I feel I am being a little bit superior about all this. So let me try to empty my mind of my 'know all' analytical prodding and just go over what is in this particular programme for people who haven't done a lot of it before. First of all, it's safe. No one seems to be forced to reveal more than of themselves than they want to, or to go further than they need to. They are well within the philosophy of the unity of mind and body and use practical exercises to put this over. The actual codification of ideas using numbers and a certain amount of mystical jargon doesn't seem to be too forced. You can either take it or leave it. If you want to think about the psyche in terms of a number of labelled levels, 9 is as good a number as any and to divide human experience into such areas as self-preservation, relationships, harmony, need for love, self expression, coordination, and sex seems a workable model. Much better than the doctrine of original sin.

Arnold Abramovitz

The 'Power - Knowledge' of Newtonian Technology and its Psychosocial Antidote*

It is difficult to dispute a now widely held interpretation concerning the present cul-de-sac of western technology: that it is a product of the 300-year-old Newtonian world-view; that this view has been upheld by established English scientific, religious and political institutions; and that its powerful thrust has been tantamount to a cultural imperialism of planetary dimensions. This is not to dump our technological plagues on the shoulders of Isaac Newton. We must distinguish between Newton the man and Newton the archetypal scientist. Towering genius he may have been, but he has also been called the greatest neurotic in the history of science. As a man he remains an enigma, but the paradigm which he eponymised has become more transparent.

What, we have to ask, is the essence of Newtonianism? Two things: the solving of conceptual riddles by the abolition of subjectivity, and (simultaneously) the devising of formularies which permit us to act on nature and eventually dominate her.

Several things flow from this interpretation. All of them are pertinent to the character of the technological ethos in which we have all grown up and which we find so hard to shake off. The Newtonian's decalogue can be formulated thus:-

1. The Universe is a machine, not an organism.

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2. To understand the machine in its totality, however, is to embark on a fruitless metaphysical enterprise. What we need are formulae, algorithms and other devices that will tell us the consequences of doing this or that to any of its subsidiary mechanisms.

3. Like all machines, the universe was designed for a purpose.

4. Our reality, or part of it, is to relate to this purpose: we can deploy the diverse mechanisms of the universe to our immediate advantage.

5. The result of our conceptual and technological manipulations of the universe is power-knowledge.

6. Power-knowledge is difficult to acquire. It requires patience, perserverence, preoccupation with objective detail and a puritanical philosophy of science. Once acquired, however, it can be codified and transmitted to almost anyone.

7. The secret of power-knowledge is to turn one's back on the private, subjective witness of the senses. This is the source of animism, magic, mysticism and sheer inconsequential zaniness. Never trust your *self* as a total instrument in the exploration of the world.

8. Power-knowledge can be multiplied qualitatively and quantitatively. We can put a man on the moon. We can also, by massive centralization, feed energy, water, food and information simultaneously to millions of men.

9. Power-knowledge is enshrined in our scientific textbooks. As such it is ethically neutral. Some people (not us) have been known to deliberately misapply this knowledge. That is a pity. But luckily we have statesmen in whose hands we can safely leave such matters.

10. Power-knowledge has sometimes inadvertently resulted in undesirable side-effects. The cure for this is invariably more power-knowledge acquired from centralized, coordinated Research and Development.

If I speak of an 'antidote' this should not be construed in the sense of countering a toxin. Power-knowledge may not in itself be toxic. But, since it is, to use a Taoist concept, very yang, it can have *has* had, fateful consequences if not subjected to the harmonizing influence of other modes of knowing (which may possibly be characterized as *yin*). Can we balance up each of the items in the Newtonian decalogue? Let me state (perhaps in stronger terms than necessary) what concepts I think our culture needs in order to square up with power-knowledge:-

1. The universe is not a dead, senseless network of mechanisms.

2. It is a living, spiritual reality, not to be apprehended in a formula or set of formulae.

3. The universe has no purpose outside itself; its purpose is its process.

4. You and I are not 'outside' the universe; our purpose is likewise inseparable from our process.

5. We should think less in terms of doing things *to* nature and more in terms of doing things *with* her; and also of letting nature do things to us.

6. Doing things with nature may mean having personal, private (even secret) *dialogues* with her.

7. My experience of the world, my purchase on reality, is an absolute. no-one can deny it, or take it from me, or substitute for it another reality.

8. I can,sometimes share my reality with others. This is the nucleus of community. An appropriate technology is one that is applied *in, with,* and *for* my community; the degree of its decentralization being dictated by the answer to the question, 'Who *are* my community?' An appropriate technology does not institutionalize 'experts'. An appropriate technology recognizes the participatory needs and resources of women and children. An appropriate technology recognizes the need for survival, but never forgets the need for fun, worship, poetry, privacy, togetherness and on-going education. In sum, an appropriate technology will embody a new concept of work.

9. An appropriate technology recognizes that nothing we know and nothing we do is value-free. I take responsibility for what I do to myself and take care for what I might be doing to you.

10. An appropriate technology is sceptical of Big Science and Big R & D. Instead of traditional research, an appropriate technology focuses on *search:* searching and re-searching all the spaces and levels that I inhabit, including *your* searching and re-searching. An appropriate technology focuses on the *process* of search than its *product.*

Romantic, pie-in-the-sky ideals? Maybe. Three centuries of frantic manipulation of the environment, conceptual and technological, have made me a reactionary. A more balanced personality may want to produce a synthesis between the yang of Newtonianism and the yin of a technological philosophy that specifically opens itself to sun, wind, soil and muscle.

I conclude with an outline of an ongoing project which I think is appropriate to my own situation in a windy smallholding shared by three families. It is an attempt to marry molinology (the study of windmills) with ergometry (the study of the quantitative aspect of human energetics) and has as its inspiration both the ancient Persian vertical-axis type of windmill as well as a windmill-cum-treadmill constructed by none other than Isaac Newton - when he was a schoolboy. (Would our destiny not have been different had Newton stuck to windmills?) My idea is simply to make a wind-and-muscle-driven merry-go-round (roundabout) which will charge our batteries

and pump and heat our water. In high winds children can have a free ride; but on calm days they have to do 'work' - as children joyously do in every playground. They can either jog or pedal. But of course anyone can recycle his stored calories into electrical and thermal energy. Some of us obviously have more watt-hours stored than others, and some of us seem able to retrieve this energy more readily than others. This is where bicycle technology, which is so beautifully appropriate for individual transport, can find ever greater applications as muscle-powered prime-movers. Our becalmed turnable, for example, could become a convivial arena where the generations mix, each member contributing his ergometrically optimal share of the work.

The wind bloweth where it listeth, but as long as we can eat we can always fall back on pre-Neolithic sources of power. Newton put a mouse to work in his miniature windmill. Is it a mere coincidence that Skinner (whose operant behaviourism is the epitome of Newtonianism in present-day psychology) used rats and pigeons to manipulate *his* devices? Using another's muscles as one would use a hired power-tool would be regressive. But if Aeolus ignores one's petitions then a hot bath† and a bright reading lamp may have to be bought in a more direct way than the traditional shilling in the meter. Which means that our crumbling cash economy may have to give way to something more real.

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† Not (in this allegory) a piping-hot 40-gallon bath; rather a 2-gallon shower in which water is raised from a sub-tropical 25 degrees C to a tepid 40 degrees C. Ecology will one day teach us all what we can really afford.