

„Caught in the Middle“.  
Philosophy of Science Between the  
Historical Turn and Formal Philosophy  
as Illustrated by the Program of “Kuhn  
Sneedified”

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# Overview

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# 1. Preliminary note

- This paper is concerned with a case study on the sociology of scientific knowledge but from an inner-scientific point of view (i.e., internal sociology of science)
- A paradigmatic example for such an „internal“ sociology of philosophical knowledge is Martin Kusch's study on „Psychologism“
- The idea is not to rule out external sociology of scientific knowledge, but rather to enrich the overall picture with information from the internal perspective.

## 2. „Structuralism“ vs. „Kuhn Sneedified“

The research project as developed by Joseph Sneed, Wolfgang Stegmüller, and others, on the basis of Sneed's *The Logical Structure of Mathematical Physics* (1971) developed in two stages:

- A. „Kuhn Sneedified“ (1971-1979)
- B. „Structuralism“ (1979-...)

# The Formalism

- Both instances of the aforementioned project are based on the same formal approach
- The idea is to describe a scientific theory by means of a class  $M$  of models and a set  $I$  of intended applications
- The only „truth claim“, in that context, is the claim that  $I$  belongs to  $M$ , i.e., the theory is empirically adequate
- This is a highly „relativistic“ setting because it does not involve truth claims of any stronger kind

# „Kuhn Sneedified“

- The initial idea of Stegmüller and Sneed was to use the aforementioned formalism as a means for a formalization of the main ideas of Kuhn's *Structure*
- Paradigms should be formalized as instances of pairs  $(M, I)$
- Incommensurable theories should be formalized by means of „reduction relations“  $\rho$  between different pairs  $(M, I)$  and  $(M', I')$

- The goal of „Kuhn Sneedified“ was to show that Kuhn’s approach does not completely refute the „received view“ of logical empiricism
- In particular, Kuhn does not rule out a formal approach to philosophy of science
- Rather, Kuhn’s conception involves a significant change of the basic formalism (from the „statement view“ to a „non statement view“) and the inclusion of a device for „reduction“ between theories
- On the basis of these changes of the formalism, however, Kuhn’s conception is „commensurable“, even in the context of the classical paradigm of philosophy of science

# A rationality gap in Kuhn's account?

- One of Stegmüller's claims was that Kuhn's conception contains a certain „rationality gap“, namely, being unable to express scientific progress
- The structuralist reduction relation was mainly intended to allow for an explanation of scientific progress, even in cases of incommensurable theories
- It is questionable whether “Kuhn Sneedified” succeeded, in this respect.
- However, even if there is no rationality gap to be closed by the formalism of “Kuhn Sneedified” it remains to be useful as a means for conciliation between classical pos and the “historical turn”.



# „Structuralism“

- „Kuhn Sneedified“ was enthusiastically welcomed by Kuhn himself and even Feyerabend wrote a friendly review of Stegmüller’s respective book from 1973 (the term „Kuhn Sneedified“ was introduced in the latter review, somewhat ironically)
- However, in spite of these positive reactions, Stegmüller and his followers ceased to develop the connections with the “historical turn”, after approx. 1979 and reformulated their program as an entirely formalist conception that tried to extend the meta-mathematical “Bourbaki program” to philosophy of the empirical sciences:

# Role Purification

“The structuralist approach should be looked at as *the striving for an extension of the Bourbaki program to science* rather than as an attempt to reconstruct the ideas of T.S. Kuhn. The fact that, with this approach, some aspects of Kuhn’s philosophy of science can be substantiated, or at least made more plausible, should be considered as a side-effect only.”

Stegmüller, *The Structuralist View of Theories. A Possible Analogue of the Bourbaki Program in Physical Science*, 1979

# What happened?

- Seen from a purely „rational“ standpoint this is rather strange because Stegmüller obviously reacted to the friendly reactions of some important representatives of the „historical turn“ with total separation from the latter.
- The matter becomes even more puzzling since it is quite obvious that Kuhn highly appreciated Stegmüller’s approach until the end of his live (and Stegmüller highly appreciated Kuhn’s appreciation until the end of his live)
- So: What happened here that forced Stegmüller to abandon his most loved child „Kuhn Sneedified“?

### 3. The encounter between Stegmüller and Kuhn

- It is no secret to Kuhn experts that Kuhn was quite impressed from the „Sneed formalism“.
- Cf. Kuhn, „Theory-Change as Structure-Change: Comments on the Sneed Formalism“, *Erkenntnis* 10, 1976, 179-199 and Kuhn, *The Road Since Structure*, 2000, 317-319.
- This positive attitude becomes even more visible in the correspondence between Stegmüller and Kuhn:

# Kuhn to Stegmüller

08-14-1974: For ten years I had been waiting for someone who pick up my (and others') incomplete enterprise and show how to carry it further. From an early stage of my involvement with your book, it has seemed to me likely that you are the man, and I have been correspondingly deeply moved. [...]

