Exploring Actuality through Experiment and Experience

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A comparison is presented of three approaches to an understanding of 'what is actual': modern science, Husserlian phenomenology, and Tibetan Buddhist Dzog Chen. In each approach, experiment is the central touch stone, while the theoretical 'foundations' are dynamically changing. The roles that consciousness plays in each of the three approaches are contrasted, in a comparative analysis that provides a fresh look at the question of the possibility of a scientific study of consciousness.

1. Objectivity and Subjectivity

The present conference is dedicated to a search for a science of consciousness. Usually, when we try to establish a science of X, we focus on the unknown properties and structure of X, in order to find a way to provide a scientific treatment of them. Tacitly, we take for granted that we already know what science is, and that we only have to search for a way to apply the scientific method in the proper way to X.

In the case of consciousness, this standard approach may fail. So far, science has only studied *objects* of various kinds. To be conscious is to be a *subject*. To treat consciousness as an object, among other objects, may completely miss the point. In this paper, I present a comparative analysis of three world views, science being one of them, in an attempt to clarify this issue.

One position, the one that most scientists seem to hold, is to consider subjectivity as a late comer. The world of objectivity is the 'real' one, the one that grounds everything else. Its existence originated in the Big Bang, and only after many billions of years did complex surface phenomena on planet Earth result in the presence of life and nervous systems and ultimately brains complex enough to pose the question "what is consciousness?". Subjective experience is thus seen as a byproduct of objective processes, an emerging property that is only present at a few isolated islands in a much vaster sea of objective reality.

Another position, more in line with the world view described by contemplative practitioners in various religious traditions, posits that both subject and object are late comers. In an attempt to interpret experience, we tend to polarize experience, regarding it as a form of interaction between a subject pole and an object pole. This polarization, however, does not affect the underlying 'pure experience'. The latter remains the more basic aspect of actuality, while the whole interpretive play forms a type of overlay. Note that these brief statements are still cast in a pseudo-objective language; a more careful description would need to rephrase and clarify each of these brief comments considerably.

At first sight, these two positions seem utterly incompatible. However, it may be possible to bring them into contact, by considering a third approach, that in a way interpolates between the two. If we start from a scientific world view, and ask ourselves how it is, exactly, that a subject deals with objects, we can switch from the usual objective third-person description to a more experiential first-person point of view. An example of such an approach is the philosophical school of phenomenology, founded by the German philosopher Husserl.

2. Inner and Outer Subjectivity

In an attempt to put these three approaches on the same map, I sketch in fig. 1 a view of the world that starts from the standard scientific picture. This figure does not represent my own view of the world, and it may not represent the every-day way in which most people, scientists and non-scientists alike, look at the world. Rather, it presents an refinement of the way most of us tend to look at the world, and at our role, as subjects, in that world.

The refinement offered in fig. 1 consists of an analysis of how a person experiences the objective world O, of which he or she is a part. Within the realm of that person's subjective experience S, many experiences are considered purely subjective, such as fantasies, desires, memories, or dreams. Other experiences are seen as corresponding to the objective world O. For example, when the person looks at a chair, a material object in the objective physical world O, he or she will have a conscious experience of the chair, within that part of the realm S that contains experiences corresponding to the objective world.

In fig. 1, that subset of S, corresponding to O, is indicated by O', the realm of experiences of the objective world, as opposed to the objective realm O itself. The distinction is important: we can be conscious of a chair, but we cannot put a chair as such inside our consciousness. The experience of a chair resides in O', while the chair is considered to reside in O. Finally, the consciousness that we study scientifically can then be called S', to distinguish it from the real thing, S. S' is the realm of psychology, while S as such is rarely thematized. S is the universe of experience, within which all experiences of a person are contained.

===== Fig. 1 =====

Fig. 1. Objectivity and Subjectivity in a naive interpretation of one person's experience. S denotes the total realm of experience of that person; O' that part of S that is devoted to experiencing the objective world; and S' that part of O' that seems to correspond to the experience of that person, viewed as an inhabitant of the world O'. In contrast, the 'real' objective world, O, does not and cannot enter directly in the world of experience, S.

From a purely phenomenological point of view, the objective realm in which we use our scientific tools is O'. It is distinct from the real thing, O, which is the most concrete realm, as the objective material realm that is posited to ground everything else. But at the same time, O is the most abstract of the four, in that it can, by definition, not be experienced, unlike S, O', and S'. It is literally abstracted from experience.

