



Universiteit
Leiden
The Netherlands

Historicism and cross-culture comparison

McAllister, J.W.; Stuart, M.T.; Fehige, Y.; Brown, J.R.

Citation

McAllister, J. W. (2018). Historicism and cross-culture comparison. In M. T. Stuart, Y. Fehige, & J. R. Brown (Eds.), *The Routledge companion to thought experiments* (pp. 425-438). London: Routledge. Retrieved from <https://hdl.handle.net/1887/3463906>

Version: Publisher's Version

License: [Licensed under Article 25fa Copyright Act/Law \(Amendment Taverne\)](#)

Downloaded from: <https://hdl.handle.net/1887/3463906>

Note: To cite this publication please use the final published version (if applicable).



The Routledge Companion to Thought Experiments



Edited by Michael T. Stuart, Yiftach Fehige and James Robert Brown

THE ROUTLEDGE COMPANION TO THOUGHT EXPERIMENTS

Edited by
Michael T. Stuart, Yiftach Fehige
and James Robert Brown

First published in 2018
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2018 selection and editorial matter, Michael T. Stuart, Yiftach Fehige and James Robert Brown; individual chapters, the contributors

The right of Michael T. Stuart, Yiftach Fehige and James Robert Brown to be identified the authors of the editorial material, and of the authors for their individual chapters, has been asserted by them in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data
A catalog record for this book has been requested

ISBN: 978-0-415-73508-7 (hbk)
ISBN: 978-1-315-17502-7 (ebk)

Typeset in Goudy
by Book Now Ltd, London

23

HISTORICISM AND CROSS-CULTURE COMPARISON

James W. McAllister

1 Thought experiment: what, where, how

This chapter looks at three issues. It investigates the identity conditions of thought experiment: under which conditions does a methodological device count as thought experiment and when should we regard a device as something else, even if it resembles thought experiment? Second, it inquires where and when thought experiment is practised: in which philosophical and scientific discourses does the practice of thought experiment occur? Third, it considers the conditions under which thought experiment carries weight: in which contexts and on which presuppositions does thought experiment acquire evidential significance, and where is it evidentially inert? The aim is to problematize the category of thought experiment and its application in different historical and cultural contexts.

Let us start with the third issue. Evidential significance is the power of a methodological device to decide – conclusively or tentatively, on its own or with other factors – controversies in evidence-based discourses, such as philosophy and science. When a controversy arises in such a discourse, members attempt to resolve it by adducing factors that have evidential significance. This works straightforwardly when the same factors have evidential significance for all participants; in other cases, participants will differ about the evidential significance of factors as well as about the resolution of the controversy.

Which factors have evidential significance in philosophy and science, and how do they come to have it? There are two main ways of tackling this question. On a logicist approach, factors have or lack evidential significance intrinsically. This means that a factor – whether this is divination, intuition, mathematical proof or experiment – has or lacks evidential significance as a matter of objective, timeless fact, irrespective of intellectual and cultural context. If some participant does not accept the persuasiveness of a factor that has evidential significance, on this view, the sole possible explanation is that he or she is mistaken.

On a historicist approach, by contrast, evidential significance is a historical attainment: a factor has or lacks evidential significance not intrinsically, but only by virtue of certain assumptions and in certain contexts. A particular factor acquires evidential significance

at a historical time by the efforts of members of a discourse: members of other discourses, who do not subscribe to the relevant assumptions, may legitimately deny it evidential significance.

2 Learning from experiment

To illustrate the logicist and historicist approaches to evidential significance, let us consider concrete experiment in science. Many writers take the logicist approach, portraying experiment as having evidential significance intrinsically. For example, Allan Franklin and Slobodan Perović (2015) write, “Physics, and natural science in general, ... provides us with knowledge of the physical world, and it is experiment that provides the evidence that grounds this knowledge.” This simple statement encapsulates the view that experiment has evidential significance self-evidently, in all contexts and historical periods, and irrespective of background assumptions.

The historicist approach, by contrast, holds that experiment has evidential significance only under assumptions such as the following: the object of scientific knowledge is regularities that underlie appearances, rather than nature in its full variety, and occurrences produced by human intervention in the unnatural and isolated setting of the laboratory are a trustworthy guide to these regularities. These assumptions are neither self-evidently true nor universally endorsed. This means that experiment has evidential significance only in certain contexts and historical periods.

History and social studies of science provide support for this view. First, science in different disciplines and historical periods has been practised in different epistemic genres or regimes, sometimes called “styles” or “ways of knowing” (Crombie 1994; Pickstone 2000; Kwa 2011). In some of these, such as John V. Pickstone’s “natural history,” experiment has carried no weight. More specifically, experiment gained evidential significance in European natural philosophy in the late sixteenth and early seventeenth centuries thanks to the persuasive efforts of some practitioners and against the objections of others (Shapin and Schaffer 1985, 3–21; Dear 2009, 127–44; Anstey 2014). Indeed, some seventeenth-century English writers called their new science “experimental philosophy” to distinguish it from earlier practices, which did not rely on experiment (Anstey 2005).

The logicist and historicist views have implications also for two further questions: what counts as experiment, and where and when is experiment practised? Because logicists believe that experiment has evidential significance irrespective of context, they expect all inquirers to use it, and they are quick to categorize empirical trials throughout history as instances of experiment.

On the historicist view, by contrast, experiment is a particular form of empirical trial, underpinned by assumptions that attribute evidential significance to it. If an empirical trial in history does not belong to a discourse that endorses these assumptions, it does not count as an instance of experiment, even if it resembles experiment in involving manipulation or control. This means that we will find experiment only in specific cultural contexts, historical periods, and branches of science.

