

Committee IV
East-West Perspectives
on Spirit and Science

DRAFT - 8/15/88
For Conference Distribution Only

LOST SCIENCE

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The Seventeenth International Conference on the Unity of the Sciences
Los Angeles, California November 24-27, 1988

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When science serves the masses, it serves vulgar distraction;
When science serves the merchants, it accelerates and disharmonizes the tempo of life;
When science serves the army, it damns what it touches;
When science serves itself, it serves the illusion of alienation;
When science serves the spirit, it acquires the possibility of healing the centre.

Introduction

Perhaps a few words are in order concerning the method followed in this article. Wishing to encompass a wide field of discussion, while at the same time keeping the length of this article within bounds, I have adopted a "mythological" approach to the ideas contained here. Thus I am telling or retelling stories, some of ancient origin for which the authenticity is sometimes only conjectural, and dealing with myth rather than fact. However the reader should not suppose by this that I regard myth as somehow inferior to fact. On the contrary, in my estimation, myth is far *more* true than mere fact.

S1. The Delian Problem

In 429 BC there was a plague in Athens which killed one in four. The people of Athens sent a delegation to the oracle of Apollo at Delphi, this very spot, to ask the oracle what could be done. The oracle said that in order to propitiate the gods the altar of Apollo had to be doubled in size. This altar was a cube of stone, and so a new cube was constructed with twice the edge. However, the plague did not abate. It transpired that it was the volume that needed to be doubled. But how to do that? This problem of doubling the cube took its place along with two other problems of ancient mathematics, squaring the circle and trisecting the angle, as the three fundamental motivating questions against which, for centuries, progress in mathematics was measured. These questions, in the form in which they were originally conceived by the Greeks, were impossible to answer. This was shown after more than 2200 years¹. Such is the longevity of a good question. The force of these questions can be measured by the mathematics it was necessary to produce to arrive at the final conclusion of their impossibility. It required the contribution of the intellectuals of many civilizations, the development of geometry by the Greeks for half a millenium, the development of algebra by the Arabs, who themselves took much from the East, for another half a millenium, and the work of the Europeans of yet another half a millenium of blending the two into a tool capable of resolving this demand of the gods. We can ponder the idea that this cultural stream of mathematical thought, sired by the gods, has led to the very possibility of latter day science, and yet, built in to it at its source, so to speak, is the warning that thought is an imperfect tool. What seems perfectly reasonable may turn out to be impossible, and that very impossibility may be extremely difficult to discover.

S2. Some Remarks on Pythagoras and the Birth of Science

Even further back in time we have the records (none of them first hand) of the Pythagorean Order. Perhaps one can say that modern science was discovered in this Order in the sense that, seemingly for the first time, the decisive role of number in the becoming of the universe was recognized and used. The discovery of the relation between the length and the frequency of a vibrating cord serves as a canonical example of this relationship even down to the present day. In the purely mathematical realm, the discovery of the irrationality of $\sqrt{2}$ is surely a mathematical result of the first order, the simplicity of today's proofs notwithstanding. How did the great Pythagoras himself view the relationship between science and the spirit? We do not know, but presumably it was related to Plato's idea that, yes, the world of mathematical thought is high above the world of ordinary thought, but that the world of the spirit is much farther yet again above the mathematical. Pythagoras did not regard scientific knowledge as essentially public, and scrupulously kept it from the vulgar and the unprepared. And yet there was interaction between the Order and the public sphere. Pythagoras himself is reported to have delivered a series of public talks to the citizens of Croton, not on his scientific discoveries, but on the principles of harmony and brotherhood in society. In these touching talks he exhorts children to have respect for their elders and parents to have respect for their children, advises never to reprimand in anger, and speaks of the evils of luxurious life and the importance of friendship. The first talk, addressed to the women and children of the community, so excited the respect of everyone that he was asked to address the council. Perhaps even more remarkable than the actual advice, which is a propos even today after twenty five centuries, is the fact that these talks were remembered by the populace as great events, and that

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they are reported to have had wide-spread and lasting effect.

