

Trends in Soviet science and design

Soviet Science, Technology, Design: Interaction and Convergence. By Raymond Hutchings. Pp. xii+320+8 plates. (Oxford University: London and New York, May 1976. Published for the Royal Institute of International Affairs.) £12.

THE idea of analysing the evolution of the interactions of science, technology and design in the Soviet Union is interesting and worthy of research, but the present study by Dr Ramond Hutchings must be regarded as a rather idiosyncratic first attempt. His book contains some factual material, notably on design, which will be new to most readers, and a number of suggestive insights into aspects of Soviet technological and design policy. But substantial sections contribute little to the existing literature in English on Soviet science and technology and, more seriously, the study is weakened by inadequacies of a conceptual and theoretical order.

Dr Hutchings discusses science, technology and design in isolation and then concludes with a brief consideration of their interrelationships. Chapters are devoted to the organisation and planning of science and the trends in expenditure on research and development in the post-war years, covering aspects of Soviet science treated in greater detail elsewhere, notably in the OECD study *Science Policy in the USSR* (1969). The chapter on finance is particularly sketchy and takes no account of the valuable studies of Louvan Nolt-ing of the US Department of Commerce. Consideration of some strands of technological policy is followed by a brief account of the problems of technical innovation. In a chapter on 'design as an institution' it is argued that following early interest symbolised by the activity in the 1920s of VKhUTEMAS (the Higher Technical Artistic Studios), a Soviet equivalent of the Bauhaus, interest in design suffered neglect until the early 1960s when a new specialised institute, VNIITE (All-Union Scientific Research Institute of Technical Aesthetics), was established. In describing this interesting organisation the author draws on his direct personal experience.

Finally, chapters are devoted to characteristic features of design in the USSR and the forces which have conditioned them—for example, the well known bias towards grandiose structures, and the influence of ideological symbolism. It is in this section that the author's rather idiosyncratic and eclec-

tic approach is most apparent, although at times his speculations on Soviet design peculiarities are stimulating and amusing. There are some minor factual inaccuracies, in part stemming from the fact that developments in the past five years are treated less thoroughly than for the 1960s.

The main thesis of the book is that science, technology and design in the Soviet Union are beginning to interact with increasing force in spite of pressures, primarily political and ideological, tending to maintain their relative separation, and that the forms of interaction are showing a tendency to converge with those typical in the West. Moreover, design, it is argued, has until recently, been the weakest link in the chain. Although much evidence in support of these propositions is adduced, there is a notable absence of serious theoretical treatment of the general processes of interaction of science, technology and design under capitalism and socialism and at different stages of industrial development. The concepts 'technology' and 'design'

are themselves defined with insufficient rigour; the former is used loosely to embrace technical sciences, engineering and technical artefacts, whereas 'design' in the main corresponds to activity in the sphere of aesthetics, rather than engineering design (although the author at times slides from one to the other). Thus, consideration of design focuses on VNIITE and little attention is devoted to the extensive network of design and project offices which forms a vital component of the Soviet research and development system. More rigorous treatment of the theoretical framework of this study would have made it a more weighty contribution to our understanding not only of Soviet society, but also of the exciting implications arising from the general tendencies of development of science, technology and design in the second half of the twentieth century.

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Notions of mechanism in biology

The Problem of Life: An Essay in the Origins of Biological Thought. By C. U. M. Smith. Pp. xxiv+343. (Macmillan: London and Basingstoke, May 1976). £10.

THIS is a gallop through biological history with an eye open for certain views of the passing countryside. It might have been called *The Triumph of Reductionism*, and our author plots the course of notions of mechanism in biology from ancient times to the present. The views of the countryside that attract him are those that show how man's idea of nature is determined by the society in which he lives. 'Biology' had a greater meaning when self-moving things were thought to be alive, or when the Greek natural philosopher, living in a polis, used 'political' explanations of the behaviour of animals.

The growth of technology provided another analogy with which to explain biological phenomena, and we are presented here with a biologist's view of the evolution of technology, mutations being selected for and against; such evolution produces a certain kind of society, and the society produces ideas of a certain sort, including those of the natural world. It is certainly

true that the history of science is largely the history of the knack of asking answerable questions of nature. This does not invalidate the unanswered questions, but the answered questions certainly help to mould the mind of the enquirer; this generates a bias in the new questions and the new people who ask them. To a certain extent science and perception of nature are thus 'culture bound', but very often the historian finds that scientific ideas are transmitted through societies, not generated by them, as the biologist or politician may be tempted to think.

The author's awareness of the limits of perception, of the urge of the mind to impose patterns on the perceived, and of the orientation of perception by culture leads him into early chapters on imagination, anthropology and language that are somewhat thin and not entirely related to the rest of the book. The level of scholarship in a book of such broad scope inevitably falters in places. In particular anatomy and Vesalius are inadequately dealt with, and there is some misinterpretation of the position of Borelli and the later animists. Nevertheless, the author's view of history is held with a firmness that provides a coherence and freshness that are particularly valuable in a survey of such a long historical period.

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