For an illustration, let us look at the debate on ancient Greek science. Most historians have accepted the logicist assumption that experiment had evidential significance as much for ancient Greeks as for present-day natural scientists. They have argued only about

whether the ancient Greeks used experiment a lot, in which case their science was good, or a little, in which case it was poor (Lloyd 1991, 70).

A historicist view offers, I believe, a more sensitive reconstruction. The ancient Greeks did not share the systematic and elaborate epistemological and methodological assumptions that, from the sixteenth and seventeenth centuries onwards, have attributed evidential significance to what we call “experiment.” It is implausible that the ancient Greeks engaged in a practice that lacked evidential significance for them. We should therefore conclude that, whereas the ancient Greeks carried out empirical trials sporadically, these did not amount to a practice and culture of experimentation. In short, the ancient Greeks did not do experiment. This finding does not disqualify their science, of course: they may still have practised good science in a distinct style, attributing evidential significance to empirical procedures other than experiment.

As Edward Grant has concluded, “Science in the late ancient and medieval periods was ... radically different from modern science. Although some interesting experiments were carried out, they were relatively rare occurrences and certainly did not constitute a recognized aspect of scientific activity ... The experimental method did not yet exist” (Grant 2004, 24) – though a more generic term than “experiments,” such as “empirical trials,” in the second sentence might have better served his point.

3 How thought experiment gained evidential significance

I have advocated extending the historicist view of evidential significance to thought experiment. On this view, thought experiment has evidential significance not intrinsically, but only by virtue of certain metaphysical and epistemological assumptions. This opens new questions about the practice of thought experiment. The first is, when and how did thought experiment acquire evidential significance?

I have suggested that thought experiment acquired evidential significance in European philosophy and science in the sixteenth and seventeenth centuries in the same historical process that attributed evidential significance to concrete experiment (see McAllister 1996, 2004, 2005 for details and references). Let us follow this development in the work of Galileo Galilei, one of the pioneers of thought experiment.

Aristotelian natural philosophy was largely a programme to gain knowledge about nature as it naturally manifested itself – in its full variety and without human intervention. Its preferred source of empirical evidence was, correspondingly, observation of natural occurrences. Inspired by Pythagoreanism and Platonism, by contrast, Galileo came to believe that nature partly revealed – and partly masked – structures that characterized the world more deeply than natural occurrences did and that scientific knowledge was knowledge of these underlying structures rather than of natural occurrences.

Galileo conjectured that every natural occurrence was the resultant of one or more phenomena and a great number of accidents. Phenomena were universal and stable modes in which physical reality was articulated and accounted for the underlying uniformities of the world. Accidents, by contrast, were local, variable, and irreproducible, and were responsible for the great variability of natural occurrences. Mechanics, for Galileo, aimed to identify phenomena and describe them in laws of nature: no scientific knowledge of accidents was possible in his view.

What sources of evidence could Galileo use? Since natural occurrences reflected to a large degree the influence of accidents, they failed to support Galileo's laws. Galileo therefore proposed to withdraw evidential significance in mechanics from observations of natural occurrences, and to vest it in new sources of evidence that, he believed, better revealed phenomena. These were occurrences in which the influence of accidents was kept as small as possible, allowing the underlying phenomenon to show through more clearly. Any such occurrence, of course, would have to be produced artificially, by reducing the magnitude of irregularities and perturbations in the apparatus used. Galileo called such a contrived occurrence "experiment."

In some cases, this strategy yielded the desired result. As Galileo would have said, his experiments produced occurrences that were determined to only a small degree by accidents, and therefore displayed the properties of a phenomenon. In other cases, however, it proved impossible to reduce the influence of accidents sufficiently to exhibit a phenomenon clearly. Distinct performances of an experiment in these cases yielded different outcomes, indicating that accidents had substantially determined the occurrences. Galileo was aware that, in these cases, no concrete experiment that he could perform would convincingly establish a law of nature.

Galileo devised thought experiment, I have suggested, as a source of evidence about phenomena where all feasible concrete experiment exhibited this shortcoming. Thought experiment represented a continuation of the process of reducing accidents until the entire, imperfect physical apparatus had been eliminated. With the abstract experimental apparatus that remained, Galileo could at last be certain that accidents no longer masked the phenomenon. This explains why Galileo, in the case of some phenomena, withdrew from the sphere of sense data and sought knowledge about the world in thought experiment rather than in concrete experiment.

In summary, I have claimed that thought experiment gained evidential significance in Galileo's work by virtue of the following assumptions: science aims at identifying and describing "phenomena," or universal and stable modes in which the world is articulated; natural occurrences – and in some cases even concrete experiments – display phenomena only imperfectly; and pure thought can grasp phenomena where concrete experiment fails. In domains and styles of science that take these assumptions to hold, thought experiment acquires evidential significance: it makes sense to seek to establish and undermine claims by thought experiment. Where these assumptions are not endorsed, thought experiment is evidentially inert.

4 Logicist view of thought experiment

Most writers about thought experiment, by contrast, take a logicist view of evidential significance: they think that thought experiment has evidential significance intrinsically. They think that everyone in the history of science was bound to recognize thought experiment as persuasive.

For example, James Robert Brown, who holds that thought experiment yields a priori knowledge of laws of nature, has written that Galileo's thought experiment on free fall self-evidently discredited Aristotle's account and established that the rate of fall of bodies was independent of their weight (J. R. Brown 2011, 99–100). John D. Norton,

who thinks that thought experiment is argument with picturesque premises, has agreed that Aristotelian natural philosophers must have accepted Galileo's thought experiment as a source of evidence, especially since, he has claimed, "Thought experiments appear throughout Aristotle's corpus" (Norton 2004, 1149).

