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AVHANDLINGENS TITTEL: *Mechanism Design for Total Quality Management:
Using the Bootstrap Algorithm for Changing the
Control Game*

The Bootstrap Algorithm (BA) is a strategy for developing large information systems known as information infrastructures. It has previously been studied from a theoretical perspective and used as a guideline for managing processes like developing international health information infrastructures, but it has never been formally evaluated from a practical systems developer perspective.

In this study the BA has been used as a strategy for developing quality control infrastructure (Total Quality Management, TQM) as part of an action research project spanning 20 years and three cycles of research in different organizational and contextual settings within the Norwegian public sector. There are three main findings.

Firstly, the way the BA literature makes use of dynamical systems theory for understanding information infrastructures is important and useful, but could be made more relevant to practice by focusing on theoretical models that unite a systems perspective with a game perspective, as can be exemplified by using the Monopoly board game as a model.

Secondly, the way the BA is formulated through the language of complex adaptive systems (CAS) is important and useful, but could be made more useful by relating it to similar and more well-known CAS-algorithms such as the Genetic Algorithm (GA).

Thirdly, for the practitioner and action researcher it is important that kernel theory and design theory for using the BA are tightly related in order to be able to learn from mistakes. Using game theory as kernel theory and mechanism design as design theory is a new way of thinking about how to implement the BA.

In a world where we have to deal with increasingly bigger and more interconnected natural, economical and technological systems, designing control from an information infrastructure viewpoint becomes more important. The practical implications of the study consist of showing how the Bootstrap Algorithm (BA) can be understood, designed and implemented from the viewpoint of developing TQM in a context of technical and political complexity.