for intercultural dialogue. I will discuss their ideas in section 5.

In my view, central to this new market place will be fresh forms of Socratic dialogue, in a renewed attempt to overcome skepticism and relativism. The appeal to reason will necessarily be more subtle than anything envisaged in European philosophy so far. Unlikely as it may sound in this day and age of irony and cynicism, it is my deep conviction that such an appeal will prove to be fruitful. I will argue for this optimistic outlook in section 6.

2. Confrontations with Nature

Science has often been pictured as resulting from a confrontation between scientists and nature. We talk about 'science at the frontiers', 'the cutting edge of science' where problems are 'attacked', and 'break-throughs' are accomplished. Where does this notion of confrontation come from?

The roots of this attitude may be found in the late Middle Ages in Europe, which saw a gradual tendency to withdraw from direct participation in the world, with the human investigator playing more and more the role of spectator [1]. In art this movement was expressed through the use of perspective, leaving the viewer of a painting outside the picture, as if looking through a window upon a world. This withdrawal of the subject from the world extended even to human embodiment. In medicine, the human body was treated more and more as a machine, about which information was obtained through anatomy studies in which corpses were dissected. In parallel, the ideal took hold of a disembodied viewpoint, an absolute and eternal vantage point from which to study nature.

When natural science took off, in the seventeenth century, the mind/ body split and corresponding subject/world split had been completed, as expressed clearly by Descartes. The subsequent growth of science, based on a firm empirical basis, elevated the view of the natural world as something objectively given, out there, independent of our subjective whims, and largely independent of religion as well – since the body/mind split had neatly separated the natural world from the world of the mind that could be left to the theologians to focus upon.

After a mere few centuries, we now find ourselves confronted with what seems like a basically complete mapping of the objective world, the outer one-half of the split that had already started to grow wider and wider during the two centuries preceding Descartes. Our current picture of nature stretches from a detailed understanding of sub-atomic particles all the way to a mapping of regions near the edge of the visible Universe, and back in time to an understanding of what has happened even in the very first second after the Big Bang. Somewhere in between the extremes of the largest and smallest scales, we find the most complex physical processes we have encountered so far: the biological processes operating in a single cell, as well as their even more complex interactions in a multi-cellular organism.

The human brain seems to be the most complex of all the structures we have encountered in the objective side of reality. And the increasingly detailed studies of the operation of the brain now present us with the greatest challenge so far: that of the connection between the subjective and objective sides of reality. It is here that we find ourselves in the middle of a confrontation that is unique in the history of science. No longer can we close our eyes for the role of the subject, in studying the objective side of things. In fact, the development of quantum mechanics, at the beginning of this century, had already started to pose uncomfortable questions about the validity of the subject/object split, but the recent developments in cognitive science, and especially in the study of consciousness, leave us scientists no alternative but to confront our own habits of confrontation.

3. Confrontations with Science

Recently, several philosophers, sociologists and anthropologists studying the practice of science have made increasingly critical footnotes to the naive notion of scientific 'discovery'. In the budding field of science studies many scholars have focused on the degree to which discoveries can be considered to be partly social constructions. Some even have gone so far as to suggest that all forms of knowledge, including that of the natural sciences, are ultimately culture-bound and therefore relative [2].

These views in turn have incensed many a scientist, since they go against the grain of some of the most deep-seated convictions of the practicing scientist [3]. This type of reaction is only to be expected. If a team of sociologists, anthropologists and philosophers would be admitted to the Vatican, to study the every-day life of the Roman Catholic officials there, they are unlikely to produce a report that will please the officials being studied. In fact, we would raise our eyebrows if it did, and suspect the scholars to have done a lazy job.

At the same time, sociologists who are unfamiliar with church matters and beliefs are as unlikely to come up with interesting fresh observations as the Vatican officials themselves. Ideally, a researcher should have a deep knowledge of, and respect for, the field being studied. It is to be hoped that more scientists will take the field of science study seriously, engaging their sociologist counterparts in a constructive dialogue. Such a dialogue will have to start from mutual respect, with a willingness to try to look through the eyes of the other. For example, a theoretical physicist can stumble over an uncooperative mathematical equation, in an experience that is as vividly felt as stumbling over a chair. Similarly, a sociologist can stumble over the many tacit assumptions present in the hidden philosophy of a physicist claiming not to be interested in philosophy. Unless both sides can share their respective senses of stumbling, no constructive dialogue will be possible.