Historical evidence casts doubt on this view, however. Galileo's Aristotelian interlocutors did not share Galileo's assumptions about the aims and methods of science. They saw the aim of science as knowledge about nature in its natural state, and, correspondingly, they vested evidential significance in observations of natural occurrences. Since they did not attribute evidential significance to it, they found thought experiment pointless.

This is why, when Galileo advanced a thought experiment, his Aristotelian interlocutors responded mostly not with an alternative thought experiment, but with observations of natural occurrences. For example, in his argument for Copernicanism, Galileo presented a thought experiment in which an object dropped from the crow's nest of a moving ship landed at the foot of the mast (Galilei [1632] 1953, 141–5). Aristotelian natural philosophers countered with actual observations of objects dropped from ship's masts under natural circumstances. In treatises of 1631 and 1634, Libert Froidmont, a professor at the University of Louvain, described the observations of Jean Gallé, a military engineer: "On the Adriatic Sea, Gallé let fall, from the top of the main mast of a Venetian galley, a lead mass: the mass did not fall at the foot of the mast, but deviated towards the stern, thus providing for Ptolemy's followers the appearance of a verification of their doctrine" (De Waard 1937, 74). Scipione Chiaramonti and Giovanni Barenghi, in treatises of 1633 and 1638, respectively, and Bonaventura Belluto and Bartolomeo Mastri, in their 1640 commentary on Aristotle's *De caelo*, cited the testimony of Ioannis Kottounios, a professor at the University of Padua, that a rock had fallen aft of the mast (Finocchiaro 2010, 96; Grant 1984, 41).

Logicians, for whom thought experiment has evidential significance intrinsically, would say that these writers refused to face the evidence that Galileo presented. A better explanation, I think, is that thought experiment lacked force for them because they rejected the assumptions of Galilean science that attributed evidential significance to it.

The historicist view raises also the questions, what counts as thought experiment and where do we find it? Logicians expect thinkers in all contexts and historical periods to make use of thought experiment. They therefore identify as thought experiment many methodological devices found in antiquity and the Middle Ages.

For example, Deborah Levine Gera (2000) has suggested that the *Dissoi Logoi* (fifth–early fourth centuries BCE), a compilation of sophist writings, used thought experiment to investigate the acquisition of knowledge and moral values, and that ancient Greek thinkers may have turned to mental experiment because they had no propensity for concrete experiment. Katerina Ierodiakonou has credited Archytas of Tarentum (fourth century BCE) with "the first recorded thought experiment, the ancient thought experiment of the man who stands at the edge of the universe extending his hand or his stick" (Ierodiakonou 2011, 37). Ierodiakonou (2005) has described the "ship of Theseus" example, first recorded by Plutarch (first century CE), as a further thought experiment. G. E. R. Lloyd (2013, 441) has listed thought experiment among the forms of reasoning and argument most frequently found in both ancient Greece and China.

Scholars have been similarly quick to identify thought experiment in medieval philosophy. Mikko Yrjönsuuri (1996) has interpreted *obligatio* – a disputation format used in

the thirteenth and fourteenth centuries to analyse propositions – as thought experiment. Thomas Dewender (2006) has identified arguments *secundum imaginationem*, some of which were attempts to gauge what God, in his infinite power, could achieve, with thought experiment. Lastly, Carla Rita Palmerino has written that many medieval thinkers, such as Nicole Oresme (fourteenth century), used the device. To establish that the four elements were not intrinsically heavy or light, for example,

Oresme makes use of an interesting thought experiment. He argues that if a pipe extending from the centre of the earth to the heavens were filled with fire except for a very small amount of air at the top, the air would descend; if instead the pipe were filled with water except for some air near the centre of the earth, the air would mount up to the heavens.

(Palmerino 2011, 114)

Such examples, according to Palmerino, showed that thought experiment pre-dated Galileo.

The claim that writers in a wide variety of contexts over 2,500 years have used what we now call “thought experiment” is implausible, I suggest, especially if thought experiment derived from an experimental tradition that arose 400 years ago. None of these cases formed part of the project of apprehending fundamental structures that underlay – and were partly masked by – appearances. In short, none was an instance of the device of thought experiment for which Galileo provided the theoretical underpinning. The cited cases, from the *Dissoi Logoi* to Oresme, are better regarded as inferences from hypothetical or counterfactual premises, familiar to Aristotelian logic and dialectics.

Just as the category of experiment is narrower than that of empirical trial, and it is preferable to reserve it for the practice that arose in European natural philosophy in the sixteenth and seventeenth centuries, so the category of thought experiment is more specific than that of imaginative inference, and it is prudent to reserve it for the practice that Galileo and others developed in the same period.

5 Limits of thought experiment: an example

Even today, thought experiment has evidential significance in some settings and lacks it elsewhere. Let us take the discipline of history as an example.

Historians practise their discipline in two different forms: as a nomothetic and as an idiographic discipline (Malewski and Topolski 2011). Historians who take the nomothetic approach presuppose that causal regularities, which may be partly confounded by contingent circumstances, underlie historical events. History proceeds largely by identifying and explaining these causal regularities, in some cases by means of lawlike relations. In short, nomothetic history endorses something akin to the Galilean doctrine of phenomena. Much economic, demographic, strategic, and military history takes this form.

