



Description
VS
Explanation

Unification in Mach
and Kitcher



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14 Sept 2026

CONTENTS

01. Explanation:
'scientific' after 1940s
02. Metaphysical, and ordinary
language explanation
03. Kitcher's explanation
04. Mach's description
as explanation



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01

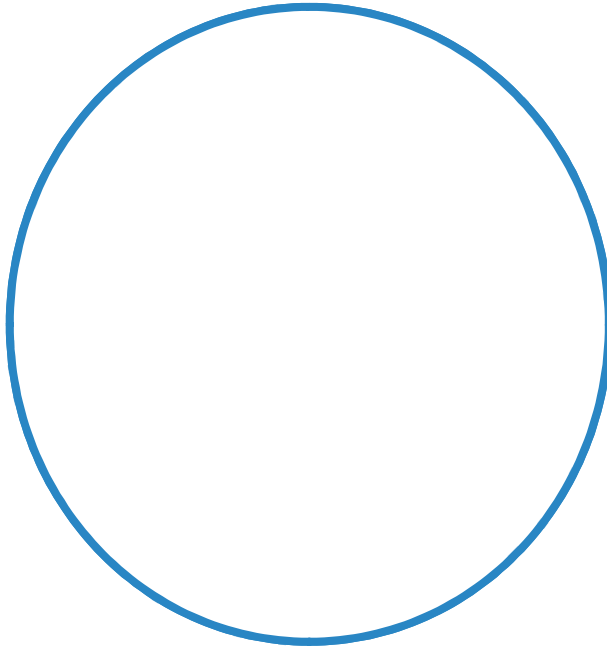
'Scientific' explanation



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Scientific explanation

Executive competition



Other Approaches

Deductive Nomological model,
Causal mechanical model
Covering laws (laws)

Does Description-explanation opposite?

Explanation viewed by late 19-20 century scientists
Scientific explanation

Unifying role of laws

Theories unifies, but in different ways
In Mach and Kitcher: Similar application, yet Mach
has thick notion of description

02

Metaphysical and ordinary language explanation



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Other meanings of explanation

Executive competition



Metaphysical
explanation

The oldest meaning of explanation.
Fire will ascend (Ancient Greece:
theory of four elements)

Medieval philosophers: every thing
(Sache) has a nature (natura)



Ordinary
language use
of explanation

There are some trends on
connecting scientific explanation
with explanation in everyday use.
However, Scientists in the last
century rarely does so.



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03

Kitcher's explanation

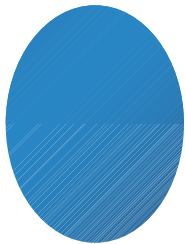
PART
THREE



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Kitcher's explanation

Executive
competition



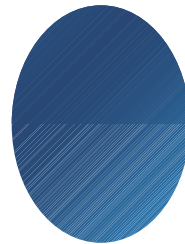
Unification

Prioritizes
unification

Because in
Unification

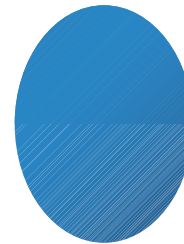
→

'Because' in
Causation



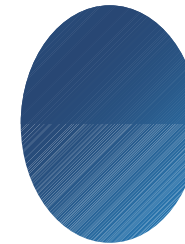
Argument patterns and schema

The 'because' of
causation is always
derivative from the
'because' of
explanation."
(Kitcher 1989,
p.477)



Criteria for patterns

Fewest argument
patterns,
→ most number of
deducted
conclusions
→ most stringent
schema



Unifying ability

Seemed more
fundamental



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04

Mach's description as explanation



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Mach's description

Description
But not explanation
(metaphysical)

Not asking their essence
But their effects .
Kirchhoff on force



Explanation Erklärung

Organises experience

Economic motive to take the most
efficient mental act

Language (concepts in language),
Math: algebra, matrix

This is also the case in *scientific theories*
With one instrument: scientists able to
describe and predict many events across
space and time.
Theory can also unify between previously
viewed as distinct phenomena

Mach 1872 <History and Root of the Principle of the Conservation of
Energy>

Limited agents: need Economy of thought
The unlimited spirit (logical ideal): capable of explaining



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Does Mach's description include scientific explanation?

