HEIRS TO TWO WORLDS

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1. EXCELLENCE AS AN ARTICLE OF SOCIAL CONTRACT

Many institutions teach people the subjects that you have studied; some teach their students how to compete successfully. Competition is with other people, but excellence is competition with oneself. One competes against one's own achievements and tries to overcome one's limitations. Excellence is not a zero-sum game in which one person's gain is at the cost of another person's loss. It is a growth experience.

Excellence is certainly not restricted to higher education, but those who have had the good fortune to undertake higher education have a better perspective of the challenges, additional skills to deal with complex problems and glimpses into the work of others who have excelled. Further they have a social contract, an additional responsibility to enrich society in return for the resources put at their disposal in the course of higher studies.

An essential part of that social contract is the duty to seek excellence, to grow in knowledge and to propagate that knowledge. Not everyone is destined to be a teacher or professor, but teaching is done not only by teachers but everyone. Let our interaction in the course of living be a growth experience, so that we learn and others may learn.

2. GOALS AND PATHS

There are conflicting claims to our attention: and some difficulty in choosing our goals. But goals we must have, if only for us to see that we can even surpass our goals or alter them. In choosing our goals we must choose those which can provide us success and happiness. It is our duty to be happy. So if the goal towards success does not make us happy we ought to re-examine the goal and our notion of success.

After a long period of stagnancy our society seems to have embarked on a
period of social change including the implementation of social justice and facilitating social mobility. During this period there have been many opportunities for people to accrue substantial fortunes. Unfortunately this has made many people equate success with the amassing of wealth. It is no crime to be rich; and to be rid of money worries is very desirable. But money by itself does not bring happiness. To do a job well, to enlighten others and most of all to bring happiness to others makes one happy. Power, too, is like wealth. Too little of it is humiliating and unsatisfactory, but power for its own sake does not produce happiness. Power and wealth can be measured: for everyone with a high level of one or the other there are still others with more of the same. But true happiness is beyond measure: when you are really happy you cannot find anyone happier!

In the study of the change of water to ice, or crystallization of any concentrated solution, or the boiling of water when the change of phase sets in there is great disorder. The refractive index of the material changes in a random manner so that rays of light do not get through. The material looks cloudy and even opaque. This opacity does not obtain in the liquid state, the solid state or the gaseous state, but only at the special transition stage. It is called critical opalescence. Such occur in personal life as in society. I am optimistic to say that the confusion and murkiness that we see around (and within) us is only critical opalescence and that it signals a new order just around the corner.

3. BINOCULAR VISION

When I was a young student at the Tata Institute of Fundamental Research in Bombay we used special nuclear emulsions to study cosmic rays. We had to scan the developed emulsions to see the tracks of nuclear particles. For this purpose we used high power binocular microscopes with low depth of focus. In the initial stages it was difficult to get used to the binocular vision. I was used to the usual microscopes in which only one view was used. The temptation was great to use only one eye; even when I used two fields of view did not coalesce. It gave me a headache, but I was told that the two fields can be adjusted to coalesce; in the initial stages such binocular vision happened only in a transient fashion. When that happened, suddenly, the pattern stood out in depth, in three dimensions. The bad habit of wanting to see two different views got corrected in due course;
and it become even difficult to remember how once I had to struggle to get the binocular perception.

4. THE TRADITION OF SCIENCE

You who are graduating today, and more generally all of us living in this period are provided with the possibility of a binocular vision. On the one hand we live in an age of science, one in which not only are there more scientists than ever before but in which science plays an important role in our life. The study of the atom and its subunits has provided us with a richness of structure; and to explain them we have introduced new conceptual models beginning with quantum theory and relativity theory at the turn of the century, and subsequently incorporating quantum theory of fields and group theory. Recent additions involve gauge field theories and the theory of extended objects like strings. At the same time we now seem to have an evolutionary theory of the cosmos, a systematic physical cosmology which explains the universal abundance of chemical elements, the cosmic background microwave noise, and the relative abundance of matter and light. The cosmological theories are closely related to elementary particle theories. Further the study of matter in bulk, including structure, function and phase transitions has been a rich and productive endeavour. In all these studies the ideas of modern mathematics have been essential.