Thought experiment has evidential significance in nomothetic history. The assumption of underlying regularities allows the historian to hypothesize the alternate development that would have ensued from non-actual starting points – often called “what if?” scenarios. The historian may thereby gauge the causal contribution or historical significance of actual events.

An early example was the investigation by Robert W. Fogel (1964) of the impact of railways on US economic development. Fogel supposed that, even if the railway had not been invented, economic regularities – the law of supply and demand, say – would have continued to hold. This allowed Fogel to conjecture how the US economy would have grown in the absence of railways, concluding that their effect was surprisingly modest. All other commonly discussed examples of thought experiment or, more broadly, of counterfactual reasoning in history lie similarly in economic, demographic, strategic or military history (Tetlock, Lebow, and Parker 2006).

Historians who take the idiographic approach, by contrast, regard human acts as creative and as irreducible to patterns: as a consequence, they conceive history as a sequence of unique and contingent events. Idiographic history, thus, does not endorse anything resembling the Galilean doctrine of phenomena, or of universal invariances that underlie occurrences. Most cultural and intellectual history, including literary and art history, takes this form.

Thought experiment has no force in idiographic history. Imagining, say, how twentieth-century art would have developed if impressionism had not arisen would not yield any informative conclusions for an art historian: the question has no determinate answer in an idiographic discipline. This is because the idiographic approach posits no underlying historical regularities that operate in all alternate scenarios: the sequence of contingent actual events is all that there is. This explains why historians of literature and of art do not use thought experiment to justify claims about their object of study.

Because most recent philosophical discussions of thought experiment in history (De Mey and Weber 2003; Reiss 2009) have neglected the idiographic form of the discipline, they have inadvertently lent credence to the logicist view that thought experiment occurs and has evidential significance everywhere.

6 Responses to thought experiment across cultures: experimental studies

We may pose the questions that motivate this chapter also in an intercultural connection: do all cultures have thought experiment, or is thought experiment evidentially inert in some cultures? One approach is to investigate how people raised in different cultures respond to typical instances of thought experiment (this section). Another is to consider whether we should classify appeals to imaginative scenarios made in various cultures as thought experiment (next section).

Richard E. Nisbett (2003) suggested that culture partly shaped cognition: East Asians tended to think holistically, dialectically, and on the basis of their experience, whereas Westerners thought analytically, logically, and abstractly. For example, Nisbett claimed, Easterners dealt with contradiction dialectically, trying to reconcile opposites, whereas Westerners chose one side over the other. Ara Norenzayan, Edward E. Smith, Beom Jun Kim, and Nisbett (2002) reported that Chinese and Korean students at the University of Michigan relied on intuitive cognitive strategies more than European Americans, who preferred formal reasoning. Such findings suggested that there existed specifically Chinese thinking styles (Ji, Lee, and Guo 2010): if so, Western thought experiments, which often turn on abstraction, intuition, and contradiction, might lead Chinese thinkers to different conclusions, or to no conclusion at all.

This work has attracted criticism on both methodological and empirical grounds. Lloyd (2007, 160–4) has objected to stereotyping diverse populations as “Asians” and “Westerners.” Adam B. Cohen (2009) has criticized cultural psychology for considering only cultures on the continental scale. Several writers have presented data suggesting that Easterners and Westerners showed no systematic cognitive differences and that both could use holistic or analytic thinking as context demanded (Lee and Johnson-Laird 2006; Mercier 2011). More specifically, Sara J. Unsworth and Douglas L. Medin (2005) found no cultural difference in preferences for intuitive versus formal reasoning, and Hugo Mercier et al. (2015) none in dealing with contradiction.

Writers in experimental philosophy have pursued similar lines. Some have presented empirical findings that people raised in different cultures had differing philosophical intuitions. They have argued that these findings cast doubt on traditional or “armchair” analytic philosophy, since this relied on intuitions as evidence. Other writers have denied that these findings troubled traditional analytic philosophy, either because intuitions have never served as evidence in analytic philosophy (Deutsch 2015) or because the empirical findings failed to show that intuitions were unreliable evidence (Boyd and Nagel 2014).

In at least three cases, the discussion has focused on thought experiments that analytic philosophers have used to elicit intuitions. First, epistemologists since Edmund L. Gettier (1963) have relied on thought experiment to ground a distinction between knowledge and accidentally true belief. Citing as inspiration Nisbett’s early work on East–West differences in thinking, Jonathan M. Weinberg, Shaun Nichols, and Stephen Stich surveyed Rutgers University students. They reported that, while a large majority of students of European ancestry made the orthodox distinction in Gettier cases, a majority of students of East and South Asian descent accepted accidental true belief as knowledge: “If these results are robust, then it seems that what counts as knowledge on the banks of the Ganges does not count as knowledge on the banks of the Mississippi!” (Weinberg, Nichols, and Stich 2001, 444). The authors concluded that the thought experiments on which epistemologists since Gettier have depended in these cases were an unreliable source of evidence. More recently, however, other researchers have found that East and South Asian and Western subjects were equally likely to make the orthodox distinction in Gettier cases (Nagel, San Juan, and Mar 2013; Turri 2013; Seyedsayamdost 2015; Kim and Yuan 2015; Machery et al. 2015). If anything, therefore, experimental philosophy seems to have delivered empirical evidence that epistemic intuitions are culturally invariant.