The reaction of horror, displayed by many scientists faced with some of the more provocative publications in science studies, may be related to a lack of historical awareness. The whole idea of objective natural science, the way it is now practiced world wide, did not arrive on Earth as a present of the Gods. On the contrary, it arose naturally within a specific cultural context, as a particular form of (natural) philosophy in the late renaissance in Europe. As such it inherited many elements of the way of thinking of that time and place: most prominently the notion of a Christian God as a point of reference outside space and time.

This cultural dependence in the method of science is not something that is discussed in a typical science education. On the contrary, scientists are used to view their own trade as something that deals with absolute truth, independent of cultural trappings. They may be aware of conflicts between science and the church, in the days of Galileo and Descartes, but they rarely notice the strong similarities in outlook between church and early natural science: the shared notion of eternal values that can be derived from an absolute and totally objective point of view [4].

Interestingly, within science itself, modern developments such as quantum mechanics have shown these assumptions to be invalid. Clearly, it is time to go back to the historical roots of science, to investigate critically what needs to be retained and what can be tossed as no longer necessary. We will come back to this point in the next section.

Another form of lack of historical awareness shows through in the indignant reactions of many scientists to the relativist notions in science studies. In fact, attitudes found in postmodernism and deconstructionism are only the latest wave in a series of such waves, throughout the history of European philosophy. What is more, the highlights of European philosophy originated as a reaction to relativism and skepticism, not by ignoring or looking down at them, but by taking them very seriously. It was in confronting the sophists that Socrates developed his method of inquiry. It was in reply to the skeptics of his day that Descartes designed his own system of clear and distinct ideas. And it was his confrontation with Hume's skepticism that led Kant to develop his critical philosophy. More recently, it was through a confrontation with psychologism that Husserl created his phenomenological approach.

What is fascinating in all these cases is the central role played by the notion of not-knowing. Socrates, when confronted with the skepticism of the sophists, said that the only thing he knew was that he did not know anything. His recipe in any of his dialogues was this. Let us take anything we thought we knew, and investigate it thoroughly. If we are careful enough, we will discover that our knowledge was only a veneer, covering a deeper not-knowing. This is the theme of what I would characterize as 'Socratic deconstruction'. Interestingly, this approach looks quite similar to that of the sophists, at first sight. However, it avoids the dead-end of the latter, by being even more radical.

The basic idea is this: when a skeptic tells us "In this world, nothing is certain", we can counter with the question "what world?" — thereby exposing the fact that every skeptic tacitly makes uses of all kind of received forms of conventional knowledge, even while avowing a skeptical attitude towards any type of certainty. Like Socrates [5], but in different ways, Descartes, Kant and Husserl all invoked forms of not-knowing in order to make a radical turn to outsmart the skeptics of their days. Descartes, confronted with the skeptical views of Montaigne and others [6], started with methodic doubt. Kant, triggered through his confrontation with the skepticism of Hume [7], made the distinction between the knowable phenomenon and the unknowable noumenon. Husserl introduced the epoche [8], a methodological approach to not-knowing, which we will discuss below in section 5.

We, too, finding ourselves placed against a new wave of skepticism, are invited to find a new form of radical empiricism, to use William James's term [9], in order to overcome extreme forms of relativism, without falling back into a naive form of absolutism. To do so, we have to find a new form of not-knowing. We have to regain a sense of beginner's mind, and return once more, like Husserl — and like Socrates, Descartes, and Kant — to the things themselves, to the world of phenomena, the world of appearance as appearance. We will come back to this challenge in section 6.