In the life sciences we have been witness to the enormous strides made in recent times. Life as a functioning of matter with metabolic, regulatory and reproductive functions coded by chemical codes has provided a framework for comprehending the myriad phenomena exhibited by living systems.

Such studies have not left out human physiology and neurology. Rapid strides have been made of the regulatory and responsive faculties of the human nervous system and the immunological system. While we are still quite far from an understanding of the well springs of mental functioning much progress has been made in relation to memory, intelligence, moods and sleep. We could modestly claim that neurosciences are well on their way to give us more understanding of the way we feel, function and think, (I am not competent even to enumerate the significant discoveries in the social sciences).

Scientific thought and scientific experimentation is, for mankind at the present epoch, a source of new knowledge and consolidation of existing knowledge.
An important by-product is technology, the practice and principles by which we selectively use natural phenomena for the fabrication, production and transmission of machinery, consumer items including food and information in all its forms.

But the essential character of science is on the one hand the systematization of its knowledge and on the other hand the willingness, even the eagerness to change itself by the acquisition of new knowledge by experimentation. Science at its best deals with knowledge handed down only as a tentative hypothesis, one which could and should be modified by experimentation. It is true that such changes are never to abandon existing science but to make economical changes in its content. By such steps our point of view itself gets changed. The theories and even the experiments of today may not have been comprehensible a century ago. In elementary particle physics the essence has changed from the time I was a research student. Being a scientist is to change one’s point of view in a responsible and responsive way in the light of new knowledge.

The success of modern science in bringing together vast domains of human experience and its ability to give a fundamental basis consisting of very few postulates makes a scientist humble and aggressive at the same time: humble that there is so much science that can be reduced to so few fundamental principles; and aggressive that he may conquer all domains of experience for science. For most scientists it is unthinkable that any phenomenon of nature is beyond science. I am one such scientist.

5. THE SCIENCE OF TRADITION

The other world view which could be called metaphysical, philosophical, spiritual or traditional deals with the world in a different fashion. We in this country have had the privilege of a long tradition which continues without interruption to this day. This traditional world view takes experience as the basic entity rather than theory, and encourage the perception of a participatory universe in which the observer is not apart from the universe but each form a part of the other. Just like the concepts of modern physics appear as unfamiliar, strange and even non-sensical to the superficial student, the ideas of tradition appear equally strange, but that is not really the criterion.

Among the ideas that have stood the test of experience is that anything obser-
viable is transient and has both an origin and a demise: this includes not only waves in water and the leaping flame but also the stars and galaxies and the universe itself. So also, the mind that can be observed is as much an object as the body that can be observed. The apparent separation of the observer and the observed and the act of observation gives rise to a fragmented world of experience in which time causation and interaction are important and which science has systematized and conquered. But it is possible to have a view beyond this temporal causal world which has its own richness. It focusses on the experience itself without comparison, without onlookers and without acquisitiveness. It is the discovery of this traditional system that genuine happiness obtains when one can be totally in experience, in the eternal present, in an unfragmented universe. It is its experimental conclusion and authenticated perception that this is possible here and now.

If you were to take two theoretical physicists specializing in the same field and of comparable learning and proficiency and ask them to explain the recent advances in their fields to an intelligent lay audience, their presentation would be quite different. Either presentation in itself would be adequate and should serve as an invitation to those capable of it to delve into the subject so that they may understand. A third scientist would find both expositions adequate and may even be able to correlate them in detail but one whose abilities do not extend far enough would benefit to follow one exposition and not lose his energy and time trying to make a comparative study.

This lesson, so transparent in this context, is often forgotten by many well meaning people who look on different expositions of the traditional method as a subject of comparative study rather than as alternate paths to growth. It requires greater maturity and ability to correlate different methods than to follow a definite path. As one grows so does one see more connections and correlations: let them come by themselves rather than search for them.