One could hear this story of Pythagoras and say merely that he must have been a very charismatic figure. I would like to suggest that that would be to miss the real point, which is that, somehow, Pythagoras had a living contact with the spirit, (which he refers to as harmony) and that all of the aspects of his life and work were infused and formed and governed by this living principle.

Alongside the praise for the scientific work of Pythagoras, one sometimes sees criticism of a superstitious or shamanic element of a primitive order, with its various injunctions, such as "When you have boiled water in a fire, do not leave the imprint of the pot in the ashes, but take a stick and stir the ashes." and, " On arising from sleep, do not leave the impression of the body in the bedsheets, but straighten them out."² One of the tragedies of modern science is that it ignores the Pythagorean superstition "to leave no trace". One sees too much of its imprint on the world, in the drying of the lakes, the vanishing of ozone layer, the technology of warfare, the mechanization of life. Even taken as literal injunctions to the neophytes of the Order, we can appreciate the beginning of a training of the moral sensibility. Considering this one example further, we may note that one of the most interesting facts about Pythagoreans is that their society was secret, that Pythagoras himself apparently wrote nothing, nor did his close successors. Much of the influence exerted by his brotherhood was indirect, but can be measured by the high regard in which the Pythagoreans were generally held as is seen in the hints which have come down to us as story and legend, often through defectors.

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S3. Spiritual Effort and Modern Scientific Effort

In any discussion about modern Science and the Spirit, a scientist must first recognize with humility that his knowledge in these two domains is not balanced. While he may know a great deal, both theoretically and through his experience about the practice of his science, in general the question of the spirit remains more or less exactly that, a question. And yet perhaps there is some virtue in the attempt to formulate, insofar as that may be possible, what is the relationship between these two great influences.

Perhaps one may say that the common endeavour of all intellectuals is the act of image making. The making of an image is certainly the very atom of scientific activity. The various models of entities, of their inner processes and interactions are images which are found throughout science and the arts. Now, images are very useful in the sense that they focus one's attention in a specific direction. They can help to concentrate one's attention. On the other hand, images form a barrier between one's self and the direct perception of the wide world. Can one say that it is this direct perception which is the atom of the life of the spirit? Such perception appears in the best scientist also, but only momentarily, at that moment when the old image is discarded and before thought crystalizes perception into a new image.

It may even be that one's correspondence with the spirit is healthiest when one's questioning is the ~~most~~ most passionate. This statement may have analogues in science, and yet ultimately science is concerned with answers as well as questions. Answer is the death of question, and the death of the passionate openness which accompanies the wholeness of spiritual questing.

Perhaps one can say that the life of the spirit involves the choice/agony

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of acquiring the taste for preferring, moment by moment, the unexpected freshness/discomfort of the direct perception to the act of codifying the perception into an image. From this perspective the role of thought in spiritual life is very much reduced as compared to its role in the life of a scientist or more generally an intellectual. Indeed the second commandment is, thou shalt not bow down before graven images³.

As a scientist, (and this is even more true in my own discipline, pure mathematics), one imagines oneself as relatively independent, imagines that what one does has no implications. And this in spite of the fact that the world is daily being transformed in response to the images created by science. This is the illusion of alienation. Krishnamurti says it quite blatantly. He says "You are the world", and "War is a projection of everyday life.". He is saying that this is true independently of whether or not we see or understand how it operates.

Is modern science a healing activity? That is, does it restore the balance and harmony of life? These are damning questions to ask of modern science.

§4. What is missing in modern science?

Perhaps we may be forgiven if we attempt to formulate a response by saying that what is missing from modern science is superstition.

In a rural French village, until recently, even less than a century ago, every stone, every tree had its resident spirit. There was more life in a little path of a few yards than in many modern city blocks. At this spot one had to give an offering; a leaf, a flower. At that place perhaps one had to turn round on the spot, and not widdershins if you please! When this was done mechanically, it was surely bondage, or worse. When it was felt as sacred ritual, it opened the heart to awe and wonder. Now all this has been

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destroyed in the great fire raging throughout the world. The doors to eternity are few and well hidden these days.

