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"Current Comments"

Dream and Reality in Science--The Loneliness of the Long-Distance Runner

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The phrase 'human condition' is becoming a cliche. But cliches are useful. They allow us to dismiss with off-hand remark what is too tedious, too vague, too difficult, too painful to dwell upon.

'The human condition' sums up a conflict between two needs. The one drives us to social interaction. Teilhard de Chardin finds this "internal propensity to unite" at even the molecular level, "the fragments of the world seek[ing] each other so that the world may come into being."[1] A human being cannot be 'human' without some sort of societal role, even if only that of withdrawal.

And yet, another need drives us to forge a 'self', an independent identity, an integrity of person that must suit each of us individually. Ironically it must end by suiting us like an armor against any total or lasting union with even one other human being. The only total union is death. Hence, perhaps, our preoccupation with it.

This paradox of the separateness that grows as the mind and heart mature is something quite different from that condition described with pity in the phrase "lonely crowd." Scientific work has always seemed to me a particularly striking enactment of the paradox. While a lonely affair, it demands consciousness and acceptance of the paradox.

Teilhard de Chardin's words came to mind last year when I read an editorial essay by Lewis Thomas, Dean of Medicine at Yale.[2] Though it may not have been meant as such, Thomas's description is as interesting and, in its way, as beautiful a statement of the paradox as I have ever come across. And how neatly it fits what Teilhard discussed in the seemingly different framework of religious philosophy. With permission, I quote from Thomas.

". . . There is an almost ungovernable, biologic mechanism at work in scientific behavior at its best, and this should not be overlooked . . .

"I don't know of any other human occupation, even what I have seen of art, in which the people engaged in it are so caught up, so totally preoccupied, so driven beyond their strength and resources.

"Scientists at work have the look of creatures following genetic instructions; they seem to be under the influence of instinct. They are, despite their efforts at dignity, rather like young animals engaged in savage play. When they are near an answer, their hair stands on end, they sweat, they are awash in their own adrenalin. To grab the answer, and grab it first, is for them a more powerful drive than feeding or breeding or protecting themselves against the elements.

"It sometimes looks like a solitary activity, but it is as much the opposite

of solitary as human behavior can be. There is nothing so social, so communal, so interdependent. An active field of science is like an immense intellectual anthill: the individual almost vanishes into the mass of minds tumbling over each other, carrying information from place to place, passing it around at great speed.

"It is instinctive behavior, in my view, and I do not understand how it works. It cannot be prearranged in any precise way; the minds cannot be lined up in tidy rows and given directions from printed sheets. It cannot be done by instructing each mind to make this or that piece for central committees to fit with the pieces made by other instructed minds. It does not work this way."

Thomas titled his essay "Natural Science." It was a neat pun, for the essay was written, as some readers may remember, in protest against the 'unnatural' science prescribed by the practitioners of administrative overkill. Until lately (and let's hope that qualification is valid) such people imagined there must be efficiency ('more bang for the buck') in "instructing each mind to make this piece" for the managed objective.

Despite the topicality of that protest, the essay goes beyond its time in its echoes of Teilhard de Chardin. The activity which Thomas describes, and which I know to be, "so social, so communal, so interdependent," is nevertheless an activity in which the individuals "engaged are so caught up, so totally preoccupied" as if "creatures following genetic instruction."

It is this duality of scientific activity that I find so striking. Communication and interaction, interdependence, are the essence of scientific advance. And yet I have found scientists to be on the whole a peculiarly 'lonely' type of person, or, as Thomas describes them, "preoccupied."

Thus I found the crowd-loving hyper-conferenced 1960s somehow puzzling. Large meetings may give younger scientists the opportunity to see and hear the great men–rarely to meet and talk with them, however. The great men and older scientists seem often to have used these occasions for 'alumni' get-togethers, or for invisible-college faculty meetings. Ironically, I think most scientists shun traditional *local* alumni organizations, though I have no data to support the belief.

Scientists are basically loners. I'm glad to see that Professor Thomas, in portraying the scientist's drive, did not romanticize it--a temptation to which many fall prey. Most scientists are not the quarterbacks, the baseball sluggers, even the solo gymnasts who thrill to the cheers of crowds. Theirs is the loneliness of the long-distance runner.

Research is a special kind of social experience that thrives on the collective drive, the collective instinct of many long-distance runners. The moments of excitement--like passes of the baton--are few and widely separated. Romanticizing science damages it as much as any politician's false or any scientist's rash promise that we can harness science to cure this or that bodily ill today, and this or that social malaise tomorrow. I think that if we tell it like it is in science, the dream of a scientific research career may prove less attractive to so many unqualified personalities who attempt it. Such individuals may be better off as science administrators or educators.

Scientists may dream and do, but must be uncompromising realists. It is no accident that research and 'teaching' often go hand in hand. The teaching in research, the passing of the baton, is the scientist's true guarantee of immortality–if any such exists. When the dream of great discovery proves after a lifetime to have been only a dream, the great teacher will have left others behind perhaps capable of realizing it. But if the reality of scientific research--the day-to-day, nitty-gritty grind--is something less than the dream, it is nevertheless the dream that we understandably enjoy. For the dream is the intellectualization of that instinctive drive to become greatly alone in the most interdependent of all activities.

1. Teilhard de Chardin, P. *The phenomenon of man.* New York: Harper & Row, 1959. IV, 2, 2.

2. Thomas, L. Natural science. *New Engl. J. Med.* 288:307, 1973; reprinted in *Science* 179:1283, 1973.