

Slow Knowledge

There is no hurry, there is no hurry whatever.

—Erwin Chargaff

It takes all the running you can do, to keep in the same place.

—Lewis Carroll

Between 1978 and 1984 the Asian Development Bank spent \$24 million to improve agriculture on the island of Bali. The target for improvement was an ancient agricultural system organized around 173 village cooperatives linked by a network of temples operated by "water priests" working in service to the water goddess, Dewi Danu, a diety seldom included in the pantheon of development economists. Not surprisingly, the new plan called for large capital investment to build dams and canals and to purchase pesticides and fertilizers. The plan also included efforts to make idle resources, both the Balinese and their land, productive year-round. Old practices of fallowing were ended, along with community celebrations and rituals. The results were remarkable but inconvenient: yields declined, pests proliferated, and the village society began to unravel. On later examination (Lansing 1991), it turns out that the priests' role in the religion of Agama Tirtha was that of ecological master planners whose task it was to keep a finely tuned system operating productively. Western development experts dismantled a system that had worked well for more than a millennium and replaced it with something that did not work at all. The priests have reportedly resumed control.

The story is a parable for much of the history of the twentieth century, in which increasingly homogenized

knowledge is acquired and used more rapidly and on a larger scale than ever before and often with disastrous and unforeseeable consequences. The twentieth century is the age of fast knowledge driven by rapid technological change and the rise of the global economy. This has undermined communities, cultures, and religions that once slowed the rate of change and filtered appropriate knowledge from the cacophony of new information.

The culture of fast knowledge rests on many assumptions:

- only that which can be measured is true knowledge;
- the more of it we have the better;
- knowledge that lends itself to use is superior to that which is merely contemplative;
- the scale of effects of applied knowledge is unimportant;
- there are no significant distinctions between information and knowledge;
- wisdom is an undefinable, hence unimportant, category;
- there are no limits to our ability to assimilate growing mountains of information, and none to our ability to separate essential knowledge from that which is trivial or even dangerous;
- we will be able to retrieve the right bit of knowledge at the right time and fit it into its proper social, ecological, ethical, and economic context;

- we will not forget old knowledge, but if we do, the new will be better than the old;
- whatever mistakes and blunders occur along the way can be rectified by yet more knowledge;
- the level of human ingenuity will remain high;
- the acquisition of knowledge carries with it no obligation to see that it is used responsibly;
- the generation of knowledge can be separated from its application;
- all knowledge is general in nature, not specific to or limited by particular places, times, and circumstances.

Fast knowledge is now widely believed to represent the very essence of human progress. While many acknowledge the problems caused by the accumulation of knowledge, most believe that we have little choice but to keep on. After all it's just human nature to be inquisitive. Moreover, research on new weapons and corporate products is justified on the grounds that if we don't do it, someone else will and so we must. Others, of course, operate on identical assumptions. And, increasingly, fast knowledge is justified on purportedly humanitarian grounds that we must hurry the pace of research in order to meet the needs of a growing population.

Fast knowledge has a lot going for it. Because it is effective and powerful it is reshaping education, com-

munities, cultures, lifestyles, transportation, economies, weapons development, and politics. For those at the top of the information society it is also exhilarating, perhaps intoxicating, and, for the few at the very top, it is highly profitable.

The increasing velocity of knowledge is widely accepted as sure evidence of human mastery and progress. But many if not most of the ecological, economic, social, and psychological ailments that beset contemporary society can be attributed directly or indirectly to knowledge acquired and applied before we had time to think it through carefully. We rushed into the fossil-fuel age only to discover problems of acid precipitation and climate change. We rushed to develop nuclear energy without the faintest idea of what to do with the radioactive wastes. Nuclear weapons were created before we had time to ponder their full implications. Knowledge of how to kill more efficiently is rushed from research to application without much question about its effects on the perceptions and behavior of others, on our own behavior, or about better and cheaper ways to achieve real security. CFCs, a host of carcinogenic, mutagenic, and hormone-disrupting chemicals, too, are products of fast knowledge. High-input, energy-intensive agriculture is also a product of knowledge applied before much consideration of its full ecological and social costs. Economic growth is driven in large measure, by fast knowledge, with results everywhere evident in environmental problems, social disintegration, unnecessary costs, and injustice.

