Eden Medina, *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile* (Cambridge, MA: MIT Press, 2011), pp. 344, $35 (hardcover). ISBN 978-0-262-01649-0.

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Cybernetic Revolutionaries is an award-winning book in the fields of the history of technology and the history of computing. Originally published in English in 2011, it was also published in Spanish in 2013 in what was a very welcome decision. The Spanish edition is translated by J. M. Neira as *Revolucionarios cibernéticos: Tecnología y política en el Chile de Salvador Allende* (Santiago, Chile: LOM Ediciones, 2013). This book is a worthwhile read from several perspectives beyond the explicit goals delineated by the author and even beyond any interest in the historical evolution of the Chilean economy, as it really deals with the political economy of (technologically generated) economic and political reform, specifically regarding the construction of a (utopian?) socialist society.

The book narrates the development of Project Cybersyn that took place during the Chilean socialist experiment under President Salvador Allende. We find an English expert in cybernetics, Stafford Beer, and young Chilean revolutionaries embarked on two utopian visions: technological and political. The relationship between technology and politics is a big issue in this volume. Stafford Beer was an international consultant in operations research whose interests in technology and social systems led him to work in the area of "management cybernetics" and the development of related models of systems organization within changing external environments. This included systems for government administration. The book explains how, through Fernando Flores, then general manager of the Chilean Development Corporation (CORFO), Beer was invited to work as an advisor and implement his vision of a "Liberty machine" for the socialist government of Chile, which was embarked on a sweeping economic, social, and political reform process.

In a sense, Flores thought that Beer's ideas would be useful as Chile moved forward in its experiment in democratic socialism, especially to work around the deficits of the Chilean government bureaucracy, such that it was to be possible to provide an effective public response to the demands of the population. The early policies of the Chilean road to socialism did not pay much attention to the management problems that would come about after the "nationalization" of different parts of the economy was accomplished. The absence of a coherent organization all through the nationalization process, as well as different types of power struggles at the political level, created a highly disorderly situation in the so-called Social and Mixed Property Areas of the economy. In this context Flores and Beer viewed CORFO as a key department for the successful development of the Popular Unity's socialist program. The technological vision of management cybernetics in government led to the political development of Project Cybersyn (a synthesis of "cybernetics" and "synergy"), which was also known as project SYNCO in Spanish (acronym for "Sistema de Información y Control").

The ambitions of management cybernetics are manifest in the picture on the cover of this book, which shows a photograph of Cybersyn's futuristic operations room, where information on industrial production obtained from a widely disseminated network would be fed via Telex machines, in real time, to policymakers who, on the basis of an adaptive model of the economy, would be able to simulate economic conditions

and make quick, informed decisions (thus skipping the shortcomings of bureaucratic decision-making processes). The idea of a non-hierarchical control structure is apparent in the notion of a circular arrangement of the room, which Allende wanted to see installed in the Presidential Palace in Santiago.

The Popular Unity government ended tragically, and this plan was discontinued by the military regime, but this volume invites us to consider whether Project Cybersyn could have worked as envisioned, in actual practice. While several other countries have viewed computer technology as a tool for the implementation of a socialist society, the development of this project to a prototype stage offers some interesting insights into several dimensions of this notion. (Indeed, the question as to why Chilean planners did not base their models on Soviet planning systems—or on American computer networking systems—is also addressed in this volume. The answer has to do with a disapproval for the centralized features of socialism in the Soviet Union, as well as with the lack of appropriate hardware to implement a different network.)

Project Cybersyn called for talented "interventors" of the nationalized firms, who would engage in direct communication with the state planners in terms of meeting and evaluating industrial goals in the economy. However, in reality, these agents also had to meet the Popular Unity's political constraints, and their selection was contaminated by political considerations that had nothing to do with managerial competence. Bringing the managers and the workers of these firms together was another source of tension in this model. Empowering workers was an important goal of the socialist program, but the mechanisms for worker participation had to be reconciled with the political structure represented by labor unions and the engineering schemes designed by the interventors.

