A Scientific Way of Life

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Science has had a significant effect on our life and culture. We are beneficiaries of the many discoveries of science and science-based technology. Imagine how much worse off we would be if we did not have penicillin, insulin, interferon and a host of such medicines. The study of genetics gives us the prognosis of health or ill health; and in relation to plant genetics we have entirely new breeds of crops. Discoveries in electronics and computer science have brought about a communication and economic revolution. We have begun our serious studies of space which may help us in locating new habitats or new resources. Along with such benefits we now have the threat of nuclear disasters and of nuclear war; we have an abridgment of our privacy and possible long term harm from genetic experiments and biological weapons.

What in all this contributes to a scientific way of life? Science is ever questioning the physical and biological world not only about new domains of study but also as to what extent the existing laws are correct—to find the limits of existing knowledge. It aims to follow knowledge 'like a sinking star,' proceeding to new domains and new conceptual constructs.

Modern theoretical physics works with abstract concepts far removed from everyday experience, but these concepts are logically related through elaborate systems of derivations to tangible experiments. The beauty of an abstract theory does not guarantee its relevance or applicability; but at the cutting edge of research it is often a guide to formulating new theories.

To be a scientist, is to find one's bearing in this world of ideas, experiments and analyses, to be dedicated to the search for deeper and deeper connections between observed phenomena. But the key words are 'search' and 'experiment'. Science is ultimately experimental in that refined experiments would decide whether an elaborate theory is valid and relevant. In the realms of molecular biology, psychology or pharmacology, the scientist is the experimenter who then develops a theoretical framework. In many areas of chemistry and particularly physics the tasks are so formidable that one has specialists in theory and in experiment. They are complementary tasks. There is no theory that does not originate in experiment and no refined experiment is possible without adequate theory.

In any new research the outcome is not predetermined—we always await surprises. When these surprises come, it takes time to assimilate. Each research project puts the entire body of knowledge to test; this naturally means that all existing knowledge is considered tentative. Yesterday's speculation may become today's canon or it would disappear. And there seems to be no limit to the domain of scientific study. The boundaries of what is known and of what is knowable continually expand.
What is it that an individual scientist does and what should he do? One essential requirement is continual study and contemplation: nirvāṇa abhyāsanaṁ chirakala abhyāsanaṁ—disciplined life in which you keep your skills in continual practice. While some people say that science is a ‘young person’s game’, the depth, breadth and familiarity with existing knowledge does contribute to the quality and versatility of a person’s research.

Being a scientist is to participate in a magnificent adventure. Science is a cooperative undertaking and no single person’s creation. We learn from others’ discoveries and in turn contribute our discoveries. The scientist continues for ever to be a student and at the same time a teacher. The greatest satisfaction comes from recognizing that your work has advanced science and opened pathways for others as well as yourself.

The scientist thus functions in an unbroken family extended over all continents and all times. A scientist is an heir to the untold riches of science. Yet the dominating principle is direct personal experience. This comes not only to the laboratory experimenter, but to the abstract theorist as well.

What are the rewards of such a dedicated life? One is true immortality; even after the particular scientist has died the ideas continue, just as we seem to know the remarkable scientists of the past. There is also the immortality through our students who have become scientists in their own right just as much as we are in the charismatic tradition. For many of us it is a source of funds to support ourselves and our families.

But among the great benefits is the life of dedication and contemplation. Life becomes almost a continual meditation in a realm far removed from the irritations of every day life. This is not to say that it is effortless: scientific work is not only absorbing but often quite strenuous. But all the strain and pain is forgotten when you make a discovery. Like a mother suffers the pain of childbirth but feels untold delight on beholding and holding the new born, the joy of a genuine discovery is indescribable.

Part of the joy is that at a moment of discovery, just as at the moment of insight, the scientist is only aware of the discovery. The ‘discoverer’ is absent and the discovery comes from you-know-where. You are a seer and in the discovery you lose yourself. This is a joy that does not depend on others: how could it since others are ‘not there’? We have several accounts of such discoveries. Planck’s discovery of the quantum a century ago, Kekule’s discovery of the benzene ring, Poincaré’s discovery of automorphic functions and Best’s discovery of insulin.

How does a scientist relate to the society in which he lives? Nations have determined that science should be supported. Universities have decided that scientific research is the duty of a professor. And scientists are often given public acclaim for their work. All this is enjoyable.

What if the acclaim does not come, or worse still, given to someone else unjustly? The discoverer of insulin had this bitter experience: Best’s discovery became known as Banting’s discovery. Even the award of the Nobel Prize to them jointly did not satisfy Best. But Best had the conviction that his discovery has benefited so many people and it continues to do so. What he began—to find a cure for diabetes which killed his sister—he had accomplished.

Many of the readers would find great similarity between the scientist’s path and the nature of a spiritual life. It is not accidental. In spiritual search as well as in scientific research, all testimony and tradition remain grand hypotheses until they become part of one’s personal experience. Elsewhere I have written an essay, Physics as a Spiritual Discipline.

Another question that is often asked is whether a life in science implies that the
scientist should be averse to religion or a spiritual life. We have already seen that it goes along with the spiritual life. As to religion, a true scientist treats the doctrine as a strong suggestion but decides whether it agrees with his chosen discipline. Many scientists don’t feel they need any religion and some are even hostile to it. But there are many, perhaps more, who find no conflict at all.

We need to have opportunities of dialogues and discussions on belief systems just as we do have it in the various scientific disciplines. To discuss is not to denigrate nor to elevate a body of knowledge without proper examination. Just as we tentatively accept some scientific doctrines as tentative hypotheses, it is only natural to accept spiritual doctrines also as tentative hypotheses. But every hypothesis deserves confrontation with experiment.

It is this tentative acceptance and never ending confrontation with direct experience that befits a scientific way of life. Anything less would be betraying a scientific way of life.

What about the layman? Should he not critically examine his belief system with his own personal experience often? If and when he practices this austere way of life he is no longer a layman but a scientist as far his inner life is concerned. Having gotten used to a rigorous confrontation of existing scientific theories with newly discovered facts, or examining the internal consistency of a body of knowledge in its practice of science, it is only natural that they should use the same rigour and precision to examine personal experience also. While it is true that scientific experience is ‘public’ in that the same experiment should give the same results irrespective of which competent scientist does the work, and personal experience is not necessarily accessible to others, nothing stands in the way of being a scientist in relation to one’s own life experiences. To some people this may sound strange; yet others would find such an examination dangerous in possible upsetting of their beliefs.

But what is the value of a belief system that cannot be critically examined? What use is theory which cannot be applied to direct knowledge? Many people believed that the earth was flat, and we continue to act often as if it were so. But direct experience showed that the earth is round. Shall we refuse to consider critically belief in a flat earth? To accept the fact that we are on a large ball hurtling through space induces vertigo: we no longer have the assurance of a solid earth beneath our feet!

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**Experience of Mantra**

As I was lying in bed I sensed the mantra everytime I exhaled, and then I began to hear it in the trees, in the rustling of the leaves. I began to realize that it was being carried in the breeze and was coming through the window and that since I was inhaling the air that was coming through the window, I was inhaling and exhaling the mantra. In one sense it was a feeling of connection between my inner being and the universe. In another sense it was almost like playing ball. I was bouncing the mantra back to the universe and it was coming back to me... It seemed like everything that was happening was all right because I was not creating the game—I was simply watching it happen... I was supposed to say it—the mantra. I tried, but saying it interfered with experiencing it, and I liked experiencing it much better. —Anonymous