Fast knowledge undermines long-term sustainability for two fundamental reasons. First, for all of the hype about the information age and the speed at which humans are purported to learn, the facts say that our *collective* learning rate is about what it has always been: rather slow. A half-century after their deaths, for example, we have scarcely begun to

fathom the full meaning of Gandhi's ideas about nonviolence or that of Aldo Leopold's land ethic. Nearly a century and a half after *The Origin of Species* we are still struggling to comprehend the full implications of evolution. And several millennia after Moses, Jesus, and Buddha we are about as spiritually inept as ever. The problem is that the rate at which we collectively learn and assimilate new ideas has little to do with the speed of our communications technology or with the volume of information available to us, but it has everything to do with human limitations and those of our social, economic, and political institutions. Indeed, the slowness of our learning—or at least of our willingness to change—may itself be an evolved adaptation; shortcircuiting this limitation reduces our fitness.

Even if humans were able to learn more rapidly, the application of fast knowledge generates complicated problems much faster than we can identify them and respond. We simply cannot foresee all of the ways complex natural systems will react to human-initiated changes at their present scale and velocity. The organization of knowledge by a minute division of labor further limits our capacity to comprehend whole-systems effects, especially when the creation of fast knowledge in one area creates problems elsewhere at a later time. Consequently, we are playing catch-up, but falling farther and farther behind. Finally, for reasons once described by Thomas Kuhn, fast knowledge creates power structures whose function it is to hold at bay alternative paradigms and world views that might slow the speed of change to manageable rates. The result is that the system of fast knowledge creates social traps in which the benefits occur in the near term while the costs are deferred to others at a later time.

The fact is that the only knowledge we've ever been able to count on for consistently good effect over

the long run is knowledge that has been acquired slowly through cultural maturation. Slow knowledge is knowledge shaped and calibrated to fit a particular ecological and cultural context. It does not imply lethargy but rather thoroughness and patience. The aim of slow knowledge is resilience, harmony, and the preservation of "patterns that connect." Evolution is the archetypal example of slow knowledge. Except for rare episodes of punctuated equilibrium, evolution seems to work by the slow trial-and-error testing of small changes. Nature seldom, if ever, bets it all on a single throw of the dice. Similarly, every human culture that has artfully adapted itself to the challenges and opportunities of a particular landscape has done so by the patient and painstaking accumulation of knowledge over many generations; an "age-long effort to fit close and ever closer" into a particular place.* Unlike fast knowledge generated in universities, think-tanks, and corporations, slow knowledge occurs incrementally through the process of community learning motivated more by affection than by idle curiosity, greed, or ambition.

The worldwide inherent in slow knowledge rests on beliefs that

- wisdom, not cleverness, is the proper aim of all true learning;
- the velocity of knowledge is inversely related to the acquisition of wisdom;
- the careless application of knowledge can destroy the conditions that permit knowledge of any kind to flourish (a nuclear war, for example, made possible by the study of physics, would be detrimental to the further study of physics);

*The words are those of George Sturt, one of the last English wheelwrights quoted from his *The Wheelwright's Shop* (p. 66, 1923/1984) Cambridge University Press, Cambridge, United Kingdom.

- what ails us has less to do with lack of knowledge but with too much irrelevant knowledge and the difficulty of assimilation, retrieval, and application, as well as lack of compassion and good judgment;
- the rising volume of knowledge cannot compensate for a rising volume of errors caused by malfeasance and stupidity generated in large part by inappropriate knowledge;
- the good character of knowledge creators is not irrelevant to the truth they intend to advance and its wider effects;
- human ignorance is not an entirely solvable problem; it is, rather, an inescapable part of the human condition.

The differences between fast knowledge and slow knowledge could not be more striking. Fast knowledge is focused on solving problems, usually by one technological fix or another; slow knowledge has to do with avoiding problems in the first place. Fast knowledge deals with discrete things; slow knowledge deals with context, patterns, and connections. Fast knowledge arises from hierarchy and competition; slow knowledge is freely shared within a community. Fast knowledge is about know-how; slow knowledge is about know-how *and* know-why. Fast knowledge is about "competitive edges" and individual and organizational profit; slow knowledge is about community prosperity. Fast knowledge is mostly linear; slow knowledge is complex and ecological. Fast knowledge is characterized by power and instability; slow knowledge is known by its elegance, complexity, and resilience. Fast knowledge is often regarded as private property; slow knowledge is owned by no one. In the culture of fast knowledge "man is the measure of all things." Slow knowledge, in contrast, occurs as a co-evolutionary process among hu-

mans, other species, and a shared habitat. Fast knowledge is often abstract and theoretical, engaging only a portion of the mind. Slow knowledge engages all of the senses and the full range of our mental powers. Fast knowledge is always new; slow knowledge often is very old. The besetting sin inherent in fast knowledge is hubris, the belief in human omnipotence now evident on a global scale. That of slow knowledge can be parochialism and resistance to needed change.

