10,000; 30,000; 70,000; 300,000 and so on rather than, say, 10,000; 30,000; 90,000; 270,000) was simply egregious—greatly complicating systematic inference, and obscuring any regularities in rank-size distribution that might inhere in the data. Local gazetteers provide sufficient information to work out putative equivalences between the number of stores in a city, the number of its streets, and the city's population; but nothing systematic of this sort was done, so that inferred populations are off-the-cuff and less than consistent. Rozman is careless with data in another critical respect. He takes as a general rule what was only an empirical tendency—namely, that more populous administrative units had more populous capitals—and then argues that the population of a capital was a *function* of the population of its administrative unit (e.g., pp. 66 and 207). As I read the evidence for China, however, the causal flow in this weak covariation normally went the other way—that is, units administered from large cities with high levels of economic centrality were made deliberately large in order to encompass, for efficient revenue extraction, as much as possible of the city's exceptionally productive commercial hinterland.

A final complaint concerns the quality of editing and proofing, format and artwork, and the standard paraphernalia of scholarship. All are abysmal. Consistency is totally wanting in the form of city names—with indiscriminate recourse to Wade-Giles, post-office, or bastard transcriptions in the case of Chinese names, and to nineteenth-century or present-day forms. No distinction is made between the names of administrative units and of their capital cities; and some place names are so garbled as to be unrecognizable. The maps are miserable in design, sophomoric in execution, and in one case (p. 246) inaccurate. The glossary is incomplete and lacks characters. The pages devoted to endnotes unhelpfully omit any indication of the range of text pages to which they pertain. In short, another bad book. The catch is that this one is indispensable to serious students of Ch'ing China and Tokugawa Japan.

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The Theoretical Foundations of Chinese Medicine: Systems of Correspondence. By Manfred Porkert. Cambridge, Mass.: M.I.T. Press, 1974. xvi, 368 pp. Illustrations, Bibliography. $13.95

After reading Porkert's *Theoretical Foundations,* there can be little doubt that this work represents by far the most authoritative and fundamental study to date of the literate tradition of Chinese medicine. Hereafter, all future scholarship on that subject can be expected to take its start from the terminological foundations and nearly exhaustive discussion of the systematic correspondences underlying Chinese medicine that are the two major contributions of this very impressive work. This volume is the first in a projected series aimed at elucidating for Western readers the theoretical and practical sides of diagnosis, pathology, pharmacology, acupuncture, and chemotherapy in the "classical" Chinese medical tradition. One can only stand in awe of the sheer enormity of the lifetime program of scholarly labor this Munich sinologist has embarked upon. And awe is again in order when the reader realizes that Porkert's conception of the Chinese medical system is of a separate and living medical science, one that provides a needed addition to Western medical science and the contemporary practice of medical care. Porkert states explicitly that he has written his book not for sinologists to contemplate as a useless hermetic discipline, nor for historians of science to compare as a cross-cultural oddity to Western science, but for medical scientists and practitioners to understand, test out, and use. His is not simply a translation of and commentary upon basic aspects of the Chinese medical classics (though it is extremely valuable for having done that), but rather an attempt to place Chinese medicine within the focus of modern scientific medicine—and to do so not merely to rationalize the former in the supposedly universal terms of the latter, but to truly universalize the latter and to lead to an eventual theoretical synthesis of both traditions. This is an astounding goal; to view this book as simply a philological exercise in an abstruse subdomain of classical sinology would be a serious mistake.

The problem confronting Porkert is essentially this: to explain Chinese medicine both within its own rational framework and from the wholly external framework of modern medical science, then to somehow relate these two very different perspectives. I believe that he largely succeeds in doing the first (and that is a tour de force deserving very high praise), but not the rest. His com-

parative analysis of this unique system of rationality and therapeutic practice, fascinating and important as it clearly is, is highly problematic.

Only careful scholarship by others, who hopefully will now be attracted by Porkert's work to this deserving subject, will determine the correctness of the philological research supporting the *Theoretical Foundations.* Lacking the necessary competence in that area, I will leave this question aside. Assuming philological validity, the presentation of the system of correspondences is lucid and compelling. Porkert essentially abandons an historical approach (only very briefly outlining the historical background within the Chinese medical tradition for the different major concepts he examines) and bases his study of the central terms and ideas in Chinese medicine on an analysis of the *Huang-ti nei-ching.* It is worthwhile outlining his approach, since it will readily reveal what is significant and also what is troublesome about this volume.

Porkert begins by presenting a comparative framework for contrasting the rationalities of Chinese medicine and Western science. The former he describes as a unique system of cognitive structures and processes, an "inductive and synthetic" mode of cognition that differs markedly from the "causal and analytic" rationality that has served scientific medicine in the West, both historically and at present. His argument is a tight one, based on certain definitions in the philosophy of science, along with his own definitions of how Chinese science operates; but it suffers from the high level of abstraction employed. Although expressed in terms understandable, perhaps, to a philosopher of science, this discussion seems beyond the intellectual reach of most readers with a specific interest in Chinese medicine itself. Indeed, this kind of Teutonic theoretical discussion will be found remote and unconvincing by those scientists and medical men whose interest Porkert desires to capture. A much simpler and extended discussion would have been more useful. The brevity and high level of abstraction of Porkert's remarks are lamentable for another reason as well: this question of different rationalities is a crucial problem currently facing researchers carrying out many different kinds of cross-cultural investigations; and the case of Chinese medicine would seem to bear directly on this problem.