One may object that we do seem to experience a chair directly. We certainly do not normally experience the experience of a chair, which would be a rather unnatural type of reflection. Therefore, we usually identify the realms O and O', and, as a consequence, we also identify S and S'. However, even when we feel that we experience a chair, that experience is still an experience (namely, one of a chair), and as such belongs to realm O'. The experience of the experience of a chair would have to be drawn into a yet more remote realm O", as the objective subset of S'.

Returning to the title of our conference, 'toward a scientific study of consciousness', the question arises, which consciousness are we moving towards a study of? If it is S', the 'inner' realm of subjectivity, then we can try to use our normal scientific approach. But if it is S, the 'outer' realm of subjectivity, then such an approach may fail, if it would turn out that the identification of O and O' could be turned into question. A comparison of the three world views mentioned above may help to shed some light here. Husserl, for example, made a sharp distinction between a focus on S', which he called 'psychologism', and a focus on S, which he deemed to be the proper realm of philosophy.

Let us start with the most familiar world view, namely the view that science offers.

3. Science and World Views.

Science is a remarkably successful way of analyzing the structure of the physical world. In a mere few hundred years, it has moved on from a description of the motion of billiard balls and planets to a very detailed analysis of physical phenomena on a huge variety of scales: from subatomic distances to the edge of the visible universe, spanning 44 orders of magnitude, from 10^{-16}cm to 10^{28}cm. We believe that we have a more or less complete understanding of the fundamental interactions governing the physical processes throughout this vast range of length scales. The structure of matter on even smaller scales is still a subject of active research, but on all scales larger than the subatomic, in principle our tool set seems to be complete.

Of course, in practice many of the systems we encounter are far too complex to allow a full calculation of the detailed consequences of the underlying interactions, even though each of those are known. The fastest supercomputers do not suffice for a complete modeling of most complex systems, and therefore we are forced to engage in approximate modeling, often an art as much as a science. But each year our computers are getting faster, and we are also getting new and better ideas about how to use them in more clever ways.

To sum up: we have been successful beyond belief. Science offers us a complete understanding of the physical realm, in principle if not yet quite in practice. And doesn't it seem most sensible that so-called non-physical phenomena are ultimately nothing more than correlates of complex processes in the brain, itself a perfectly physical piece of matter, obeying the perfectly well known laws of physics?

Well, yes, such a conclusion does seem most sensible, for those who have wholly bought into the prevailing interpretation of what science is, and what it can deliver. In that case, 'towards a scientific study of consciousness' is in no way different than 'towards a scientific study of superconductivity', for example. Consciousness, like everything else, is then simply seen as grounded in physical reality, as one of many physical phenomena.

But what if we don't buy into such a belief? What if we ask questions like 'what is science' and 'what is science based on'? To address the latter first, scientific understanding is based on an interplay between theory and experiment, with experiment providing the ultimate touch stone of what is real. Of course, designing, carrying out, and interpreting those experiments, as well as developing and testing theories, are all human activities that take place, for each individual, within his or her consciousness. Doing science is a very specific project, with agreed-up rules, at least at any given time and place.

A modern individual can choose from many projects to engage in, dedicating him or herself to arts, business, politics, or other projects, besides science. And when we compare our own culture with that of others, we are confronted with many other possible projects, valid in other cultures. Thus, as soon as we view science as a project, one project out of very many, we may wonder how unique the world view, presented by science, is.

Two questions arise here. First, are there other valid world views, comparable in their validity to that of science? Second, how valid a world view does science offer? Does it really give us a complete world view, or is something fundamentally lacking? To try to answer these questions, I will briefly discuss two other world views, one from within twentieth-century Western philosophy, and one that can be found within Tibetan Buddhism, with roots that are at least a thousand years old, and probably much older.

4. Three Approaches to 'What is Actual'

What are world views views of? An obvious answer would be 'reality', but that word is already slanted to a particular class of world views. The root 're', of the Latin *res*, or thing, suggest that things are at the base of everything. However, many world views are more dynamic, and do not necessarily base themselves upon things or objects as being most fundamental. Therefore, a more general word would be 'actuality', rather than 'reality'. Whether or not 'what is actual' can be explained in terms of things will be left open.