Superstition in a closed mind is no worse than knowledge in a closed mind. Superstition in an open mind is the distillation of that mind's real work to understand the world. Perhaps there is more life in superstition than in conviction, as conviction is often an attribute of a closed heart. The origin of the word superstition is *super stitio* "I stand over", and in that sense, it has the meaning of prophesy. The polite scientific word is intuition, and of course a good scientist needs a generous helping of it.

Generally we scientists ask our scientific question with only our minds and we put our energy into thought to solve our problem. We go about this with our load of images concerning what is true. We don't call them superstitions, we call them previous work, and if we can add to them or discredit them we are quite content. If there is a commercial application, we have the possibility of becoming businessmen.

But what about real superstition. One has the image of the crafty but basically primitive shaman, carrying out rituals calculated to enslave the ignorant. In this form superstition is presented as a lack of development of the mind. On the contrary, perhaps we can say that the real difficulty there is the same as the difficulty with science in general in that there is a tendency for its practitioners to ignore the balanced development of their whole being and so insure that this development ends before its possibility is exhausted. When the scientist says that we must get rid of superstition he must be very wary that he does not banish irreplaceable aspects of the emotional life. Credulity and wonder are not so very far apart.

As regards "credentials", modern science is located at a rather low level of the magical arts, in the sense that one needs only a relatively well

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developed intellect to understand and participate in the process of this science. Farther up the ladder in this hierarchy one finds, for example, the Taoist alchemical arts, the "Great Work" which require the development of the second (astral) body for their practice. These alchemical sciences themselves have long been ignored or misunderstood by modern scientists (but not by all - for example Newton's alchemical library was larger than his scientific library). It is also interesting to note, as Titus Burkhardt⁴ points out, that this science, together with its mythological ground, was incorporated in the west into all three of Judaism, Christianity and Islam.

S5 The Present Need

Nehru, echoing Krishnamurti, has said that what is needed in this age is not religion and science but spirituality and science.

What is the difficulty with religion? As time goes on, the great Idea of a religion begins to get covered up by its interpretations. For the intellectual it becomes mental. It is known mentally, from memory, but not as a living force. Whole dead generations are born and die embracing the fossils of an original Idea. The fossils are mistaken for the real.

A teaching must be judged by the masters it produces. A fossilized religion produces fossilized caricatures of incarnate wisdom, and the idea of a master degenerates. Human beings look at religion and do not see anything great or wise or beautiful, but rather something cumbersome, habitual, and even meaningless. Their criticism of religion is in fact a criticism of its manifestations during its death throes. At its final stages a religion fulfils only the function of bringing order, some simple morality. And then even that disappears.

What are the conditions required for a spirituality which does not degenerate? It needs living examples, people who embody the original Idea.

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Look at the faces of the statues around the door of the Chartres cathedral. You will not see their like in the street. They no longer exist. And yet something in us recognizes their faces.

What has science to offer spirituality? It has, for one thing, the idea of the rigorous experimental method. To apply this to the spiritual domain, however, requires a reinterpretation. The way of science is to study phenomena in the outer world. Even psychology aims to study, for the most part, the projection of the inner world on the outer. For a true application of the method of science to the spirit what is required is to study directly my own inner world. Rigour is demanded here, since the usual supports for rigour in sciences, for example the criticism of one's colleagues, the criterion of repeatability etc., may not be available. What then is the meaning of rigor in this domain? It certainly must mean that observation needs to be very keen, and from every angle. Each assumption, each working hypothesis, needs to be uncovered, seen fully, and tested carefully, tested from all sides, with every aspect of one's self included as tool and as material. What I like, what I do not like must be considered equally impartially, scientifically. We can be sure that such an inner study, if it is rigorous enough, and broad enough, sufficiently scientific must yield true knowledge of one's own nature; knowledge written not in journals available to others, not just in the memory available to the mind, but in the being, available to the whole of one's self.