Of course this discussion is only an introduction to Porkert's chief concern: explaining the system of correspondences that form the theoretical skeleton of all aspects of Chinese medicine. Here Porkert offers clear and detailed explanations of basic concepts and their function in medical theory, including the *yin-yang* polarity, the cycle of the Five Evolutive Phases *(wu-hsing),* phase energetics *(yün-ch'i),* orbisiconography *(tsang-hsiang),* and the functional relationship between energetic conduits or sinarteries *(ching-luo)* and sensitive points *(shu-hsüeh).* The terminology is original, representing Porkert's attempt to develop standardized translations of Chinese medical terms (in English and Latin). This difficult and tedious work should prove quite valuable for future research, and Porkert deserves congratulations for laying the terminological foundations for the systematic study of Chinese medicine.

Three components of this approach should be singled out for their special significance. Porkert's discussion of the Five Evolutive Phases *(wu-hsing)* is superb, and goes far to rectify many misconceptions and obfuscations that have burdened previous efforts to understand this central aspect of the system of relations and correspondences. Specifically, he demonstrates that Chinese medicine is essentially a science of functional relationships (speculative or empirically demonstrable) and, as such, is not only very different from the structural approach of much of contemporary medical science, but also becomes significantly distorted when viewed from such an alien perspective. The elaborate description of the Evolutive Phases and the system of energetics, though probably doing full justice to the rich materials he is working with, remains terribly complex and difficult to follow. One hopes that in future volumes, Porkert will write somewhat simpler accounts that are less demanding of his readers. Here we have a recurrent thorny problem: this is an extremely difficult book to read. In part, this is the result of the esoteric subject matter itself. But in part, it seems to represent some ambivalence on Porkert's side about his audience. *Theoretical Foundations,* though claiming to be a general introduction to Chinese medicine, reads much more like a dictionary; I would venture to say it will be more appealing to most readers as a reference source than as a book to be read straight through from cover to cover. However, given the unusual objectives that stand behind this volume, it is easy to understand the author's difficulties in writing both a scholarly exegesis that is interpretable in the framework of

science, and a guide for those who can appreciate it scientifically but lack the necessary philological background.

A second important contribution is the conception expressed by Porkert's rendering of *tsang-hsiang* as orbisiconography. Here he shows that *tsang-hsiang,* rather than signifying a close counterpart of anatomy—as it has been taken to do—is in fact its antithesis. It is a description, not of anatomical structures, but of energetic processes and their dynamic interrelationships in the microcosmic organism.

The two examples discussed here both stress the functional characteristics of Chinese medicine, and its tendency to focus on ecological interactions. The emergence of sophisticated ecological perspectives and chronobiological interests, as recent developments in science, point to the importance of these dynamic interactions—which were also part, in a different form, of Hippocratic medicine.

Finally, Porkert provides an excellent chapter on sinarteriology and foraminilogy, in which he outlines the theoretical basis of physiological and pathological relationships amenable to acupuncture treatment. Here he demonstrates that the sensitive points—not the sinarteries—are empirically verifiable, while the sinarterial system operates as a mere mnemonic device. Along the way, he provides detailed definitions of such crucial terms as *ch'i, ching, shen, hsüeh,* etc.

What remains most troublesome with this book is its claim to exploration of an alternate system of medical practice that holds theoretical, as well as practical, significance for modern medical science. Porkert stands nearly alone among serious students of Chinese medicine in the West, as far as I can determine, in maintaining the view that synthesis between these distinct medical systems must occur on a theoretical, as well as on a practical, level. This provocative notion nowhere receives adequate treatment in the present volume. Nor does he explain in nearly enough detail exactly what it is about Chinese medical theory that is worth investigating from the standpoint of modern science, what is worthy of the sustained interest of medical practitioners. Certainly this issue deserved much more attention than it has received in this introductory volume. Yet even this criticism points to the extraordinary accomplishments of the book, since the reader comes to evaluate it (almost despite himself) by the same visionary objective that the author proposes, largely because it does provide such a thorough and sophisticated account of the theory supporting Chinese medicine.

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Research and Revolution: Science Policy and Societal Change in China. BY RICHARD P. SUTTMEIER. Lexington: Lexington Books, 1974. 188 pp. $15.00

Research and Revolution is a sound, scholarly description and analysis of the changes in policy toward scientific organization in China during the past quarter-century. It describes, in detail, the organization and development of the Chinese Academy of Sciences. Policy debates on science organization are thoroughly examined up to the Cultural Revolution. For the post-Cultural Revolution period, the book is sketchy but useful. Organizations and principles to encourage mass participation in science and technology are also examined.

Science organization was marked by much the same "struggle between the two lines" as were other fields of activity—such as industrial organization, health, education, and agriculture. In general, Mao favored a mobilization model—with mass participation, decentralization, elimination of elitism, integration of manual and mental work, and ideological incentives. Liu Shao-ch'i believed in a bureaucratic-professional model—marked by central control, professional expertise, and material incentives.

To this general analysis, Suttmeier brings two important insights. First, he shows that Chinese policy in science organization has not simply gone back and forth from one policy to another. It is not a ping-pong ball, first in one court and then in another; nor is the pendulum metaphor suitable. Suttmeier discovers that policy is a *spiral,* in which there is constant learning and feedback in each policy experiment. Thus, the policies of the early 1960s—while similar to those in the mid 1950s—are not exactly the same, and show indications of growth and improvement. Likewise, the Cultural Revolution policies were not simple carbon copies of the Great Leap Forward policies. It is interesting to note that a recent article in *Peking Review* (October 25, 1974) used precisely the same image (spiral) in describing the development of policy in China.