4. Confrontations with Knowledge

There are many modes of knowledge. The scientific approach is one of them, one that has been extraordinarily successful and that has led to an enormous depth of insight over the last four centuries. The drawback of any type of success, however, is that we tend to overconcentrate on the area of success, neglecting other areas. And indeed, our culture has become rather unbalanced in its exaggerated focus on scientific and technological knowledge in contrast to other modes of knowledge.

Reactions to this exaggeration are visible in many forms. The most negative ones are a nihilistic 'I don't care' attitude, an inability to face the grave problems both in society and in the environment. There are also tendencies to retreat into new types of religious fundamentalism. And then there are new forms of skepticism, attempts to argue that scientific certainties are largely or wholly figments of the imagination, projections of our particular cultural outlook. None of these, however, quite get to the core of the matter.

The real question is not how to 'overcome' science. Many people intuitively feel the threat of scientism stealing our soul and banning us from the lived and felt reality of this world into an impoverished world of atoms and molecules and formulas and cold objective analyses. But rather than trying to overcome the perceived cause of the problem, science, the challenge is to overcome scientism, the impoverishing interpretation of science.

If science is considered the one and only recourse, the only source of true knowledge, then science turns into an ism and with this cloak of interpretation we are faced with scientism. This then triggers counter currents, other isms that try to do battle with scientism (creationism, for example). What is needed is a counter balance, a healthy and relaxed focus on other modes of knowledge, rather than fanatic attempts to straighten out what has grown skewed by trying to bend it forcefully the other way.

Sources for balance are easy to find. For the first time in history, we have access to a vast spectrum of different cultures, past and present. The resulting confrontation is more striking than it has ever been, given that this time we are not dealing with an encounter of two or three cultures, but literally with all cultures present right now on Earth, together with a great many for which we detailed historical knowledge. We are thus entering a global renaissance, in which we are forced to look afresh at our roots: from the classic Greek culture in Europe, via the ancient Indian and Chinese cultures in Asia, to other historical cultures for which we have a deep enough understanding.

This process of coming to grips with our roots will take time. How much time? That is a difficult question. Traditionally, it has taken several generations, at least, to find new syntheses in the midst of culture clashes. By and large, the human mind seems too stiff to make quick turns towards radically new ways of looking at the world.

I am quite optimistic about the global cultural integration and syntheses that seem to be unavoidable, even though they have been rather slow to unfold. Perhaps more prominently visible right now are the last vestiges of a counter-reaction: various forms of fundamentalism, as well as forms of nihilism or extreme relativism. However, I consider both to be transient phenomena. Rather than attacking them straight on, I think it will be wiser to quietly go our way, in search of new forms of synthesis. The more these will be successful, the more they will lessen the force of fundamentalism and nihilism.

It is likely that this renaissance will witness a re-birth not of one ancient culture, but of many. In this process, we will have to confront the facts of diversity and unity. We will have to respect the vast differences in outlook between different cultures. At the same time, within each culture, we will have to reflect on our own limitations and particularities, with the help of mirrors held up by others. While doing so, we also have to respect similarities, recognizing that vastly different starting points can lead to comparable conclusions. I am aware that it is not very popular to stress similarities nowadays, in the climate of focusing on 'difference' and 'the other'. It may well be my outlook and temperament as a physicist that makes me look for hidden unity more than for apparent diversity. But I feel that true respect for diversity includes a realization that within all that diversity common goals can be identified and reached.

William Blake expressed it nicely [10]: "If the fool would persist in his folly he would become wise." How one starts off on any given problem is not that important. What is really essential, rather, is a willingness to adopt one's method, time and again, to the particular obstacles encountered. In scientific research we are reminded of this situation on a day-to-day basis. In any new piece of research we are confronted with uncertainties, and often it turns out that our starting points were not quite (sometimes not at all) suitable for the job. So we go back and try again, in different ways, until we reach our goals — which often turn out to be very different from the type of goals we had in mind when we embarked on our research. And indeed, in natural science different researchers, starting from quite different assumptions, in the end can and often do reach the same conclusions.