Yes : Marr 2003

Description

Not mere recording down the phenomena, but seek functional relations between phenomena

Equals to what scientists (psychologists) use as explanation

Mach was against metaphysical explanation



Or more radically

Description

Human-centric
Most accounts of scientific explanation falls in this

Explanation

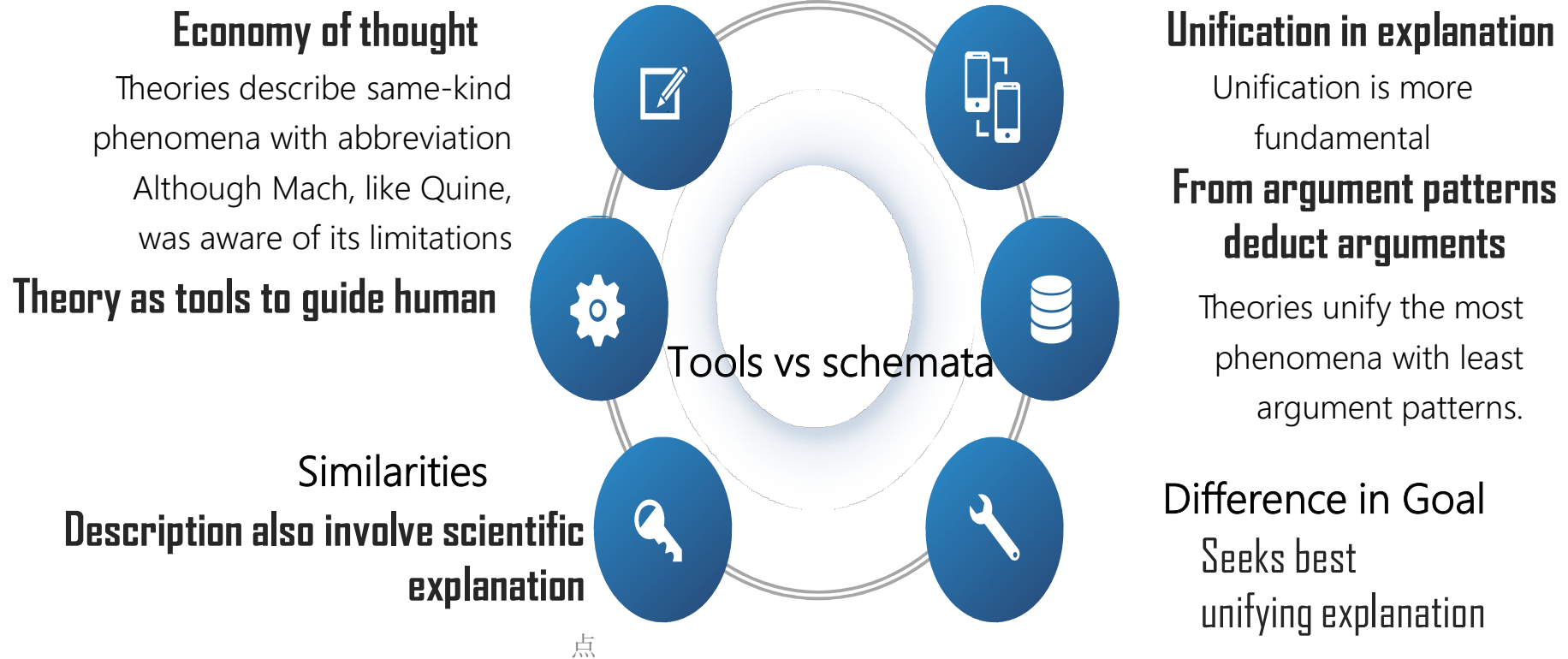
Only the absolute, unbounded can achieve

göttliche Denken (Husserl), the god's eye, the view from nowhere (T.Nagel)



Core comparison

Unification



References

Kitcher, P. . (1989). Explanatory unification and the causal structure of the world. *University of Minnesota Press*, 13(1), 410-505.

Mach, E. . (1872). History and root of the principle of the conservation of energy.

[1] Marr, M. J. . (2003). The what, the how, and the why: the explanation of ernst mach. *Behavior & Philosophy*, 31, 181-192.

Kitcher, P. . (1985). Two Approaches to Explanation *The Journal of Philosophy*, Vol. 82, No. 11,

Mach, E. (1912). *Die mechanik in ihrer entwicklung. Historisch-Kritisch Dargest. Von Ernst Mach. MIT 257 ABB. 7. verb. U. Verm. AUFL.*

F.A.Brockhaus.

A person in a blue jacket stands on a rocky mountain peak, reaching their right arm towards the year '2026' in the top right corner. The background shows a vast mountain range under a bright, hazy sky at sunrise or sunset. A large, stylized blue wave graphic is on the left side of the slide.

2026

Thank you
for listening!



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