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Open Mathematization

**On the Tension between Plurality and Unity of Scientific Knowledge
in David Hilbert's "Axiomatic Thinking"**

Hilbert's 1917 lecture "Axiomatic Thinking":

- allows the possibility both of a limitation to the mathematization of science and of different degrees of mathematization**
- understands mathematics as a necessary condition of scientific research**
- qualifies mathematics to play a leading role in science in general**

Hilbert's 1917 lecture "Axiomatic Thinking":

- is situated within the field of tension between two extremes:
 - *formal unification*: axiomatic thinking as a method which can be applied to different scientific contents
 - *substantive unification*: the quest for a universally valid world equation ["Weltgleichung"] from which all scientific knowledge can be deduced together with additional assumptions

Hilbert's 1917 lecture "Axiomatic Thinking":

- recognizes the plurality of science:
 - limits the scope of fields of knowledge
 - takes into account the further historical development of **individual** fields of knowledge.
 - understands axiomatic thinking as capable of adapting to its objects and the changes they undergo
 - allows to characterize his method as axiomatization based on model theory.

“Everything you can think of, however vast or inclusive, has on the pluralistic view a genuinely ‘external’ environment of some sort or amount” (William James).