Physics offers some striking examples, with the contrasting approaches of Newtonian versus Hamiltonian dynamics, or Heisenberg's matrix mechanics versus Schrödinger's wave mechanics, in each case leading to the same conclusions, in strikingly different ways [11]. These examples are internal to physics itself. But quantum mechanics has given us another example of how a resulting position can be quite different from the one adopted at the start of a search. Classical mechanics was defined so as to be purely objective, and any influence of the human physicist doing measurements was assumed to be negligible, at least in principle. Quantum mechanics, in contrast, has told us otherwise. Now we know that choices made by the experimenter do affect what we can measure, in a way that is incompatible with any form of classical objectivity [12]. This switch in outlook is not something anybody specifically ordered; on the contrary, physicists have only reluctantly learned to live with it.

So here we are, with a situation in which one particular cultural approach, based on extreme assumptions of objectivity, has given us a wonderful body of knowledge, natural science, that itself carries the message: there is no such thing as pure objectivity. On this ground alone, it is worth engaging in an honest and deep cultural comparison. What have other cultures to say about objectivity? We find ourselves in a situation in which we have to change our underlying logic. Can we learn from the logic of other cultures, from their way of viewing the world?

5. Husserl and Nishida

For many years, I have wondered which type of stepping stones might be most appropriate, to begin to connect the rich heritages from Europa and from India/China. So far, the most promising leads I have come across, I have found in the writings by two philosophers who lived in the first half of this century: the German philosopher Edmund Husserl (1859-1938) and the Japanese philosopher Nishida Kitaro [13] (1870-1945). In this paper there is no room to go deeply into the thought of either of them. I hope to do that elsewhere. Therefore, I will merely sketch an outline of how I see the current prospects for cultural synthesis, and the important roles that I think Husserl and Nishida can play therein.

Husserl is a most unusual philosopher in that he effectively modeled himself after a physicist, in using both theory and experiment, and letting experiment be the deciding factor. His laboratory was what he called the epoche, a switch to an attitude in which all that appears is seen and acknowledged as it appears, in its own structure of appearing, without tying it down immediately to the usual external explanatory framework (of a physical world, in which we possess a body with sense organs and a brain that is assumed to give rise to consciousness).

When reading Husserl, I get a sense that for him the epoche was not at all a metaphorical device or aid to help him explaining his ideas. Rather, it was for him a deeply personal change in the way he related to life, to himself, to others, to the world [14]. In fact, his description, in those rare passages where he tells us something about his more personal engagement with the epoche, is very much akin to that of a mystic, trying to find words to describe an experience that in itself cannot be conveyed in words, but only hinted at.

What I find most curious about Husserl is his theoretical interpretation of his experimental findings. With his epoche, he realizes how the body/mind problem dissolves when we see how everything is given as pure appearance, pure phenomena. Unfortunately, he then jumps to the conclusion that these phenomena must be present in something (consciousness) that somehow belongs to someone (the transcendental ego). Had he been able to refrain from bringing in those two typically European prejudices, he would have been able to see eye-to-eye with Zen Buddhists and other experimental investigators working in non-European traditions.

Even though his prejudices held him back to some extent, we do find in Husserl's writings many remarkable acknowledgments and descriptions that seem to defy the barriers he placed in front of himself. For example, in one of his manuscripts Husserl states [15]:

> Consciousness ... is not a psychical experience, not a network of psychical experiences, not a thing, not an appendage (state, action) to a natural object. Who will save us from the reification of consciousness? He would be the saviour of philosophy, indeed, the creator of philosophy.

Who indeed? It is here that we can turn to Nishida.

Unlike Husserl, Nishida already had a tool, ready at hand, to study the character of reality as it presents itself directly on the level of phenomena. Zen Buddhism provided him with an excellent tool to strip away the various layers of tacit dogma that have become encrusted upon the way we usually deal with experience, and that are handed down and reinforced implicitly in education. Where Husserl had to build a new tool from scratch, the epoche, Nishida had his de-conceptualizing equipment handed down to him directly through his Japanese cultural background.

What Nishida lacked, however, was a framework in which to express the results of his experiential investigations. Although he very much appreciated the practice of detailed conceptualization, central to European philosophy, he did not find a way to make his ideas fit in the types of reasoning he found there. After decades of trying various approaches, he decided to develop his own form of logic, the logic of basho (place).

