

Weak Knowledge: Forms,
Functions, and Dynamics

Schwächediskurse und Ressourcenregime

Discourses of Weakness & Resource Regimes

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and Susanne Schröter

Volume 4

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Weak Knowledge: Forms, Functions, and Dynamics

Campus Verlag
Frankfurt/New York

ISBN 978-3-593-50977-8 Print
ISBN 978-3-593-44029-3 E-Book (PDF)

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Cover design: Campus Verlag GmbH, Frankfurt-on-Main

Printing office and bookbinder: Beltz Grafische Betriebe GmbH, Bad Langensalza

Printed on acid free paper

Printed in Germany

For further information:

www.campus.de

www.press.uchicago.edu

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Preface

The present volume collects contributions to a conference held in Frankfurt/Main on 2-4 July 2017, contributions which have been re-worked after intense exchanges both during and following the conference. They pursue a common objective: to re-evaluate and challenge historiographical conceptions of the epistemic, social, cultural and practical strength, the robustness, of scientific knowledge. Whether we look at ancient or modern, at metropolitan or peripheral knowledge, whether we consider medical or mathematical knowledge, the empirical material of all but the most superficial studies of an episode in the history of science will reveal that, in its own period, and from the perspective of those involved, the bodies of knowledge involved were often quite different in nature from what textbook epistemology tells us. Justifications of knowledge claims may have been – and often were – found to be lacking, the practical uses of the knowledge in question may have provided formidable obstacles or were entirely missing, the cultural embedding of a given body of knowledge may have been difficult, and/or the social or institutional support for it may have been less than what some actors had hoped for.

While this does not come as a surprise for any serious historian of science, the question of what this observation *implies* for an analysis of scientific knowledge and its historical dynamics has less often been posed. What kinds of deficiencies in knowledge were articulated, when, and by whom? What is the role that such articulations of deficiencies played in the dynamics of knowledge? Were they intended as criticisms of knowledge claims that certain actors hoped to reject, or were they admissions of weaknesses by those producing and defending new bodies of knowledge, intended to help in improving this knowledge? Questions such as these are asked by the contributors to this volume. Taken together, their contributions show that there is a wide variety of possible answers – depending on the particular episodes studied, and on the specific interest that the authors bring to their materials.

In times of mounting criticism of scientific research on the part of political actors interested in undermining, or even denying, scientific evidence altogether, at least in certain fields such as climatology or medicine, it is important to clarify what a historical analysis of the weaknesses of knowledge advocated here does

strive for, and what it does not. By discussing the wide variety of articulations of perceived weaknesses in scientific knowledge, be they epistemic, social, or practical in nature, this collection certainly does not intend to lend a hand to any form of science denialism. Quite the opposite. We hope to contribute to a better understanding of the fluidity and even fragility of scientific endeavours in the historical situations in which they are undertaken, and of the intellectual and social processes by which they are formed. Even a knowledge fraught with, and aware of, deficiencies of many kinds, may be the best guide to reasonable and responsible action in a complicated world.

The contributions in this volume are grouped in four sets. The first three chapters discuss general perspectives on our topic. Moritz Epple begins by outlining a framework for a historical epistemology of weak knowledge. He is followed by an essay in which Anne Marcovich and Terry Shinn sketch their understanding of weaknesses, in what they have proposed to call science research regimes in earlier work. Andy Pickering, in turn, challenges our conceptions of the role – and strength or weakness – of knowledge in action, by offering new reflections on, and examples of, what he has termed dances of agency.

These reflections are followed by historical case studies. In the first group, Daryn Lehoux discusses the status of uncertain knowledge in ancient astrology, Laurence Totelin takes a look at the role of weak actors in Graeco-Roman pharmacology, and Orna Harari discusses the attempts of metaphysicians in Late Antiquity to claim the status of an exact science for their field. A comment by Annette Imhausen closes this group. The second group of case studies addresses modern bodies of knowledge that have been considered as weak. Sven Dupré discusses the ways in which “failures” were addressed in early modern artisanal knowledge. Rivka Feldhay offers an analysis of historical knowledge claims in Dostoevsky’s novels and asks how historical knowledge, or experience, in literary writing compares to that of historians. In her chapter on narratives and theories in economics in the 1920s, Monika Wulz discusses another literary tool with a precarious relation to scientific knowledge: the role of fictions. An area of physical knowledge whose status with respect to the established hierarchy of scientific disciplines was – at least initially – perceived as weak is discussed in Falk Müller’s chapter on industrial physics in Germany. This group is closed with a joint contribution by participants of a pre-conference workshop for young scholars exploring the analysis of weak knowledge in yet other fields, including early modern literature and meteorology, recent child psychiatry, and educational sociology, while also taking up general reflections on Chinese “science” and Latourian science studies.

In the third set, Dominique Pestre, Matthias Heymann, and Richard Staley address articulations of weaknesses in bodies of knowledge relating to climate and the environment. In their contributions, we can, in particular, follow the mo-

tives of such articulations from the inner workings of climate research (as in Heymann's discussion of computer-based climate modelling) to the political and economic attacks on it (as in Pestre's look at environmental knowledge and regulation, or in Staley's account of self-proclaimed "heretics" in climate science)."