The first approach to what is actual, to be considered here, is the view presented by natural science. The main object of study, in terms of the distinctions made in fig. 1, is the objective realm O', as it is given to us, *i.e.* in experience. This realm is what is studied by physics, chemistry and biology, for example, and includes the realm of S', the object of study of psychology. The realms O and S, as such, are not addressed by science. This is illustrated in fig. 2.

The second approach that we will consider is that of a school in modern philosophy, called phenomenology. The term phenomenology, although used earlier by Hegel, was taken up again by the German philosopher Edmund Husserl (1859-1938). He used it to indicate a radical approach to the study of actuality, in which we are invited to shift our focus of attention from O' and S', in fig. 1, to S. To facilitate this move, he designed a specific experimental method, which he called the *epoche* (from the Greek $\epsilon\pi o\chi\eta$ for 'suspense of judgment'). This shift towards S at the same time enlarges and shrinks the world under consideration, as compared to the world of science. Operationally speaking, it features an enlargement, by adding a third realm S, besides O' and S'. But given the fact that most scientists automatically posit the realm O as forming an imputed foundation, Husserl's shift constitutes a 'reduction', as he also called the *epoche*, by leaving out this fourth realm O. See fig. 2, and ref. [1].

===== Fig. 2 =====

Fig. 2. Three experimental approaches to an understanding of 'what is actual'. Note that in science, the realms O and S are effectively off-limits.

The third approach, that of Tibetan Buddhist Dzog Chen [ref. 2], again invites us to shift our focus of attention. The main topic in Dzog Chen is an investigation of what is actual, while circumventing our habitual tendency to analyze reality in terms of objects and subjects. Prior to the subject-object split, the focus lies on actuality itself, from which the subject and object poles can be seen to arise through a form of polarization. In terms of the classification presented in fig. 1, the subject pole of this polarization is not S', which is only a small part of the object pole O', but the much larger realm S (or, depending on the precise identification, S minus O'). This is graphically indicated in fig. 2.

At this stage, it is not my intention to consider these three world views in any particular order, or nesting relation. While fig. 2 could suggest that the view offered by Dzog Chen may contain that of Husserl, which in turn may contain or ground that of science, I prefer to avoid such an interpretation. For one thing, the roles of S in science and in phenomenology are quite different. For another, the role of O in science and that of A in Dzog Chen are even more incommensurable. For now, I prefer to simply put these three views on the table, so to speak, if nothing else just to show how rich the range of reasonable world views can be. So, rather than trying to relate them immediately, let us first compare their internal structure. Ultimately, for a more detailed analysis, we will have to move beyond the schematic pictures offered in figs. 1 and 2.

5. Natural Science

Starting with natural science, fig. 3 illustrates, in the top part, the ordering of disciplines in the 'house of science'. In this simple picture, physics 'rests' on top of mathematics, in the sense that all its laws are couched in the language of mathematics, and all its predictions are derived from those laws using mathematical operations. Chemistry in turn is layered on top of physics, biology on top of chemistry, and so on. Each 'higher' discipline uses the entities provided by a 'lower' discipline, together with the interactions specified between those entities, as the basis for its own description of what is actual. For example, psychology uses as given the presence and way of operating of sensory organs, described in biology, and biology in turn uses descriptions based on biochemistry, which in turn reduces to interactions between atoms, as specified in physics. For simplicity, only some of the disciplines are sketched explicitly in fig. 3.

===== Fig. 3 =====

Fig. 3. The house of science. The internal arrows correspond to a naive view of explanatory power. The two arrows at the side correspond to feedback loops that indicate the hermeneutic character of natural science, as a living and evolving approach to the study of actuality.

The arrow of explanation thus proceeds from top to bottom, from the logical principles that underly mathematics, all the way to psychology. This is the type of picture that is implicitly presented, in scientific textbooks and popular science books alike. And indeed, when we take a snapshot of the state of science, at any given time, it is quite an accurate picture. However, when we ask the more probing question 'what is science', we have to go beyond that what appears in a single snapshot, and we have to look at how science has developed over the centuries.

The historical picture that emerges from such a longer view is markedly different, and no longer presents the neat picture of a 'house of science'. It turns out that developments in 'higher' floors can necessitate fundamental changes in 'lower' floors. For example, the discovery of quantum mechanics, which gave us a more accurate description of the physical world than classical mechanics, forced us to change the underlying principles on which everything else seemed to rest. This change was dramatic: determinism gave way to chance, or spontaneity. Consequently, causality no longer held in the strict way it had been presumed to hold, for hundreds of years. And repeatability, long considered to be the very touch stone of physics, had to be thrown out the window: two radioactive atoms, though fully identical in all their details, yet will decay at different times, in an intrinsically unpredictable way. The picture emerging from a more long-term view of science thus offers a more circular structure of explanation. For example, the chance brought on by the discovery of quantum mechanics is presented by the arrow on the left-hand side of fig. 3.