Contrary to a popular impression, I am not an enemy of formalism. (Could anyone trained as a theoretical physicist really take such a position?) Rather, I've objected to the sort of formalism long applied to philosophy of science, and I've had no notion how to find a substitute for it. I think the answer you and Sneed provide may fill the gap I have long felt, but it is taking me forever to assimilate it.

# Stegmüller's fears

Stegmüller hesitated to contact Kuhn and expressed to a number of friends his fears that he may become caught in the middle with his new approach towards Kuhn:

However, I am afraid to become caught in the middle here [“mich zwischen alle Stühle zu setzen”]. Apart from one logical error in Kuhn, which admittedly is quite serious (and becomes over and over repeated by him and Feyerabend in different varieties), I think that he is right in all the other points of the controversy, in particular, concerning the question of immunity of a theory against ‘contradictory experiences’.

I yet hear Feigl say: “Now this Stegmüller has also gone over to these obscurantists”. In the same way, however, I can imagine vividly what Feyerabend would say when he faces my manuscript: “That is the peak point of logical weirdness. Now these super-logical crackpots begin to use ‘the laughable inadequate methods of a logician’ as a means for the analysis of the *dynamics* of the sciences”.

Stegmüller to Yehoshua Bar Hillel, 03-26-1973

# London Ontario

- Actually, Stegmüller's fears were not ungrounded.
- The first presentation of "Kuhn Sneedified" to a wider audience – at the CLMPS congress in London Ontario, 1975 – was obviously a disaster.
- Sneed, Stegmüller, and Kuhn presented the new approach there, in the context of a symposium that was attended by a huge number of VIP's in the field of philosophy of science but obviously almost no one was willing to accept the new approach
- The failure was so obvious that immediately after London Ontario Stegmüller began to „purify“ his approach and to develop the purely formal „structuralism“



## 4. Why did „Kuhn Sneedified“ fail?

- The “Sneedification of Kuhn” may be viable at a systematic level or not.
- Its real failure has little or nothing to do with systematic problems of that account.
- “Kuhn Sneedified” was rejected, not for systematic reasons, but it simply was never accepted by the scientific community, at such an immature stage that subtle systematic discussions cannot have played a major role.

## (a) The Kuhn-Feyerabend community

- There is no substantial argument against „Kuhn Sneedified“ to be found in the K-F-literature
- Rather, the approach is identified as „irrelevant“, as an „unnecessary formalization“ or „over-formalization“
- The argument against „Kuhn Sneedified“ is not at all a viable systematic claim but rather the all-encompassing claim that formal considerations are “irrelevant”
- In other words, this is a clear phenomenon of *role purification*: the K-F-community just doesn't care about formal approaches to philosophy of science (without having an argument against them)

## (b) Other varieties of „European style“ formal philosophy of science

- There are other varieties of „European style“ formal philosophy of science.
- Example: truthlikeness
- Problem: truthlikeness is an approach that is intended to defend a „scientific realism“ against relativism
- Thus, it is fundamentally at odds with the „relativist“ conception of „Kuhn Sneedified“
- Also *role purification* because „anti-relativism“ is intended to separate classical pos from the „historical turn“

## (c) Pure mathematical philosophy

- Philosophical logic (as the main variety of pmp) mainly proofs non-trivial mathematical theorems
- „European style“ pos mainly illustrates philosophical problems at a formal level
- From the standpoint of pmp „European style“ work is just considered with trivialities and mathematically irrelevant formalizations
- This „difference in ,mentality““ (Johan van Benthem) involves just another phenomenon of methodological incompatibility and *role purification*

## (d) „Old style“ philosophy of science

- Finally, „Kuhn Sneedified“ is also fundamentally at odds with „old style“ philosophy of science
- The latter starts to fight its battle against relativism almost exactly at the same time as Stegmüller started to defend a (moderate form of) relativism
- „Kuhn Sneedified“ was *too relativistic* even for heretical philosophers of science such as Bas van Fraassen or Larry Laudan and it was much too relativistic for the scientific realists, of course
- *Role Purification*, again.

# 5. Conclusions

- „Kuhn Sneedified“ was indeed „caught in the middle“, in several ways.
- The problem of this approach was essentially that it tried to conciliate between different approaches in philosophy of science which underwent a process of purification in the course of the 1960s and 1970s
- As a consequence of these purification tendencies conciliations were not welcome, at all sides of the spectrum

- „Kuhn Sneedified“ becomes a didactic play of how specialization may lead to unfortunate and actually paradoxical consequences because, *as a consequence of specializations, the philosophical landscape often does not become richer but actually poorer.*
- Negative dialectics: a thesis and an anti-thesis are not followed by a synthesis, but by an establishment of the thesis and the anti-thesis in two completely isolated realms

# Outlook

- Kuhn and Stegmüller were „hybrid“ representatives of the „historical turn“ (Kuhn) and of classical POS (Stegmüller) who tried to formulate their approaches in such a way that interdisciplinary exchanges with the respective „other side“ may become possible
- Thus, it may be useful to try to understand them not just as representatives of the respective “other side” but as interdisciplinary scientists who formulated interesting conceptions, which, taken seriously, may allow us to re-conciliate between different purified fields of research (i.e., STS, POS, formal philosophy, etc.)