Second, philosophers of language since the 1970s have used thought experiment to probe intuitions about reference. Edouard Machery, Ron Mallon, Nichols, and Stich (2004) reported that East Asian speakers of Cantonese tended to have descriptivist intuitions about the referents of proper names, while Western speakers of English tended to have causal-historical intuitions. Again, though, there has been methodological criticism (Ludwig 2007) and replication attempts have yielded mixed results (Lam 2010; Sytma, Livengood, Sato, and Oguchi 2015).

Third, moral philosophers since the 1960s have cited “trolley dilemma” thought experiments as evidence that there was a morally significant difference between causing and allowing harm. Patricia O’Neill and Lewis Petrinovich (1998) found no difference in the responses of Taiwanese and US students to these thought experiments. Other researchers have reported that the responses of Russian, American, and British subjects were more

utilitarian than those of Chinese subjects (Ahlenius and Tännsjö 2012; Gold, Colman, and Pulford 2014).

If the findings of earlier sections of this chapter are correct, then thought experiment, even in Western culture, has force in some discourses but not in others. In this light, rather than compare the responses of Western and Asian subjects to a given thought experiment, it would seem more productive for experimental philosophy to inquire in which specific discourses in both Western and Asian cultures thought experiment has evidential significance and on what presuppositions it acquired that significance.

7 Does thought experiment occur in Indian and Chinese culture?

There is a long tradition of hypothetical and imaginative reasoning in both Indian and Chinese culture. Several writers in Anglo-American philosophy have used the category of thought experiment to classify such reasoning. The question, however, is whether the identification of these forms of reasoning with thought experiment is warranted or a misleading representation of a discourse in terms taken from a radically different tradition.

Let us start with treatments of knowledge in traditional Indian texts. Sriharsa (twelfth century) discussed the case of a person who mistook fog for smoke and then inferred the presence of fire, where there really was fire. Sriharsa concluded that “true awareness” was not sufficient for knowledge and that a further condition, “produced by a faithful cause,” was required. Gaṅgeśa, the founder of the Nyaya school (twelfth–thirteenth century), discussed the case of a mistaken liar who, while trying to deceive a listener, uttered the truth. Gaṅgeśa suggested that, as long as the listener had no indication that the speaker was a habitual liar, he or she would gain knowledge from the utterance. Other members of the Nyaya school disagreed, holding that the mistaken liar was not a reliable testifier. In their histories of Indian philosophy, Bimal Krishna Matilal (1986, 135–40; 1990, 70) and Jonardon Ganeri (1999, 70, 77–78; 2007, 133–40) have interpreted these passages as Gettier cases *avant la lettre*. Stephen H. Phillips (2012, 12–13) has treated several further texts of the Nyaya school as Gettier cases.

Joseph Shieber has classified Gaṅgeśa’s discussion of the mistaken liar as thought experiment. He cited the disagreement within the Nyaya school in his critique of experimental philosophy: “Interestingly, this suggests that one needn’t have appealed to experimental philosophy to discover that there is disagreement – even among communities of sophisticated, highly trained philosophers – as to the interpretation of thought experiments.” He concluded on a positive note, however: “the example of Gangesa suggests that disagreement – even about such core cases – does not in fact invalidate the use of thought experiment in philosophy” (Shieber 2010, 560).

But is it legitimate to regard these passages as thought experiment? Just as Jonathan Stoltz (2007) has cautioned against assuming that Gettier addressed the same issues as earlier Indian writers, so we should beware lest superficial similarities between Indian and Anglo-American forms of philosophical reasoning lead us too quickly to interpret Indian writers as engaging in thought experiment.

The same holds for Chinese culture. Several authors writing in English have applied the category of thought experiment to describe various passages in traditional Chinese moral thinking.

For example, commentators have described as thought experiment several passages in the *Mozi*, the compilation of the doctrines of Mozi (Mo Tzu, fifth century BCE), an early critic of Confucianism. Loy Hui-chieh (2006) has interpreted as thought experiment the passage “Exalting Unity” (*Shang Tong*, chapters 11–13), which opened with a hypothetical scenario in which people lacked any form of social and political authority. Mozi inferred that people in that scenario would hold to a variety of conflicting moralities and, consequently, would live in a state of anarchy (Johnston 2010, 91). Bryan W. Van Norden has characterized the passage “Impartial Caring” (*Jian Ai*, chapters 14–16) as “probably the first use of ‘thought experiments’ in Chinese philosophy, and perhaps their first use in the world” (Van Norden 2007, 179). Mozi argued there that even a person more concerned for self than for others had reason to value impartial care: such a person, departing on a long journey, would prefer to put his or her family in the care of someone committed to impartial care rather than of a partialist (Johnston 2010, 153). Carine Defoort (2006, 132) has also analysed this passage in terms of thought experiment.

Mengzi (Mencius, fourth century BCE), a Confucian, argued that all humans innately possessed dispositions toward virtuous feelings, including a disposition towards benevolence: “Suppose someone suddenly saw a child about to fall into a well: anyone in such a situation would have a feeling of alarm and compassion – not because one sought to get in good with the child’s parents, not because one wanted fame among one’s neighbors and friends, and not because one would dislike the sound of the child’s cries.” (Van Norden 2008, 46). Philip J. Ivanhoe (2000, 19) and Van Norden (2007, 215–18) interpreted this passage as a thought experiment, and one now commonly finds it called a thought experiment in English-language philosophical discussions (Schmidt 2011, 272; Wang and Solum 2013, 117–18; Stepień 2014, 82).