When looked at closely, the explanatory structure of science is full of such hermeneutic circles. Another one is indicated on the right-hand side of the same figure, through an arrow that points to the filter separating the experience of the scientist, below, from the product of the work of the scientists, above. At the beginning of modern science, only a few aspects of human experience were admitted as valid topics for scientific investigation. The mass and size of an object, for example, were considered primary qualities, that were allowed to pass through the filter, to be studied by physics. Most other properties, such as its color, or its tactile quality, were designated as secondary properties, less real in a sense, and off limits to scientific investigation. In the course of time, however, the expansion of the framework of physics allowed a gradual widening of the openings in the filter separating science from experience. By now, the color and texture of an object are just as amenable to analysis in physics as are the mass and length of an object.

Note that in fig. 3 biology and psychology aim at an analysis of human experience, through a study of the brain and of the mind, respectively. However, their area of study, though labeled 'experience' is quite different from the experience underlying all of science, and represented by the cloud at the bottom of the figure. This cloud below corresponds with the realm S in fig. 1, whereas the experience aimed at by biology and psychology corresponds to the much more limited realm S'.

6. Husserlian Phenomenology

Science starts with a form of 'via negativa', ignoring almost all of what is important in our day-to-day experience. Values, beauty, anything related to social interactions, anything to do with what is considered sacred: all of that does not make it past the filter depicted in fig. 3. Amazingly, notwithstanding these severe limitations, science has been able to reconstruct a skeleton of the world, as we experience it, in incredibly precise detail. And in the process, it has left in its wake powerful technological tools that have changed the world, for better and worse.

Whether such an approach might ever lead to the construction of a complete world view, is an open question. It may be possible to somehow regain a full understanding of 'what is actual', above the filter, of a richness comparable to the more amorphous and ambiguous direct experience below the filter. And then again, it may not be. The only way to find out is to try, and scientific research is doing exactly that, especially in the many branches of cognitive science.

My guess is that anything like a satisfactory understanding of our cognitive processes, in a richness comparable to what we start out from, before applying the scientific filtering operation, is at least a few centuries away. It took us four hundred years to reach our present depth of understanding of the objective side of the world. An understanding of the subject, and of the subject-object interaction, may take at least as much time, and possibly much longer. Therefore, even if we are firm believers in the progress of science toward ultimate completeness, it is not a bad idea to look for alternative approaches. If we want to find a more complete world view within our own life time, we may be better off starting from other angles on actuality.

===== Fig. 4 =====

Fig. 4. Husserlian Phenomenology contrasted with Natural Science.

Phenomenology, the branch of Western philosophy developed by Husserl, offers us such an angle. His key move, in my view, is a replacement of the filter of science by a prism, as indicated in fig. 4. Phenomenology advocates a thorough description of anything we can discern in our experience of what is actual. In the words of William James, who was a source of inspiration for Husserl, and who used the term 'radical empiricism' for an approach that was a forerunner of phenomenology:

> To be radical, an empiricism must neither admit into its constructions any element that is not directly experienced, nor exclude from them any element that is directly experienced. [ref. 3]

At first sight, phenomenology may seem rather flat. While it is very broad, and does not leave out anything, it merely attempts to give a detailed description of what is actually happening. However, such a view is misleading. First of all, an enormous amount of training is required, to learn to become a good phenomenologist. To really see what is going on, we have to learn not to interject our prejudices of what is supposed to go on, and we also have to learn not to overlook the unexpected and so-far unrecognized. Secondly, laying out everything on the table, so to speak, and 'staring' at it, letting it organize itself in our consciousness, often leads to unexpected insight. In many areas of science, the key to a new break-through lay in the 'seeing' and acknowledging of what had been visible all the time, but had not been noticed before.

Einstein's relativity theories form a beautiful example of what can be won by a patient, honest, and detailed phenomenological analysis. By carefully looking at the behavior of falling elevators and passing trains and light signals, Einstein 'saw' some of the fundamental results of both special and general relativity theory, well before he was able to provide detailed and complete mathematical descriptions.

