

Management and Cooperate Action
A Short Summary on our Seminar
at Leipzig University in S21

Prof. Dr. Hans-Gert Gräbe
<http://www.informatik.uni-leipzig.de/~graebe>

July 23, 2021

Seminar Objective

Better to understanding the term *Management* on the background of the general topic "*Contradictions and Management Methods*" of the WUMM Project.

<https://wumm-project.github.io/>

Prior Knowledge of the Participants

- ▶ Some experience in teaching management methods especially in the field of IT (ISO 9000, CMMI, Spice, TQM).
- ▶ Study of systems theory approaches in socio-technical, socio-economic and socio-ecological contexts (W19)
- ▶ Study of methods of analysis of contradictory requirement situations in the field of engineering (especially TRIZ; S19, W20)
- ▶ Linking to aspects of a philosophy of technological development, especially in the tradition of Hegelian concepts of development and a materialist dialectic.
- ▶ **No experience** neither with practical management nor with the world of management theories.

How did we proceed?

- ▶ Joint research seminar with master students in computer science.
- ▶ Selection of topics and literature based on recommendations from third parties and own investigation.
- ▶ Each topic was prepared by a student for presentation, a handout was prepared and published beforehand, the presentation was intensively discussed in the seminar. This usually resulted in a first approach to the topic, as deeper theoretical knowledge cannot be expected from the students.
- ▶ Already in the discussion this thematically narrow approach was usually broadened, overarching aspects were critically considered and lines of development were highlighted.
- ▶ The staff members played a particularly important role in this discussion due to their more detailed knowledge of the concepts developed so far.

How did we proceed?

- ▶ Individual aspects of this overarching reflection were summarised in *Seminar Notes* (see the website of this workshop).
- ▶ Now the student have to compile *Seminar Papers* on this basis, in which the respective topic is to be deepened once again and placed in a larger context.
- ▶ The seminar was accompanied by a *Lecture* (for the slide stack, see the website of this workshop), in which the conceptual system developed so far, especially on
 - ▶ Technology,
 - ▶ Systems and Spaces of Action,
 - ▶ Language – Information – Knowledge,
 - ▶ Digital transformation and Semantic Web, as well as
 - ▶ Ccooperative Action,were presented in more detail as a basis for further qualification of the seminar paper.

Findings

1. There is a close connection between

- ▶ the unfolding of an industrial mode of production,
- ▶ technological development,
- ▶ development of production-organisational instruments and
- ▶ differentiation of professional profiles.

This concerns in particular the profession of an engineer and the profession of a manager.

In both cases, educational structures (engineering schools, management schools) emerged. Since the 1970s engineering schools have developed into an essential component of a more general university education (technical universities).

Findings

2. This can be well mapped onto the **triad of our concept of technology**, consisting of

- ▶ socially available processual knowledge,
- ▶ institutionalised procedures,
- ▶ private processual skills.

In the studies on the concept of management, the focus was primarily on the **process of institutionalisation** of production-organisational processual knowledge.

3. Systemic concepts play a central role in both the theory and practice of **systematic** development of technical and social process landscapes.

They are a proven means to extract the **practically approved** from the feedback cycle of "justified expectations – experienced results" and to institutionalise it in **approved practices**.

Findings

4. Even though the beginnings date back to the second half of the 19th century, these processes of differentiation essentially took place in the 20th century (and are still taking place).

It did not develop in a linear fashion, but in stages with **clearly distinguishable paradigms**.

5. The first stage is characterised by technological optimism, mechanical-materialistic conceptions of processes and the attempt to transfer the successes of machinic instrumentation to production-organisational processes. The factory should function like a machine.

This has a strong impact on management concepts of that time which were essentially oriented towards preparing the workers for this algorithmically driven organisation of production.

"One head and a thousand of hands".

Findings

6. On the one hand, this impetus of controllability intensifies with the availability of computer technologies, especially in the cybernetics of the 1960s, but on the other hand it gets caught up in a complexity crisis. This conflict essentially characterises the **second stage** of the unfolding of management approaches.

In the latter, systemic concepts and dialectical-materialistic approaches to process organisation are gaining importance, especially after the publication of the "Limits of Growth" and further insights anchored in deeper scientific understanding of the complexity of interrelations between the "natural" and the "social".

Findings

7. Both trends are intensifying in the current digital transformation, whereby the front of the debate has shifted further to the sector of technology.

In engineering and computer science prevail mechanistic-algorithmic approaches of a "Factory 4.0", of "Data Mining" ("Mining" the "Oil of the 21st century") or a "Human Brain Project".

They are confronted with the question of how the complexity of this processes can be **practically mastered** and what instruments are available to reduce complexity. Here again, systemic concepts **that are well anchored in domain knowledge** play a central role.

8. Sustainability cannot be achieved without a solution of this fundamental question of anchoring systemic and dialectical-materialist ("organismic") thinking in the foundations of the understanding of processes of the industrial mode of production.

Scientific Thought as Planetary Phenomenon (V.I.Vernadsky, 1938)

Learn to think in a new way (Potsdam Manifesto, 2005)

Findings

9. We encountered management in three forms: Management, Leadership and Business Process Modelling.

We further encountered management on three levels of abstraction:

(1) **Management as the ability of the leader** to organise the area of responsibility assigned to him or her in such a way that the required KPIs are achieved.

For the foundation of this ability in a conceptual system, the feedback loop is decisive between the manager's privately justified expectations and privately experienced results.

Corresponding experiences "institutionalise" in the manager's world view and form the basis of his or her actions.

Findings

(2) **Management as the ability of the company** to coordinate the management processes (1) and to bundle them in a company-wide management strategy.

For the foundation of this ability in a conceptual system, the feedback loop is decisive between the justified expectations and the experienced results of the group of managers in the company. This is a cooperative process in the company as action space.

Corresponding experiences institutionalise in company-wide specifications, data collection processes and control structures and thus form the basis of the company's actions.

Findings

(3) **General management theories** or theories of business process modelling, in which the experiences of level (2) are generalised across companies.

Level (2) is based on the systematisation of experiences at level (1), but on the other hand provides the infrastructural prerequisites (e.g. through data collection processes and controlling) under which certain forms of practical activity at level (1) only become possible.

The same applies to the connection between levels (2) and (3).

10. Precisely at these level boundaries run the processes of institutional solidification of practically proven things in proven practices.

We observed a massive surplus of theory production at these two interfaces – a lot of theory is produced, little of which becomes established.