Are there occasions when we need fast knowledge? Yes, but with the caveat that many of the problems we now attempt to solve quickly through complex and increasingly expensive means have their origins in the prior applications of fast knowledge. The point, as every accountant knows, is the difference between gross and net. After all of the costs of fast knowledge are subtracted, the net gains in many fields have been considerably less than we have been led to believe.

What can be done? Until the sources of power that fuel fast knowledge run dry, perhaps not a thing. Then again, maybe we are not quite so powerless as that. The problem is clear: we need no more fast knowledge cut off from its ecological and social context—no more ignorant knowledge. In principle, the solution is equally clear: We need to discover and sometimes rediscover the knowledge of things like how the Earth works, how to build sustainable and sustaining communities that fit their regions, how to raise and educate children to be decent people, and how to provision ourselves justly and within ecological limits. We need to remember all of those things as means by which to repair a world fractured by competition, fear, greed, and shortsightedness. If there is no quick cure, neither are we without the wherewithal to create a better balance between the real needs of society and the pace and kind of knowledge

generated. For colleges and universities, in particular, I propose the following steps aimed at improving the quality of knowledge by slowing its acquisition to a manageable rate.

First, scholars ought to be encouraged to include practitioners and those affected in setting priorities and standards for the acquisition of knowledge. Professionalized knowledge is increasingly isolated from the needs of real people and, to that extent, it is dangerous to our larger prospects. It makes no sense to rail about participation in the political and social affairs of the community and nation while allowing the purveyors of fast knowledge to determine the actual conditions in which we live without so much as a whimper. Knowledge has social, economic, political, and ecological consequences as surely as any act of Congress, and we ought to demand representation in the setting of research agendas for the same reason that we demand it in matters of taxation. Inclusiveness would slow research to more manageable rates while improving its quality. And there are good examples of participatory research involving practitioners in agriculture (Hassanein & Kloppenburg 1995), forestry (Banuri & Marglin 1993), land use (Appalachian Land Ownership Task Force 1983), and urban policy (Bryant 1995). There should be many more.

Second, faculty ought to be encouraged in every way possible to take the time necessary to broaden their research and scholarship to include its ecological, ethical, and social context. They ought to be encouraged to rediscover old and true knowledge and to respect prior wisdom. And colleagues and universities could do much more to encourage and reward efforts by their faculty to teach well and to apply existing knowledge to solve real problems in their communities.

Third, colleges and universities ought to foster a genuine and ongoing debate about the velocity of

knowledge and its effects on our larger prospects. We bought in to the idea that faster is better without taking the time to think it through. Increasingly, we communicate electronically by quick-mail and internet. As a consequence, I believe that one can detect a decline in the salience of our communication and perhaps in its civility in direct proportion to its velocity and volume. It is certainly possible to detect a growing frustration among faculty with the time it takes to service the rising deluge of electronic messages, pronouncements, and directives, and to separate chaff from grain. For comparison, consider the collected correspondence of, say, Thomas Jefferson and James Madison, letters written slowly by quill pen, perhaps by candlelight, delivered by horse, and still full of magic and power

nearly 200 years later. Would that magic and power be present still had Tom and James corresponded by e-mail? Somehow, I doubt it.

Conclusion

Fast knowledge has played havoc in the world because *Homo sapiens* is just not smart enough to manage everything that it is possible for the human mind to discover and create. In Wendell Berry's words, there is a kind of idiocy inherent in the belief "that we can first set demons at large, and then, somehow, become smart enough to control them" (Berry 1983:65).

Slow knowledge really isn't slow at all. It is knowledge acquired and applied as rapidly as humans can comprehend it and put it to consis-

tently good use. Given the complexity of the world and the depth of our human frailties, true knowledge takes time, and it always will. "There is no hurry, there is no hurry whatever."

David W. Orr

Literature Cited

- The Appalachian Land Ownership Task Force. 1983. Who owns Appalachia? University of Kentucky Press, Lexington.
- Banuri, T., and A. Marglin. 1993. Who will save the forests? ZED, London.
- Berry, W. 1983. Standing by words. North Point Press, San Francisco.
- Bryant, B. 1995. Pollution prevention and participatory research as a methodology for environmental justice. Virginia Environmental Law Journal.
- Hassanein, N., and J. Kloppenburg. 1995. Where the grass grows again. Unpublished.
- Lansing, S. 1991. Priests and programmers. Princeton University Press, Princeton, New Jersey.



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