Similarly, Husserl was able to make great progress over and above the insights derived by Descartes, Kant, and Fichte, in 'seeing' many of the layers of the processes through which we reconstruct the world in our experience. In fact, much of what is now gradually being discovered about ways to build robots and to let them function as autonomous subjects, was foreshadowed in many of Husserl's detailed analyses of subject-object interactions.

7. Dzog Chen

In one aspect, natural science and Husserlian phenomenology take an opposite approach to the analysis of experience. The first approach starts with a breakdown into an analysis of a few elementary processes, leaving out almost everything else, followed by an attempt to make a full synthesis, in order to regain what was left out. The second approach starts with the fullness of what presents itself, analyzing everything together.

The former method reminds me of an attempt to copy a complicated piece of machinery. If we somehow acquire a blueprint, with complete instructions to build the machine, we may be able to reconstruct the whole machine, even though in the intermediate descriptive state a lot of unnecessary detail was left out. The reduction from the material machine to a virtual description could be reversed, by adding back what was left out, namely the physical presence of the machine components.

The latter method reminds me of an attempt to read a book that has been dropped in the water. All the pages are wet, and stuck together. The first attempt to read the book will result in a rather unclear story: each time we try to turn a page, we actually turn several pages, and skip over some episodes. The story is still more or less understandable, but many details only make partial sense, or no sense at all. In the course of the phenomenological method of analysis, consisting of 'teasing the pages of experience apart', more and more begins to make sense, with many details falling into place naturally.

Notwithstanding the great contrast between both approaches, there is also a significant similarity in that both methods are based upon description. The goal of science is to present a detailed description, as complete and as simple as possible, of what is actual. The goal of phenomenology, too, is to provide such a description, even though the approach is radically different. What would happen if we would try to arrive at a world view not based upon description?

In our culture, art and religion offer us ways of experiencing the world, or at least part of the world, in ways that are more direct. Similarly, an engagement in sports can lead to forms of experience that are more direct than those based upon description. However, the deep satisfaction that may result from an intimate involvement with any of those approaches, does not easily translate back into a world view. Certainly arts seem to be too much culture bound, but also in the case of religion, not much progress has been made in reaching inter-religious agreement.

It is conceivable that such type of agreement could be obtained, perhaps already during the twenty-first century. Practitioners from diverse religious traditions, such as Buddhism, Christianity, and Islam, could come together, and compare notes. They could try to find a core of common understanding, based on the deepest forms of religious experience they have obtained. Perhaps they could reach a degree of agreement comparable to the way in which physicists from all countries nowadays agree upon Newton's laws or Maxwell's equations.

===== Fig. 5 =====

Fig. 5. Dzog Chen contrasted with Phenomenology and Science.

An example of a world view based directly upon contemplative experience is the form of Tibetan Buddhism called Dzog Chen. My reason to choose this particular approach is related to the very radical nature of inquiry in Dzog Chen. Very briefly, we can divide meditative inquiry into methods based upon renunciation, transformation, and appreciation of actuality 'as it is'. Most approaches center upon forms of renunciation, with lesser emphasis on transformation, and even less on direct appreciation. Japanese Zen, and the Chinese Chan from which it was derived, are examples of approaches based upon direct appreciation, as is Dzog Chen.

The utterly radical nature of a focus on appreciation, without any attempt to select or transform anything, is what holds the key for an intercultural comparison of these types of world views. One reason to choose Dzog Chen, from among the class of radical approaches, is that there seems to be more of a living tradition preserved, in a direct lineage to ancient times, among Tibetans, both in Tibet itself, as well as among the Tibetan refuge communities.

8. Conclusion and Outlook

The three world views presented here briefly have the following in common:

- They form three *experimental* approaches to an understanding of what is actual.

  Science is based on experiment as the ultimate arbiter of truth. Phenomenology, unlike most other, more speculative branches of Western philosophy, is firmly rooted in experience. And Dzog Chen, in a most radical way, starts and ends with what is immediately given.

- Although originated in a particular culture, each one strives to find a form of deep truth *independent* of that culture;

  Science, by and large, has achieved that goal. Whether Husserlian phenomenology and Dzog Chen will be recognized to be particular ways of expressing a similarly universal truth, still has to be seen. My guess is that there is a good chance that this will happen, within another hundred years. I also expect that an appreciation for the one will facilitate an appreciation for the other, given that both are so radical (remember James' description of phenomenology as 'radical empiricism'; an excellent characterization of Dzog Chen as well).

