

The Magic Ring

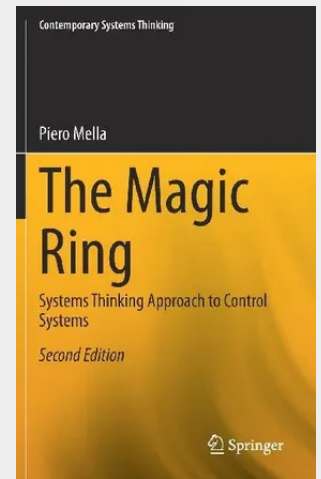
Systems Thinking Approach to Control Systems

This book presents a new understanding on how control systems truly operate, and explains how to recognize, simulate, and improve control systems in all fields of activity. It also reveals the pervasive, ubiquitous and indispensable role of control processes in our life and the need to develop a "control-oriented thinking"—based on uncomplicated but effective models derived from systems thinking—that is, a true "discipline of control." Over the book's thirteen chapters, Piero Mella shows that there are simple control systems (rather than complex ones) that can easily help us to manage complexity without drawing upon more sophisticated control systems.

It begins by reviewing the basic language of systems thinking and the models it allows users to create. It then introduces the control process, presenting the theoretical structure of three simple control systems we all can observe in order to gain fundamental knowledge from them about the basic structure of a control system. Then, it presents the anatomy of the simplest "magic ring" and the general theoretical model of any control system. This is followed by an introduction to a general typology of control systems and a broader view of control systems by investigating multi-lever control systems and multi-objective systems.

The book undertakes the concepts through various environments, increasingly broader in scope to suggest to readers how to recognize therein control systems manifestations in everyday life and in natural phenomena. Updated for the 2nd edition, new chapters explore control systems regulating the biological environment and the organizations, with an in-depth study of the control of quality, productivity, production, stocks and costs. Finally, it concludes by dealing with the learning process, problem-solving, and designing the logical structure of control systems.

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