But is it legitimate to say that Mozi and Mengzi used thought experiment? Identifying these passages as thought experiment might be an example of the tendency to appropriate elements of Chinese culture and thought for Western intellectual purposes, against which many writers, such as David L. Hall and Roger T. Ames (1995, 111–79) have warned. We might do more justice to these texts, and preserve their cultural specificity, by refraining from applying to them a category that was first put forward in a very different setting, Galileo’s reform of mechanics in seventeenth-century Florence. Even within Western discourses, the category of thought experiment cannot be applied to all instances of imaginative reasoning, or so I have argued above. Of course, if present-day Chinese writers use imaginative and counterfactual reasoning to probe traditional Chinese moral doctrines, this may well count as thought experiment: an example is Yiu-ming Fung (2001, 258–65), who consciously draws on the methodology of Western analytic philosophy.

In sum, I advocate learning from interpretations of the dream accounts that are widespread in Chinese culture (C. T. Brown 1988; Strassberg 2008, 1–47). Zhuangzi’s “Dream of the Butterfly” (fourth century BCE; Ziporyn 2009, 21) is a good example. Many translators and commentators have enrolled this dream account in modern Western philosophical concerns, presenting it as an argument for a certain metaphysical or epistemological claim. For example, Han Xiaoqiang has interpreted it as “a skeptical response to Descartes’ refutation of skepticism based on his *Cogito, ergo sum* proof” (Han 2009, 1), put forward nearly 2,000 years later. A more sensitive approach, I think, is to regard this dream account as *sui generis*, investigating its nature and place in Chinese thinking without reducing it to

Western philosophical genres and standpoints (Moeller 2004, 44–55; Kohn 2014, 39–43). Adopting the same caution would mean interpreting the passages of Mozi and Mengzi not as thought experiment but as a distinct form of imaginative reasoning.

8 Conclusions

The aim of this chapter was to problematize the category of thought experiment and its application in different historical and cultural contexts. Writers in both history of science and comparative philosophy have been liberal in their use of the category, as we have seen, identifying many forms of reasoning in diverse contexts as instances of thought experiment. I believe that this usage presupposes a logicist view of evidential significance: if thought experiment has evidential significance intrinsically, it is reasonable to suppose that all writers in all settings will find it persuasive, and thus will use the device throughout intellectual history.

In this chapter, I have presented arguments and evidence for an alternative, historicist view of the evidential significance of thought experiment. On this view, thought experiment has evidential significance not intrinsically or everywhere, but only where particular metaphysical and epistemological assumptions have attributed evidential significance to it. Galileo was, I have suggested, the first person to have carried out this attribution of evidential significance: Galileo, we may say, invented thought experiment. Discourses that have descended from Galilean natural philosophy – including much present-day natural science and areas of Anglo-American philosophy that take natural science as their model – have inherited thought experiment as an evidence-bearing factor. In other discourses, by contrast, thought experiment is evidentially inert and is thus not used. These discourses include Western natural philosophy before Galileo, idiographic disciplines, and intellectual traditions distinct from Western philosophy and science. In these discourses, even if a methodological device or argument form resembles thought experiment, we should resist the temptation to call it thought experiment.

The outcome is that the domain of application of the category “thought experiment” is much narrower than we might have expected. I suggest, however, that the historical and cultural specificity and sensitivity that this approach brings more than make up for the loss of apparent breadth.

References

-
- Ahlenius, H. and Tännsjö, T. (2012) “Chinese and Westerners respond differently to the trolley dilemmas,” *Journal of Cognition and Culture* 12: 195–201.
- Anstey, P. R. (2005) “Experimental versus speculative natural philosophy,” in *The Science of Nature in the Seventeenth Century: Patterns of Change in Early Modern Natural Philosophy*, edited by P. R. Anstey and J. A. Schuster, Berlin: Springer.
- Anstey, P. R. (2014) “Philosophy of experiment in early modern England: The case of Bacon, Boyle and Hooke,” *Early Science and Medicine* 19: 103–132.
- Boyd, K. and Nagel, J. (2014) “The reliability of epistemic intuitions,” in *Current Controversies in Experimental Philosophy*, edited by E. Machery and E. O’Neill, New York: Routledge.
- Brown, C. T. (ed.) (1988) *Psycho-Sinology: The Universe of Dreams in Chinese Culture*, Washington: Woodrow Wilson International Center for Scholars.