- In each world view, the *process* of investigation is remarkably similar, even though the results are markedly different.

  An example is the move to step out of the world in order to step into it more fully. In science, a laboratory environment provides a way to shield the investigator from distracting influences, allowing him or her to focus on one particular experimental set-up. In phenomenology, the *epoche* allows the investigator to disengage from the habitual way of viewing the world as given, as objectively existing in a more or less frozen way. And in Dzog Chen, specific forms of meditation and contemplation allow the practitioner to get closer to an immediate appreciation of what is actual, even though the initial exercises may seem to make him or her withdraw from the world.

In this brief summary, I have not been able to give much more than a whiff of what each of the three world views has to offer. I hope that the reader will at least have gotten some feel for the excitement that I have tasted, at discovering these very different ways of exploring actuality. Especially the exhilaration that comes with finding new degrees of freedom in what is actual, is something that I hope has come across, in between the lines.

Freedom, after all, is what a complete world view can offer. We tend to identify ourselves with all the roles we are playing, which can make the play into a burden. In contrast, a complete world view offers us a freedom from identification, an authentic form of freedom, based on a direct contact with what is actual. Without a need to discard any of our roles, seeing them as roles we can play them more lightly, in a less formal and more spontaneous way.

My agenda for a further comparative study of world views can be summarized by the slogan 'roots, not fruits'. Rather than comparing cosmologies, such a the Big Bang theory and ancient creation myths, I am far more interested in comparing the structure of inquiry in science with that of inquiries in other attempts to arrive at complete world views. Is there a common soil, in which scientific experience, and phenomenological experience, and Dzog Chen experience are all rooted? What can we say about that common soil, and how can that help us to arrive at a deeper understanding of what is actual? These are the questions that I hope to pursue further.

Unfortunately, the current structure of academic research does not naturally leave room for an investigation of world views, as a fundamental discipline. Not only does such an investigation cross many traditional boundaries, what is worse, an emphasis on the living experience underlying each world view is often incompatible with the more indirect and purely descriptive nature of research in most of academia. Hopefully, this situation will soon cure itself, and indeed, the last few years have seen a ground swell of interest into topics such as the scientific studies of consciousness.

In an attempt to speed up this transformation of the academic treatment of direct experience, we have recently founded a non-profit organization, called the Kira Institute (website: <http://www.kira.org>). Our aim is to act as a catalyst, by showing how comparative research of the roots of world views can be undertaken, crossing the traditional academic boundaries, while retaining the standards of academic rigor.

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[ref. 1:] Husserl's writings, in so far as they are published, are available in: *Husserliana*, Vol. I-XXX (1949-1996), by Edmund Husserl [Kluwer]. A good recent introduction to Husserl's thought is: *An Introduction to Husserlian Phenomenology* (1993), by Rudolf Bernet, Iso Kern, and Eduard Marbach [Northwestern Univ. Pr.]. For a vivid description of a form of phenomenological *epoche*, refreshingly unsophisticated and down-to-earth, see *On Having No Head* (1961, 1988) by Douglas E. Harding [Arkana].

[ref. 2:] Recently, a large number of books on Dzog Chen have appeared. Here are a few: *The Practice of Dzogchen*, by Longchen Rabjam, introduced, translated, and annotated by Tulku Thundup (1989) [Snow Lion Publications]; *The Great Perfection (Rzdogs Chen)* (1988), by Samten Gyaltsen Karmay [Brill]; *Dzogchen, the self-perfected state* (1989), by Namkhai Norbu [Arkana]; *Natural Liberation: Padmasambhava's Teachings on the Six Bardos* by Padmasambhava, with commentary by Gyatrul Rinpoche (transl.: 1998, by Alan Wallace) [Wisdom Publications]. In addition, an interesting world view is presented in the book *Time, Space, and Knowledge* (1977), by Tarthang Tulku, a Tibetan Lama who has presented some of his views in ways that are largely decoupled from his particular background and religion. For the purpose of our present discussion, the vision presented in this book is sufficiently similar to Dzog Chen to play the role of the contemplative world view, indicated in fig. 5.

[ref. 3:] William James's *Essays in Radical Empiricism* (1912), reprinted in *Essays in Radical Empiricism & A Pluralistic Universe*, by W. James [1967, Peter Smith].