

Book Reviews

TYING THINGS TOGETHER

Systems Psychology

Edited by Kenyon B. de Greene. (McGraw-Hill Series in Management.) Pp. xviii + 593. (McGraw-Hill: New York and Maidenhead, July 1970.) 178s.

THIS is an expensive book but it is a large one—about 400,000 words long. There are fifteen authors, all American, who are mostly psychologists but a few engineers and administrators are included. They deal with topics such as systems analysis techniques, accidents and safety, control systems, man-computer interrelationships, psychophysiological stress and “aesthetics, architecture and city and regional design”. The writing is discursive, usually factual, sometimes tedious, sometimes emotional and is rather deceptively informal. Deceptive in that there is an enormous expertise and a quality of structured thinking which may not be obvious to the reader who has not tried to do this kind of work. The authors are clearly men of extensive experience in the design of large scale systems, and many have a background of laboratory experimental work with which they tend to be disillusioned. For example, Chapanis (p. 76), “the fact of the matter is that most laboratory experiments in psychology have only very limited relevance for the solution of practical problems”.

Systems psychology emerged from experiences on the post-war defence systems such as SAGE. This book is an advance on earlier ones in that it includes extensive work on space systems such as Apollo, industrial problems of computer based information systems and some tentative and entirely speculative excursions into current social problems. Typically the systems approach is defined as “a pragmatic approach to tying things together” justified by a rather nice quotation from John Muir, “When we try to pick out anything by itself we find it hitched to everything else in the universe”. There are various dimensions and hierarchies of systems: behavioural—biological—equipment, particles—atoms—molecules—colloids—nuclei—cells—tissues—organs—organisms—man-machine systems—groupings, parts—units—components—subsystems—systems—macro-systems, elements—tasks—duties—jobs, automatic—man-machine—socio-technical—social. The systems psychologist is the specialist in human behaviour within this structure; he is the advocate for the human operator particularly when there is arbitration about the relative roles of men and machines. He functions most effectively as a member of design and development teams especially for technologically advanced systems. His tools are chiefly those of systematic observation, recording and analysis of real behaviour: task analysis, skills analysis and error analysis. He occasionally resorts to the study of isolated variables in the laboratory situation but only as a source of supporting evidence for his systematic observation. For the conduct of experiments he more often uses a simulator where the operator's task and environment are as similar as possible to “reality”. He believes in training but seems to need the superficial security of hardware dominated training which relies on computers, simulators, teaching machines, mock-ups and visual aids: the teacher has become either a “management developer” or a “lesson planner”. His more formal concepts are mathematically based: information theory, decision theory and control theory. He tries to steer a difficult course between the need to be comprehensive

in his consideration of relevant variables and his preference for hard evidence. His justification must be that no more than a fair share of real system failures result from his design mistakes.

The book brings us up to date on current practice. There are interesting but dangerous new trends in the recognition of social problems and the substitution of humanistic values for cost effectiveness—dangerous in that the systems psychologists have at present no more idea of how to tackle these problems than anybody else has. The sweeping nature of systems concepts has an unfortunate tendency to induce grandiose thinking. In common with every other scientist or technologist, the systems psychologist can only deal with problems in relation to which he has both relevant concepts and relevant evidence. The interesting question is whether a young psychologist can operate more effectively as a laboratory experimentalist or a systems designer. My vote goes to the latter. Not because laboratory work is necessarily invalid but rather because the advancement of knowledge by good laboratory experiments is just too difficult except for a very tiny minority of research workers. Systems design is also difficult but those who are not sufficiently competent are more easily found out.

The book lacks an author index. References are placed at the end of each short chapter and so its value as a guide to the literature is not high. Diagrams and tables of data are excellent but there are not enough of them.

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RECORDS OF IRON-AGE HORSEMEN

Frozen Tombs of Siberia

The Pazyryk Burials of Iron Age Horsemen. By Sergei I. Rudenko. Translated from the Russian and with a preface by M. W. Thompson. Pp. xxxvi + 340 + 180 plates. (Dent: London, September 1970.) 252s.

PROFESSOR Sergei Ivanovich Rudenko was born in 1885. He graduated in Leningrad and was until his recent death a senior scientific member of the Institute of Archaeology of the Russian Academy of Sciences. Primarily an anthropologist, he readily appreciated that in Siberia the primitive present was very close to the primitive past. In 1947–9 he excavated four large barrows at Pazyryk. Frozen barrows had been dug in the Altai by Radloff in 1865, and by Gryaznov in 1925–9. One of Gryaznov's barrows was Pazyryk 1. No further work was carried out until 1947–9 when the other four large barrows at Pazyryk were excavated by Rudenko. It is the work at Pazyryk in 1929 and 1947–9 that formed the subject of Rudenko's *Kultura Naseleniya Gornogo Altaya v Skifskoe Vremya* published in Moscow/Leningrad in 1953. This present book is an English translation by Dr M. W. Thompson, and has the benefit of revisions by the author. The results of excavations since 1949 in other barrows in the Altai, where the finds were far less spectacular than those in the five Pazyryk barrows, were published by Rudenko in 1960 in his *The Culture of the Population of the Central Altai in Scythian Times* (Moscow/Leningrad), together with some revised judgments on his earlier work.

The dead in the Pazyryk barrows were buried in wooden chambers in shafts below the mounds. The unusual preservation of materials and human bodies from the ancient and prehistoric past of man is one of the great fascinations of the archaeological record. No student of the past can fail to be excited by the bodies surviving in the tree-coffins of Denmark or by discoveries such as those of Tollund and Grauballe man in the Danish peat bogs. Great dryness or wetness can preserve human beings, leather, wood and textiles as we know from Europe and America, but in a limited area of Asia—Mongolia and Siberia—constant freezing has the same spectacular results.