

Title

Subtitle

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Chapter 1

Introduction

1. What is phil of maths:
 1. local
 2. general
 (Use Shapiro)

2. In the second case, it is important to discuss in parallel applications to maths itself, and to the world. (Marquis, 1995; Mancosu, 2008))

Landmarks:

 1. Klein (Marquis, 2009)
 2. Category and Topos (Marquis, 1995; Landry and Marquis, 2005; Bell, 1986)
 2. Frege/Hilbert
 3. Quine-Putnam (Colyvan, Leng, Baker, Fields)
 4. Continuum mechanics (Wilson, Smith, Truesdell)
 5. Error analysis (Corless, Wilkinson, etc.)
 6. etc.

3. I will discuss mainly explanations, and use the diagnosis of many land-

marks to improve our philosophical theory of explanation.

Baker(2009): “The recent rise of philosophical interest in the topic of mathematical explanation can be divided into two main strands. [see mancosu] One strand has focused on ‘internal’ mathematical explanation, in other words the role of explanation within mathematics, for example in distinguishing between more and less explanatory proofs of a particular theorem. A second strand has focused on ‘external’ mathematical explanation; in other words, the potential role of mathematics in science as a tool for providing explanations for physical phenomena.”

Steiner’s test (1978)

4. Quite general, almost hand-wavy.

We can get more specific by classifying foundational thesis according to a Marquis-Style classification.

Appendix A

Notes on Conditioning

A.1 From Yu, *Notes AM524*

“Most real-world problems confronting us, being neither linear nor even nearly linear, fall outside the domain of traditional closed-form analysis, and must be tackled in the first instance on a computer. But numerical solutions, like physical experiments, typically produce unwieldy masses of data, and for both of these, phase-space concepts must be recognized as an essential guide to the structuring of the investigation and the interpretation of the results.” p.1

A.2 From Creath

“The standard of appraisal for the proposals is their utility within science. Thus, philosophy is considered as a kind of conceptual engineering that serves science rather than a mysterious enterprise that somehow locates its own domain of facts that are deeper than those that science can reveal.” (Creath, 2008, 323)

Carnap had adopted two different paths to reach his principle of Tolerance and his reject of metaphysics: (1) logic and (2) empirical science. I'll do the same, but by focussing on mathematical explanation.

Contra recent trends that consists in treating all sentences in philosophy and science on the same footing (in the line of (Quine, 1951)), it is important to make the Carnapian distinction between claims that *genuinely have content and describe the world* and those others that serve instead to *structure and constitute the language* in which we describe the world.

Logic and math is usually considered of the second type. But my point is not to say what's what in this sense. I want to identify which part of mathematical explanations is of which kind. What is representational and susceptible of receiving a truth-value, and which is not.

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Glossary

ACK: Ack explanation.

Class: Document style definition. Contains environments and commands.

UWO: University of Western Ontario.

VB: Visual Basic

WYSIWYG: What You See Is What You Get

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