S6. The Present Moment

There is a widespread notion abroad in the land today, having its origin in many traditions, that the present historical moment is one of the ending of an age. René Guenon gives a very interesting description of the disorders of our time that result from inversions in the usual order of

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things⁵. In the latter stages of the Kali Yuga, the connection between the priest and the spirit is severed, so that the priest can no longer perform his true role. Sooner or later the relationship between the priest and the king is cut, and then between the king and the merchants, and finally between the merchants and the workers. It is clear that in the world today, even more so than when Guenon was writing, we are subject to the rule of the struggle between the merchants and the workers, a chaotic and dangerous time. But the end of the Kali Yuga coincides with the beginning of the Satya Yuga, the golden age of the next Manvantara. How does the Satya Yuga appear out of the present chaos? Perhaps this is one of the deeper meanings of the myth of the Phoenix which dies in flame, but in the ashes there is an egg out of which the new Phoenix will arise. The seeds of the new age must already be present in the flames and ashes of the old world. And the traditional view is that the first link to be reforged is the first that was broken; that is, the connection between the spirit and the priests. Regeneration comes from above, but it needs to find open hearts that will "co-operate" with it.

It seems pointless to expect modern science to reform itself. Modern science is vital now because it serves the masters of the day: the masses, the merchants and their minions the military. The question is not how modern science can serve the spirit, because that is impossible. The momentum of its present fragmented form is too powerful to be fundamentally altered. In a certain sense, it is not interesting. That impulse must live itself out, eventually to die. The question is how can the *scientist* serve the spirit? Normally the level of the priest is the same at its root as the level of the intellectual. It is at this level that the spirit will attempt to form a bridge. What is interesting is, can there be a higher science, based on entirely new, or rather eternal, principals, which could

begin to incarnate? And how might one aid in this new birth?

S7. The Eternal Challenge.

And now we come to the most difficult part. What now? Because it is not a matter of forming committees, organizing conferences, writing papers, although these have their place. If it is true that the higher science will take the spiritual level of development of the experimenter into account as one of its variables, thus ending, in a restricted sense, the requirement of repeatability of experiments, we come to a very interesting parting of the ways. On the one hand, the ordinary scientist has a choice before him: does he wish to participate in the higher science? And if his answer is yes, he must seek to obtain the credentials for this, which means "going back to school". On the other hand there is the question of whether such schools exist. And they do not exist. That is, it is a question of a full human development rather than a merely scientific one. The North American Indians have their medicine societies, societies which offer support to their members in their search for the spirit. One cannot found a "medicine society"; but, if one can discover the corresponding attitude, and if one is very fortunate, one can join one. Such a society is always originated by a "higher scientist"; otherwise it is only sham. Seeking one's "medicine society" is the first difficulty in the way of the would-be higher scientist, and one that requires a good deal of discrimination. Once he has found his place, an arduous training awaits him. As it is sometimes said, three lifetimes are required to come to the spirit; one is not sufficient. Apparently this is not a frivolous undertaking. In the meantime, it may even be that one's ordinary science is practised more as a passionate hobby, in one's spare time, so to speak, as a rest from one's real work, which becomes a matter of living a wholeness in

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one's everyday life. In the end of course the scientist of the higher levels may find that his idea of science has changed so radically that the old questions are no longer interesting by themselves. Indeed this is to be hoped for as one of the first fruits of such a reformation, that the old questions will now present themselves in a much larger context which will entirely alter their significance. Thus the question "what now" become a very personal matter, so personal that one's very thought and personality is exterior to this depth. It is the unanswerable questions, who am I, what should I serve, with all their anguish and doubt, which carry high.

Notes

1. This story is taken from Boyer's *History of Mathematics*, Princeton University Press 1985, p. 71.
2. These are paraphrases. See the *The Pythagorean Sourcebook and Library*, compiled and translated by K. S. Guthrie with additional translations by T. Taylor and A. Fairbanks Jr., Phanes. 1987 p. 159 et seq., especially maxims 12 and 34.
3. Holy Bible, Exodus 20, 4-5.
4. Titus Burckhardt, *Alchemy Science of the cosmos, Science of the Soul*, Penguin, 1971
5. René Guénon, *The Reign of Quantity and the Signs of the Times*, Penguin Books, 1972