The great seers among our ancestors have conveyed to us their findings in the form of brief formulae, to remind us about the insights accompanying the experiential sadhana. Without either a teacher of insight or direct experience these formulae do not convey coherent meanings: somewhat in the same way as a text book on algebraic topology would convey little to someone with less than a high school education; or a hand book of IC's mean anything to a poet.
One of the causes of bewilderment for the scientist used to causal temporal objective descriptions is the eternal present of the path of Tradition in which all experiences are treated together; the language is unfamiliar and incomprehensible. In their frustration some even well meaning scientists revert to the mentality of the barbaric plunderers: that which you cannot carry away should be destroyed! Fortunately, unlike artifacts a perennial living tradition cannot be so easily destroyed.

6. BRIDGES BETWEEN SCIENCE AND TRADITION

There are a number of common bridges between the path of science and the path of tradition. The one that I have found most impressive is the process of enlightenment, of learning, the functioning of vidiya. There is the period of darkness, of non-comprehension, of frustration when it appears that it is eternal and non-ending. Then comes clarity of perception, either through the instruction of a gifted guide or through a spontaneous process. In either case the light that shines on the problem resolves it so completely that it becomes difficult to imagine that you could have ever not seen the revolution. The process of growth is thus a sequence of destructions and creations: and the modality of knowing is the functioning aspect of the great teacher, the guru, the remover of darkness. In the functioning of the living teaching there is no student but only the illumined perception.

7. DISCOVERY AS JOY

The illumined perception carries joy with it; this is not a matter to be debated but experienced. It is the great discovery of our tradition that joy, Ananda, is not brought about by events and circumstances but is in the nature of reality. When the superimpositions are removed the misperceptions disappear and the true nature shines forth. In physics the First Law of Motion states that uniform motion is the nature of matter and called this property inertia, thus clearing away much contrived explanations of why an arrow flies forth; we should similarly refer to the First Law of Tradition that joy is the nature of true existence. Tunchattu Ramānuja Ezhuttachan, the sage poet of Kerala has stated this so beautifully in his Harinamakirtanam to say: When I realize that I am the eye that sees the eye that is the mind which in turn sees the eye that sees
the light, like the sun and the fire, I am filled with liminal joy. So he
prays: Lord, that I may not ever become filled with ego; but if I am,
I feel the ego let the whole universe be identified with my ego.

8. MERGING OF TWO WORLD-VIEWS

Can we reconcile these two views? Is it possible to have one eye trained on
Science and the other on Tradition? The two views need not be (and must not be)
identical, otherwise binocular vision contributes nothing new. It is in the
reconciliation, despite the difference that a new vision in depth emerges. In
this process corrections and misperceptions of one view tend to get eliminated:
it is not merely a case of Science removing superstitions from Tradition, but
also of Tradition separating shallow Science and immodest generalizations from
the essence of Science.

Common to both the visions is, the supreme principle of nascent knowledge,
the powerful present which illuminates: such penetrating insights are not the
property of either the student or the teacher but of the creative confluence of
the deserving student and the adept teacher.

The other common feature is excellence. In Tradition excellence is obvious,
since the practice is to unify experience; there is no one to compete with,
except oneself. In science the norm is the best, not the average. So the ideal
in this case also is the excellent. When we talk of Science it is not essential
to hold up the incompetent or the obsolete; nor should we do that in the
context of Tradition. In both cases we should not only look for the best but use
them to excel.

9. THE LAZY-EYE SYNDROME

There are persistent forces which urge us to choose monocular vision with
either one eye or the other: to choose between Science and Tradition. This is
sheer laziness: and a lazy eye needs treatment! The treatment is the adept
teacher, the dakiniDharmakirti, who unifies the two worldviews.

When you see with two eyes and perceive depth configurations that did not
make sense with one-eyed vision would make sense. Education in Science enlarges
one's conceptual models: non-commuting physical quantities, or one-sided surfac-
es are miracles if one is not familiar with the framework. So are the unusual
conceptual configurations in Tradition.