In parallel with the forms of not-knowing advertised by Socrates, Descartes, Kant, and Husserl, as antidotes to the skepticism of their days, Nishida offered his own brand of not-knowing. But it is here that an important difference shows up: not-knowing as an epistemological move did not satisfy Nishida. He went one step further, and took a move more radical than what had been seen in European thinking. In a turn from epistemology to ontology, he grounded his not-knowing into an underlying not-being. His widest and ultimate basho, as a most encompassing horizon of all forms of existence, is 'mu no basho', the place of absolute nothingness [16]. It is on this ultimately open stage that we may hope to find enough playing room to start looking for deep intercultural comparisons, and perhaps even develop new forms of synthesis.

6. Outlook

Science presents us with a marvelous mode of knowledge, but one that we have not yet integrated into our culture. The resulting imbalance is visible everywhere, from weapons technology and the degradation of the environment to the alienation of individuals in technocratic societies. Our challenge is to find a balance between different modes of knowledge, respecting and appreciating each while allowing new forms of integration to develop freely.

In Eurocentric circles, inventories of modes of knowledge have traditionally been made up through dichotomies such as science versus humanities, or arts and science, or arts and crafts, or in earlier periods mystic versus dogmatic knowledge. However, in order to chart knowledge, we must acknowledge all forms of knowledge, even the most ordinary ones: there is the everyday knowledge of how to tie our shoe laces, how to deal with people on the street, with friends and foes, and most difficult of all, how to deal with ourselves.

In the accelerated encounters between different cultures that we are now witnessing, it is on the level of the various modes of knowledge that the clashes are most fascinating, and most likely to lead to new breakthroughs, in attempts to make critical comparisons while aiming at new syntheses. We already see this in particular fields, such as medicine, where comparative studies of, for example, Chinese and European approaches are increasingly taking place. We also see this on the level of our basic outlook to life.

Where one culture sees a tree as a living force to be reckoned with, another culture sees a collection of atoms and molecules, raw material to be used or protected. Are they both right? If so, can these points of view be brought into harmony with each other?

Such questions are essential, for our own future and that of our planet. Ultimately, our world view determines how we act. Our outlook on life and on the world, on the other and on ourselves: this is what determines how we respond to crises, and this is what determines how we live our daily life. Usually, our world view is something that is tacitly present and unquestioned. Only in times of upheaval are we thrown back upon our most basic assumptions, forced to inspect our own belief systems, most of which we have never really stared in the face.

In the twenty-first century, we will have to do this staring in the face, collectively. There is no way to avoid this. On the one hand, ecological and political problems will force us. On the other, a real and honest dialogue between the various world cultures can no longer be postponed. The question is only where to start, in overhauling our world view. After opening the hood, shall we take out the engine? Or first clean the carburetor, or what?

My suggestion is not to start in a vacuum, but to begin with an attempt to update the ideas of Husserl and Nishida: two stepping stones towards a global renaissance. My aim is not so much to follow them, or to analyze their particular accomplishments in great detail, but rather to capture the spirit of their approach, and apply that to the problems we are currently confronting in a search for a unitary world view, both logically coherent and experientially grounded.

In Husserl, I recognize someone starting from a firm belief in science. What he found, going that route, was a laboratory tool termed epoche, that provided him with a form of mystical experience. Stepping out of the nineteenth century scientific world view he was raised in, stepping through the gate of the epoche, he found himself in a living universe, unlike anything he had been familiar with so far. The only way he was able to, and willing to, report the results of his investigations was again in terms of science. And this is fine, if done consistently: following the example of Blake's fool getting wise. The problem is that very few of his contemporaries understood him, mostly I guess because they were not familiar with the types of experience that Husserl tried to convey.

