

reviews

Machiavelli with a computer

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The Humane Technologist. (Science and Engineering Policy Series.) By D. Davies, T. Banfield and R. Sheahan. Pp. ix+180. (Oxford University: Oxford, 1976.) £4.75.

FOR some inscrutable reason the dust cover of this book carries a puff from the co-founders of the Club of Rome. Do not be put off by this. Any apprehension that the book was sponsored by the body which condoned a diet of exponentials for computers is soon dispelled. The authors courteously dissociate themselves from any such nonsense. They are as well equipped as anyone to compose mathematical models of future scenarios; so it is refreshing and reassuring to find them quoting, as a good example of organisational models, the table of contents of Machiavelli's *The Prince*: "and" they add, "the chapters themselves are commendable succinct runs of these models. There are, however, no rules for the construction of such models except the general one of keeping them simple and avoiding the hopeless pursuit of meaningless quantification."

The theme of Davies and his collaborators is that the technologists' honeymoon is over; society will no longer permit man to do all he is capable of doing. But technologists must not lose heart, for they hold the clues to the solution of our present perplexities. They must not lose heart but they must acquire the skills of "human perception and understanding". In brief, an education which equips the technologist to handle ideas and things should equip him, too, to handle people; the immediate threat to industrial societies is not shortage of energy or depletion of resources, it is the risk of disorder due to stresses in human relations, between management and shop floor, between government and citizen.

Drawing on a wealth of examples and the rich background of a great industry, the authors of this intelligent and sophisticated book examine the uses of models by technologists, with special reference to the circumstances of a democratic society. Enriched with historical allusions from Greek tragedy to medieval geopolitics, the book offers facts and opinions on such models as

the Boston Experience Curve (which relates the cost of a product to the accumulated experience of making it); the constraints which limit the use of such models in industry and government; and the part played in technological innovation by access to investment capital. It ends by an appeal not to regard people as "inanimate thermodynamic assemblies of customers, clients, operators, and educators". Technologists have been slow to face some of the human problems they have created; yet they have (so the authors claim in their last chapter) the right sort of experience to deal with models of these problems: numeracy, familiarity with the effects of error and uncertainty, patience in reconciling concepts with the realities of everyday systems.

The book is entertaining, but the authors quite rightly want something more from the reader than "polite applause" or "stunned silence". It is a book to provoke discussion and it deserves to, for the issues it raises are critical for modern society. Perhaps the most ominous of these issues is the dilemma of what the authors call "top-down" models. Having persuaded the reader that models are important—indeed essential—to the proper deployment of technology, they then distinguish two kinds of models. On the one hand there are "bottom-up" models (they cite as an example a model for traffic flow in Westminster) which can be assembled with other subsolutions into pragmatic hierarchies to provide data for political and social decision-making; going from the particular to the general. Such models may be too empirical to provide guidance for grand strategy. On the other hand there are "top-down" models (such as the Club of Rome and the Hudson Institute indulge in) which are synoptic, and which adopt doctrinal or dogmatic guidelines. Because "bottom-up" models are liable to be difficult to integrate into a hierarchical whole, there is a temptation to adopt "top-down" models, such as the Soviet Union has used for years. Then comes the authors' warning: "a state based on top-down modelling throughout cannot afford to be democratic and must be authoritarian if it is to be effective. We reject absolute authority in politics,

and so we must severely restrict the applicability of top-down modelling." But will society reject absolute authority, if the alternative on the horizon is chaos? To rescue society from having to make this choice is the challenge of this book.

For some years observers of industrial society have stressed the need for innovation in political institutions to match innovation in technology and industry. The only recent political innovation (I use the phrase deliberately) which has emerged in response to this is the multinational corporation. Do we discern in (for example) the oil companies the prototype of international power, if not yet of international government? Such corporations are deeply distrusted by the man-in-the-street; they too, like "top-down" models, are not compatible with democratic government.

The book cleverly leads the reader toward the conclusion the authors intend, namely that there ought to be a "constructive alliance" between technologists and sociologists. But how? Alas, the authors turn to education as the recipe. Education is by its very nature conservative; it is a process analogous to the transfer of genes in heredity: a sort of cultural DNA; not the place to look for such major innovation as is needed. If innovation is to come, its source is more likely to be the political philosophers. The need is for a redefinition of values and a machinery for reconciling conflicts of values. Karl Marx offered one pattern of innovation, but for those who value personal freedom the price to be paid for his pattern is too high. Is some lonely successor to Karl Marx now working in the British Museum on a political philosophy adapted to a post-industrial society? If so, he will find in this book the questions to which democratic societies seek an answer.

One postscript: the Oxford University Press used to be impeccable in its standards of proof reading. The misprints in this book are a disgrace to the Press. □

Eric Ashby (Lord Ashby of Brandon) recently retired from the Mastership of Clare College, Cambridge. He was chairman, from 1970 to 1973, of the UK Royal Commission on Environmental Pollution.