The fourth and final set of contributions is devoted to medical knowledge, and thus to another field of knowledge in which claims of inherent weaknesses formed part and parcel of the field's tradition and were re-negotiated in each historical period. Suman Seth looks at the contested role of medical knowledge in late eighteenth-century abolitionist debates. José Brunner takes us to the courtrooms of Victorian England and the medical discourse on "nervous shock" in the context of railway accidents. John Harley Warner, in turn, analyses the co-emergence of a weaker, more personal form of medical knowledge with modern scientific medicine in the USA in the decades around 1900. The latter, and the specific discourses of weakness in the later rise of "evidence-based medicine", are the subject of Cornelius Borck's contribution. The four chapters in this set are then commented upon by Mitchell Ash.

As readers will find, several threads connect the contributions in this volume. One of these concerns the epistemology of various bodies of knowledge perceived to be weak, across the periods explored. A second is, clearly, the social and political status of such bodies of knowledge, or, in other cases, the social and political status of claims that a certain form of knowledge is weak. Finally, one recurring theme here is the practical relevance of knowledge and the role this plays in perceptions of its strength or weakness. Throughout, we find that an analysis of such perceptions of weakness, and of the discourses in which such perceptions were articulated, provides ample material for historical analysis, an analysis, we hope, that can deepen our understanding of both the significance and the fragility of knowledge in the "mangle of practice" (to borrow Andy Pickering's term).

*

The conference upon which this collection is based was funded by Frankfurt's Collaborative Research Centre (CRC - Sonderforschungsbereich) 1095 Discourses of Weakness and Resource Regimes, in turn funded by the German Science Foundation (DFG). We thank our CRC speaker, Iwo Amelung, and its manager, Mi Anh Duong, for generously supporting the conference. We are grateful for further financial support from Goethe University of Frankfurt/Main and the Vereinigung der Freunde und Förderer der Goethe Universität.

Neither the conference nor the research performed in our group would have been possible without the work of our doctoral students, Theresa Dittmer, Na-

dine Eikelschulte, Lukas Jäger, and Linda Richter. They, and Martin Herrnstadt, at the time working with a Minerva fellowship at the Cohn Institute for the History and Philosophy of Science and Ideas at Tel Aviv University, also made it possible to organise the highly successful pre-conference workshop, bringing together doctoral students and post-docs from Israel and Germany. We are extremely grateful to all organisational support given by our secretaries, Susanne Bernhart and Judith Delombre, student helpers, Leo Kaiser and Nelli Kisser, and our local magician Convin Splettsen (whose magical knowledge is definitely *not* weak). The manuscript of this volume has been prepared for the press by Chris Engert in Florence, whose careful language editing improved all contributions, and Nelli Kisser, whose diligent work accompanied all stages of the production process from its early beginnings until the final layout.

We also need to thank two speakers whose important contributions to the conference could not be included in the present collection, Katharine Anderson and Eleanor Robson. Finally, one of the editors, Moritz Epple, wishes to thank Hans-Jörg Rheinberger for choosing *fumaria officinalis* as the subject of his first poem, opening this collection. This is a surprising coincidence, involving weak medical knowledge of a very personal relevance.

Frankfurt am Main, July 2019

Moritz Epple, Annette Imhausen, and Falk Müller

Schwaches Wissen I

Erdrauch

Hans-Jörg Rheinberger

Den Erdrauch
bekam Carl von Linné
aus Sibirien geschickt.
Es war ein Versehen.
Als die Samen aufgingen
im Garten von Hammarby
war die Enttäuschung
des Naturforschers groß.
Er sah nicht
die Herzblume wachsen
über die er gelesen hatte
in der Dissertation
jenes russischen Studenten
und die er
hatte mustern wollen
mit eigenen Augen.
Doch die Fumarie
wuchs prächtig
an der Mauer seines Hauses
und breitete sich
ohne sein Zutun aus
über Uppsala und Umgebung.

Von dort
nahm sie ihren Weg
durch ganz Europa.
Vom Altai bis nach Schweden
hatte die Post
ihren Samen getragen.
Der Rest war das Werk
der Ameisen
denen der Anhang
ihrer Nüsse schmeckt.
Hätte er das alles gewusst
er wäre vorsichtiger
mit ihr umgegangen.
Und schließlich:
Wie so viele Pflanzen
aus seinem System ist sie
auch theoretisch gewandert.
Sie hat die Gattung gewechselt
und gehört heute
zu den Corydalien.