In Nishida, I also find that respect for science and mathematics, that eagerness to provide public reports, rather than to form esoteric circles. Unlike Husserl, Nishida had the specific aim of bridging European and non-European philosophical views. Unlike Husserl, he had a tool already, zazen, and his main concern was to look for a methodology for the production of appropriate theory, approaching the balance between theory and experiment from the other direction than Husserl did. For Nishida, it was crystal clear that experience has a person, not the other way around [17]. He did not have to struggle with the European hangup of staking out an ultimate ground, and putting up a sign of 'transcendental subject' to claim that ground. Starting with pure experience was natural for Nishida. The problem was to find a form of logic that respected process over substance, dynamics over statics, the openness of nothingness over the frozenness of existence [18].

Nishida's move towards nothingness (or emptiness, or even better: openness) is nothing especially new in the history of humankind. There are many other examples in India, China, and other Asian cultures, from the Sufis to Advaita Vedanta to Buddhism and Taoism. In general, the notions of not-knowing and that of emptiness or openness are far more prevalent in Asia than in Europe, even though in Europe they have not been absent in the past. Besides Socrates, there are some great examples in the Middle Ages, of individuals that have stumbled upon not-knowing as a firm foundation of knowledge: the anonymous author of the Cloud of Unknowing, for example, or Ruusbroek, or Meister Eckart. It is only during the last few centuries, really, that the crucial role of emptiness has been completely neglected in European thought. It is high time to address this imbalance, through a vigorous form of global Socratic dialogue, starting from a collective realization that even today, the only thing we know is that we do not know.

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Notes

[1] Romanyshyn, R.D. 1989, Technology as Symptom and Dream [New York: Routledge].

[2] See, e.g., Science as Practice and Culture, ed. A. Pickering, A., 1992 [Chicago: Univ. of Chicago Pr.]

[3] An example of severe criticism of anything smacking of relativism can be found in Gross, P.R. and Levitt, N., 1994, Higher Superstition [Baltimore: Johns Hopkins Univ. Pr.]

[4] For a balanced view of religious influences in philosophy, in European and as well as Asian thought, cf. Mohanty, J. N., 1992, Reason and Tradition in Indian Thought [Oxford: Clarendon Press], esp. pp. 282-299.

[5] Vlastos, G. 1991, Socrates, Ironist and Moral Philosopher [Cambridge: Cambridge Un. Pr.]

[6] Popkin, R.H., 1979, The History of Skepticism, from Erasmus to Spinoza [Berkeley: Univ. of Calif. Pr.]

[7] Kant, I., 1783, [transl. 1950:] Prolegomena to Any Future Metaphysics [New York: Macmillan Publ. Co.]

[8] Husserl, E. 1913, [transl. 1962:] Ideas, General Introduction to Pure Phenomenology [New York: Macmillan Publ. Co.]

[9] James, W. 1912, Essays in Radical Empiricism, reprinted in: James, W. 1967, Essays in Radical Empiricism & A Pluralistic Universe [Gloucester: Peter Smith].

[10] Blake, W., 1790, The Marriage of Heaven and Hell; in The Portable Blake, 1976, ed. A. Kazin [Penguin], p. 253, l. 18.

[11] Feynman, R.P., Leighton, R.B. & Sands, M., 1964, The Feynman Lectures of Physics [Menlo Park: Addison-Wesley], volume II, Ch. 19; and volume III, Ch. 20.

[12] Bell, J.S., 1987, Speakable and Unspeakable in Quantum Mechanics [New York: Cambridge Univ. Pr.]

[13] In quoting Japanese names, I will write family names first; this seems more logical than the current habit of quoting Chinese names in English in the indigenous order while reversing Japanese names.

[14] Husserl, E., 1936, [transl. 1970:] The Crisis of European Sciences [Evanston: Northwestern Univ. Pr.], p. 137.

[15] quoted by R. Bernet, I. Kern, and E. Marbach in 'An Introduction to Husserlian Phenomenology' [Northwestern Univ. Pr., Evanston, Illinois], p. 62

[16] *cf.* Nishida, K., 1949, [transl. 1987:] Last Writings, Nothingness and the Religious Worldview [Honolulu: Univ. of Hawaii Pr.].

[17] Nishida, K. 1911, [transl. 1990] An inquiry into the Good [New Haven, Yale Univ. Pr.], p. xxx.

[18] Nishida, Last writings, op. cit.