- Brown, J. R. (2011) *The Laboratory of the Mind: Thought Experiments in the Natural Sciences*, 2nd ed., New York: Routledge.
- Cohen, A. B. (2009) "Many forms of culture," *American Psychologist* 64: 194–204.
- Crombie, A. C. (1994) *Styles of Scientific Thinking in the European Tradition: The History of Argument and Explanation Especially in the Mathematical and Biomedical Sciences and Arts*, London: Duckworth.
- Dear, P. (2009) *Revolutionizing the Sciences: European Knowledge and Its Ambitions, 1500–1700*, 2nd ed., Princeton: Princeton University Press.
- Defoort, C. (2006) "The growing scope of *Jian*: Differences between chapters 14, 15 and 16 of the *Mozi*," *Oriens Extremus* 45: 119–140.
- De Mey, T. and Weber, E. (2003) "Explanation and thought experiments in history," *History and Theory* 42: 28–38.
- Deutsch, M. (2015) *The Myth of the Intuitive: Experimental Philosophy and Philosophical Method*, Cambridge: MIT Press.
- De Waard, C. (ed.) (1937) *Correspondance du P. Marin Mersenne. II. 1628–1630*, Paris: Gabriel Beauchesne.
- Dewender, T. (2006) "Imaginary experiments (*procedere secundum imaginationem*) in later medieval natural philosophy," in *Intellect et imagination dans la philosophie médiévale*, edited by M. C. Pacheco and J. F. Meirinhos, Turnhout: Brepols.
- Finocchiaro, M. A. (2010) "Defending Copernicus and Galileo: Critical reasoning and the ship experiment argument," *Review of Metaphysics* 64: 75–103.
- Fogel, R. W. (1964) *Railroads and American Economic Growth: Essays in Econometric History*, Baltimore: Johns Hopkins University Press.
- Franklin, A. and Perović, S. (2015) "Experiment in physics," in *Stanford Encyclopedia of Philosophy*, edited by E. N. Zalta, <http://plato.stanford.edu/archives/sum2015/entries/physics-experiment> (accessed 15 November 2016).
- Fung, Y. (2001) "Three dogmas of new Confucianism: A perspective of analytic philosophy," in *Two Roads to Wisdom? Chinese and Analytic Philosophical Traditions*, edited by B. Mou, Chicago: Open Court.
- Galilei, G. (1632 [1953]) *Dialogue Concerning the Two Chief World Systems – Ptolemaic and Copernican*, translated by S. Drake, Berkeley: University of California Press.
- Ganeri, J. (1999) *Semantic Powers: Meaning and the Means of Knowing in Classical Indian Philosophy*, Oxford: Clarendon Press.
- Ganeri, J. (2007) *The Concealed Art of the Soul: Theories of Self and Practices of Truth in Indian Ethics and Epistemology*, Oxford: Oxford University Press.
- Gera, D. L. (2000) "Two thought experiments in the *Dissoi Logoi*," *American Journal of Philology* 121: 21–45.
- Gettier, E. L. (1963) "Is justified true belief knowledge?" *Analysis* 23: 121–123.
- Gold, N., Colman, A. M. and Pulford, B. D. (2014) "Cultural differences in responses to real-life and hypothetical trolley problems," *Judgment and Decision Making* 9: 65–76.
- Grant, E. (1984) "In defense of the Earth's centrality and immobility: Scholastic reaction to Copernicanism in the seventeenth century," *Transactions of the American Philosophical Society* 74, Part 4.
- Grant, E. (2004) *Science and Religion, 400 B.C. to A.D. 1550: From Aristotle to Copernicus*, Westport, CT: Greenwood Press.
- Hall, D. L. and Ames, R. T. (1995) *Anticipating China: Thinking Through the Narratives of Chinese and Western Culture*, Albany: SUNY Press.
- Han, X. (2009) "Interpreting the butterfly dream," *Asian Philosophy* 19: 1–9.
- Ierodiakonou, K. (2005) "Ancient thought experiments: A first approach," *Ancient Philosophy* 25: 125–140.
- Ierodiakonou, K. (2011) "Remarks on the history of an ancient thought experiment," in *Thought Experiments in Methodological and Historical Contexts*, edited by K. Ierodiakonou and S. Roux, Leiden: Brill.
- Ivanhoe, P. J. (2000) *Confucian Moral Self Cultivation*, 2nd ed., Indianapolis: Hackett.
- Ji, L.-J., Lee, A. and Guo, T. (2010) "The thinking styles of Chinese people," in *The Oxford Handbook of Chinese Psychology*, edited by M. H. Bond, Oxford: Oxford University Press.

- Johnston, I. (ed.) (2010) *The Mozi: A Complete Translation*, Hong Kong: Chinese University Press.
- Kim, M. and Yuan, Y. (2015) "No cross-cultural differences in the Gettier car case intuition: A replication study of Weinberg et al. 2001," *Episteme* 12: 355–361.
- Kohn, L. (2014) *Zhuangzi: Text and Context*, St. Petersburg, FL: Three Pines Press.
- Kwa, C. (2011) *Styles of Knowing: A New History of Science from Ancient Times to the Present*, translated by D. McKay, Pittsburgh: University of Pittsburgh Press.
- Lam, B. (2010) "Are Cantonese-speakers really descriptivists? Revisiting cross-cultural semantics," *Cognition* 115: 320–329.
- Lee, N. Y. L. and Johnson-Laird, P. N. (2006) "Are there cross-cultural differences in reasoning?" in *Proceedings of the 28th Annual Meeting of the Cognitive Science Society*, edited by R. Sun and N. Miyake, Mahwah, NJ: Lawrence Erlbaum.
- Lloyd, G. E. R. (1991) *Methods and Problems in Greek Science*, Cambridge: Cambridge University Press.
- Lloyd, G. E. R. (2007) *Cognitive Variations: Reflections on the Unity and Diversity of the Human Mind*, Oxford: Clarendon Press.
- Lloyd, G. E. R. (2013) "Reasoning and culture in a historical perspective," *Journal of Cognition and Culture* 13: 437–457.
- Loy, H. (2006) "On a *Gedankenexperiment* in the *Mozi* core chapters," *Oriens Extremus* 45: 141–158.
- Ludwig, K. (2007) "The epistemology of thought experiments: First person versus third person approaches," *Midwest Studies in Philosophy* 31: 128–159.
- Machery, E., Mallon, R., Nichols, S. and Stich, S. P. (2004) "Semantics, cross-cultural style," *Cognition* 92: B1–B12.
- Machery, E., Stich, S., Rose, D., Chatterjee, A., Karasawa, K., Struchiner, N., Sirker, S., Usui, N. and Hashimoto, T. (2015) "Gettier across cultures," *Noûs*.
- Malewski, A. and Topolski, J. (2011) "The nomothetic versus the idiographic approach to history," in *Idealization XIII: Modeling in History*, edited by K. Brzezczyzn, Amsterdam: Rodopi.
- Matilal, B. K. (1986) *Perception: An Essay on Classical Indian Theories of Knowledge*, Oxford: Clarendon Press.
- Matilal, B. K. (1990) *The Word and the World: India's Contribution to the Study of Language*, Delhi: Oxford University Press.
- McAllister, J. W. (1996) "The evidential significance of thought experiment in science," *Studies in History and Philosophy of Science* 27: 233–250.
- McAllister, J. W. (2004) "Thought experiments and the belief in phenomena," *Philosophy of Science* 71: 1164–1175.
- McAllister, J. W. (2005) "The virtual laboratory: Thought experiments in seventeenth-century mechanics," in *Collection, Laboratory, Theater: Scenes of Knowledge in the 17th Century*, edited by H. Schramm, L. Schwarte, and J. Lazardzig, New York: De Gruyter.
- Mercier, H. (2011) "On the universality of argumentative reasoning," *Journal of Cognition and Culture* 11: 85–113.
- Mercier, H., Zhang, J., Qu, Y., Peng, L. and Van Der Henst, J.-P. (2015) "Do Easterners and Westerners treat contradiction differently?" *Journal of Cognition and Culture* 15: 45–63.
- Moeller, H.-G. (2004) *Daoism Explained: From the Dream of the Butterfly to the Fishnet Allegory*, Chicago: Open Court.
- Nagel, J., San Juan, V. and Mar, R. A. (2013) "Lay denial of knowledge for justified true beliefs," *Cognition* 129: 652–661.
- Nisbett, R. E. (2003) *The Geography of Thought: How Asians and Westerners Think Differently... and Why*, New York: Free Press.
- Norenzayan, A., Smith, E. E., Kim, B. J. and Nisbett, R. E. (2002) "Cultural preferences for formal versus intuitive reasoning," *Cognitive Science* 26: 653–684.
- Norton, J. D. (2004) "On thought experiments: Is there more to the argument?" *Philosophy of Science* 71: 1139–1151.
- O'Neill, P. and Petrinovich, L. (1998) "A preliminary cross-cultural study of moral intuitions," *Evolution and Human Behavior* 19: 349–367.
- Palmerino, C. R. (2011) "Galileo's use of medieval thought experiments," in *Thought Experiments in Methodological and Historical Contexts*, edited by K. Ierodiakonou and S. Roux, Leiden: Brill.