Schwaches Wissen II

Der unsichtbare Begleiter

Hans-Jörg Rheinberger

Südafrika
war das Ziel ihrer Reisen.
Auf getrennten Wegen
kamen die beiden Schüler Linnés
ans Kap der Guten Hoffnung.
Carl Peter Thunberg
wandte sich
dem Landesinneren zu
bevor er
in holländische Dienste trat
um Java und Japan zu bereisen.
Anders Sparrman
schloss sich am Kap
der Zweiten Cookschen Weltreise an
bevor auch er, zurück
aus dem pazifischen Archipel
sich mit der Südspitze Afrikas
vertraut machte.
Aber vergessen wir nicht:
Ohne den jungen
Daniel Ferdinand Immelman
den gebürtigen Kapstädter

den kundigen Führer
wären beide
nicht weit gekommen.
Wenn wir den zwei
Naturforschern heute
in ihren Werken begegnen
und ihr Wissen bewundern:
Denken wir auch an ihn
den unsichtbaren Reisenden
er hat ihnen
den Weg gewiesen.

General Perspectives

The *Theaetetus* Problem: Some Remarks Concerning a History of Weak Knowledge

Moritz Epple

Abstract

In philosophy and history of science, knowledge and science have long been viewed as a cultural resource of remarkable epistemic, social, and practical strength. However, many recent studies indicate that, both in the period of their emergence and in many other historical circumstances, bodies of knowledge have been epistemically deficient, socially marginal, culturally fragile, and/or weak in other respects. This may be the case even when the knowledge in question is a highly desired resource within a given historical formation. The chapter outlines an analytic framework for investigating the forms, functions, and dynamics of weak bodies of knowledge.

1. History of science as a historiography of strength?

The beginnings of the historiography of science in early modern Europe were informed by a historical narrative in which science – as a body of knowledge, as a cultural tradition, or as a web of institutions – was placed in a position of epistemic, cultural, and, eventually, social, strength. As is well known, for eighteenth century historians of the exact sciences, such as Jean-Étienne Montucla and others, the progress of the exact sciences, and of astronomy in particular, served as an exemplar for the progress of reason and of the human mind.¹ Others, including Jean D’Alembert in his *Discours préliminaire* (1751) to the *Encyclopédie* co-edited by Denis Diderot and himself, and later Nicolas de Condorcet in his *Esquisse d’un*

1 Montucla 1758. Among the histories of astronomy of the period, one should mention Pierre Estève’s *Histoire générale et particulière de l’astronomie* (1755); Jean Sylvain Bailly’s contested writings; and, one generation later, Jean Baptiste Joseph Delambre’s *Histoire de l’astronomie moderne*, in several volumes (1817–1827). This narrative was not new in the eighteenth century. An early praise of astronomy as a result of long-term epistemic progress was given by Johannes Kepler in his *Apologia pro Tychone contra Ursum*, see Jardine 1988.

tableau historique des progrès de l'esprit humain (published posthumously in 1795²), went a step further and declared the progress of knowledge to be a crucial factor in, and a measuring rod for, social progress in general.³ States in which attention was given to the advancement of knowledge were considered to be far superior to those deplorable kingdoms in which ignorance reigned. When, several decades earlier, Voltaire had declared in his *Lettres sur les Anglais* of 1734 that a scientist such as Isaac Newton, and not a violent political leader, was the greatest human being of all times, he did not trigger laughter, but – in co-operation with a group of like-minded intellectuals and patrons – a Newtonian fashion which, in some senses, continues to this day.⁴

In those “modern” societies which have formed since that time, and in particular, in the European nation states of the nineteenth century, and all those later states that were based upon this model, the sciences were organised as a strong arrangement of institutions from elementary schooling to high-prestige research, which profoundly shaped both social and technological life. The main product of this institutional arrangement – *knowledge* – thereby acquired a strong and constitutive role in such societies. Historians have been tempted to speak of societies which were modelled on these states as “knowledge societies”. Scientific and political discourses which aim at stabilising and extending this position of strength, and historical discourses contributing to a politics of memory which celebrates the sciences as a unique modern achievement, are so widespread that they are hard to survey. Even certain recent and sophisticated forms of professional history of science are still feeding upon this narrative of strength.⁵

The narrative is mirrored, and, to some extent, pre-figured, in the philosophical tradition that has addressed the topic of knowledge since antiquity. One *locus classicus* of this tradition is Plato’s dialogue *Theaetetus*, which offers the philosophical definition of knowledge that probably remains its most widely-discussed definition in philosophical circles, and, according to which, knowledge is a belief (gr. *doxa*) endowed with two additional features providing strength, i.e., *truth* or *correctness* (gr. *orthē doxa*), and a *justification* (gr. *logos*) for the truth of the given belief. The argument of Plato’s dialogue consists in a graded criticism of *deficient* forms of knowledge or beliefs: pure sense perception, belief without a truth-check, and correct belief without justification. Plato’s text is radical and consistent in its re-

2 The *Esquisse*, written shortly before Condorcet’s death, summarises the drafts and fragments on which Condorcet had worked for years; see de Condorcet [1772–1794] 2004.

3 For an illuminating discussion of the idea of progress and its decline, see Canguilhem 1987.

4 Compare, among others, Shank 2008.

5 This is even the case in varieties of the history of (scientific) knowledge, such as the literature on the “science question in feminism” or on “colonial science”. When “modern” or “Western” science is characterised as being an instrument of male or colonial domination, the assumption rests in place that this instrument is powerful and can serve its purpose on the grounds of this strength.