Chapter 1

Introductory Chapter: System of System Failures

Takafumi Nakamura

Additional information is available at the end of the chapter

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1. Introduction

Managers are expected to cope with ever-changing complexity and diversity. They are asked to tackle a much greater diversity of problems learning from previous failures. This book provides managers with a bird's eye view learning from various approaches through utilizing system of system methodologies (SOSM). In order to promote holistic view and promote creativity, Jackson [1, 2] introduced SOSM. SOSM classifies the world of objects into two dimensions: systems and participants. The system dimension has two domains: simple and complex. The participant dimension has three domains: unitary, plural, and coercive. On this basis, holistic approaches can be classified into four types (**Figure 1**):

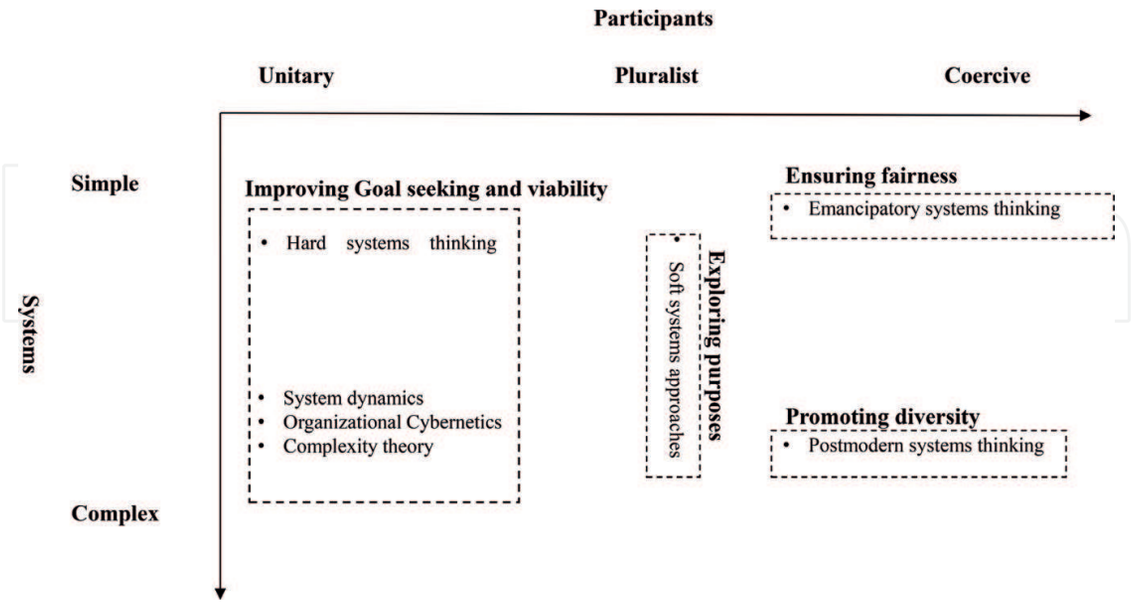

Figure 1. Systems approaches related to problem context in the system of system methodologies (SOSM).

1. Systems approaches for improving goal seeking and viability.
2. Systems approaches for exploring purposes.
3. Systems approaches for ensuring purposes.
4. Systems approaches for promoting diversity.

2. System of system failures (SOSF)

Based upon the SOSM framework, various approaches are developed for risk management and engineering system failure arena, that is, system of system failures (SOSF) [3–5].

In the Preface, the editor noted that this book intends to provide the reader with a comprehensive overview of the current state-of-the-art in engineering safety by holistically examining system failures for the purpose of preventing further occurrence of system failures. This provides managers a practical reflection to be able to bring to bear, on the complex, diverse and rapidly changing problem situations they confront, holistic approaches based on the variety of possible perspectives.

3. The structure of the book

A short conclusion closes the argument. In this introductory chapter, the editor sought to make clear the structure of the book and the logic underlying that structure. The book structure is summarized by SOSM in **Table 1**.

Introductory chapter		
Improving goal seeking and viability	Chapter 2	System and Component Failure From Electrical Overstress and Electrostatic Discharge
	Chapter 3	Vibration Strength of Pipelines
	Chapter 4	Probabilistic Methods of Failure Assessment in Aeronautical Engineering Exploring purposes
Exploring purposes	Chapter 5	Failures in a Critical Infrastructure System
	Chapter 6	Dealing with Uncertainties in A System-of-Systems: Assessing the Robustness of Energy Infrastructure Investments

Table 1. Structure of the book.

Author details

Takafumi Nakamura

Address all correspondence to: tk_moek@nifty.com

Fujitsu Fsas Inc., Tokyo, Japan

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