- Phillips, S. H. (2012) *Epistemology in Classical India: The Knowledge Sources of the Nyaya School*, New York: Routledge.
- Pickstone, J. V. (2000) *Ways of Knowing: A New History of Science, Technology and Medicine*, Manchester: Manchester University Press.
- Reiss, J. (2009) "Counterfactuals, thought experiments, and singular causal analysis in history," *Philosophy of Science* 76: 712–723.
- Schmidt, S. (2011) "Mou Zongsan, Hegel, and Kant: The quest for Confucian modernity," *Philosophy East and West* 61: 260–302.
- Seyedsayamdost, H. (2015) "On normativity and epistemic intuitions: Failure of replication," *Episteme* 12: 95–116.
- Shapin, S. and Schaffer, S. (1985) *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*, Princeton: Princeton University Press.
- Shieber, J. (2010) "On the nature of thought experiments and a core motivation of experimental philosophy," *Philosophical Psychology* 23: 547–564.
- Stepień, M. (2014) "The relationship between human nature and human rights: The Confucian example," in *Human Rights and Human Nature*, edited by M. Albers, T. Hoffmann, and J. Reinhardt, Dordrecht: Springer.
- Stoltz, J. (2007) "Gettier and factivity in Indo-Tibetan epistemology," *Philosophical Quarterly* 57: 394–415.
- Strassberg, R. E. (ed.) (2008) *Wandering Spirits: Chen Shiyuan's Encyclopedia of Dreams*, Berkeley: University of California Press.
- Sytsma, J., Livengood, J., Sato, R. and Oguchi, M. (2015) "Reference in the land of the rising sun: A cross-cultural study on the reference of proper names," *Review of Philosophy and Psychology* 6: 213–230.
- Tetlock, P. E., Lebow, R. N. and Parker, G. (eds) (2006) *Unmaking the West: "What-if?" Scenarios that Rewrite World History*, Ann Arbor: University of Michigan Press.
- Turri, J. (2013) "A conspicuous art: Putting Gettier to the test," *Philosophers' Imprint* 13, no. 10: 1–16.
- Unsworth, S. J. and Medin, D. L. (2005) "Cultural differences in belief bias associated with deductive reasoning?" *Cognitive Science* 29: 525–530.
- Van Norden, B. W. (2007) *Virtue Ethics and Consequentialism in Early Chinese Philosophy*, Cambridge: Cambridge University Press.
- Van Norden, B. W. (ed.) (2008) *Mengzi: With Selections from Traditional Commentaries*, Indianapolis: Hackett.
- Wang, L. and Solum, L. B. (2013) "Confucian virtue jurisprudence," in *Law, Virtue and Justice*, edited by A. Amaya and H. H. Lai, Oxford: Hart.
- Weinberg, J. M., Nichols, S. and Stich, S. (2001) "Normativity and epistemic intuitions," *Philosophical Topics* 29: 429–460.
- Yrjönsuuri, M. (1996) "Obligations as thought experiments," in *Studies on the History of Logic*, edited by I. Angelelli and M. Cerezo, Berlin: De Gruyter.
- Ziporyn, B. (ed.) (2009) *Zhuangzi: The Essential Writings, with Selections from Traditional Commentaries*, Indianapolis: Hackett.