According to the plan, Telex networks between nationalized firms and CORFO would provide a clearer view of the structure of the Chilean economy. But this required an efficient functioning of the relevant information systems. Moreover, a system of incentives would be necessary to ensure the correct working of these systems: "disciplined" agents would be required in this sense. As the author notes, early on the engineers working in this project noticed that the problem of collecting information at the firm level, as well as the very nature of the economic interdependencies involved in the manufacturing sector, led to greater difficulties in modeling the productive sector and in making information available than what was initially considered. The administration of all this information would also face problems of scale at the top level. This, in turn, would be related to the way the occupants of the system's operations room—the top roles in the system—were to be selected, which does not seem to have been fully addressed.

Eden Medina lucidly explains the paradoxes implicit in this project. For one, a tension between individual autonomy and collective welfare in the context of economic planning is readily apparent. A similar conflict appears regarding the possibilities of structural change in the economy through technological innovation, and even in the foreign expert's assessment of his work. The political instability in Chile during 1972, and especially during the October Strike, portrays such tensions, as the government was led to use the new technology in a different, more concrete way, specifically to deal with interruption of the supply of different produces generated in this context. Overall, this process led to the emergence of subtle, as well as not so subtle, differences between Beer and Fernando Flores. As the Chilean was named Minister of the Economy, he became more pragmatic and engrossed in the very important problems

the economy was then facing. In the meantime, Beer was becoming more confident as to the possibilities of a radical transformation of the Chilean society. Intriguingly, Medina notes that Beer also grew ambiguous as to whether his work was technocratic or political—in order to increase citizens' participation in government. The role of a non-economist as an expert economic advisor that appears here is a variant of the problem of expertise in policy making studied in different contexts in the history of economics.

The Chilean socialist experiment wanted to demonstrate technological prowess. In a context of limited resources, and difficult political conditions (including a strong opposition), a unique utopian vision was being tested—technologically, politically, and also in terms of design. But fundamental economic (and political) naiveté on the part of many of the experts, including the authorities and engineers at CORFO, and Beer himself, made the development of this project an uphill struggle, if not an impossible task. Despite the progress she documents in the development of Project Cybersyn and her admiration in this sense, the author is very honest about its contradictions. The different evaluations afforded to this project also merit a careful consideration in this work. Even though it aimed at decentralizing power structures throughout the Chilean economy, Project Cybersyn has been considered anything but this. As Eden Medina argues, some type of social engineering (my term, not the author's) was built into this system, and this is related to a guiding role of the state in economic planning. Other features of the system, such as the "algedonic meters" intended to measure well-being and provide feedback mechanisms as to the workings of the economy, also raised eyebrows as they involved granting significant power to the political authority. From the other side, the idealistic and even romantic views of this system are implicitly addressed in this volume, although no mention is made of the fact that in the early 1970s, Chilean students were exposed to Beer's work and the possibilities of economic management in their college-level courses in business and economics.

In all, this is a well-researched, stimulating, and entertaining volume that, as noted, deals not only with the history of technology, but more fundamentally with the possibility of radical economic and political reform. Readers will probably differ in their views regarding the overall economic feasibility of a socialist society, but maybe this represents a different type of problem. Ultimately, this book represents an important contribution to the history of the economics broadly defined.

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Michael Szenberg and Lall B. Ramrattan, eds., *Eminent Economists II: Their Life and Work Philosophies* (Cambridge: Cambridge University Press, 2014), pp. 486, $37.95. ISBN 978-1-107-65636-9.

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How might one appraise the historical value of a collection of autobiographical essays? Two approaches come immediately to mind, reading in depth or/and reading in breadth. A volume of autobiographical essays promises to be a trove of insights on the lives of economists of the late twentieth century. *Each* of the twenty-nine essays of