What is Theoretical Knowledge?

Klausen, Søren Harnow; Petersen, Esben Nedenskov

Published in:
Theoria

DOI:
10.1111/theo.12292

Publication date:
2021

Document version:
Accepted manuscript

Citation for published version (APA):

Go to publication entry in University of Southern Denmark's Research Portal

Terms of use
This work is brought to you by the University of Southern Denmark. Unless otherwise specified it has been shared according to the terms for self-archiving. If no other license is stated, these terms apply:

- You may download this work for personal use only.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying this open access version

If you believe that this document breaches copyright please contact us providing details and we will investigate your claim. Please direct all enquiries to puresupport@bib.sdu.dk

Download date: 15. Sep. 2023
Abstract

While it is common in social epistemology, philosophy of education, and sociology to speak of theoretical knowledge, the concept of theoretical knowledge used in ordinary discourse has not been properly examined, and its relations to other types of knowledge remain unclear. This paper argues that this ordinary language notion of theoretical knowledge has a distinct meaning different from the meanings of terms for other knowledge types, e.g., knowledge-that, and meta-cognitive knowledge, and provides an analysis which characterizes theoretical knowledge as distinguished by its indirectness. The paper then discusses the implications of this view for the practical role of theoretical knowledge and suggests that a reappraisal of its epistemic significance is due.

1. Introduction

The expression ‘theoretical knowledge’ is widely used to categorize some part of human knowledge. It is ubiquitous in disciplines like social epistemology, philosophy of education and sociology, but also quite common in everyday discourse, where the contrast between the ‘theoretical’ and ‘practical’ is frequently invoked. Yet aside from agreement on the obvious point that theoretical knowledge is somehow associated with theory, or theorizing, a clear understanding of its meaning in everyday discourse is missing. The many different uses of the expression, moreover, may seem to suggest
that it is used with ever changing meanings on different occasions. Against such a view this paper proposes that ‘theoretical knowledge’ has a stable prevalent meaning in natural language. The paper argues that ‘theoretical knowledge’ refers to a kind of knowledge different from other commonly discussed knowledge types, develops an analysis of the ordinary language notion of theoretical knowledge, and discusses the epistemic role and value of such knowledge.

An important question, which we will consider first, is how theoretical knowledge is related to other types of knowledge. The notion is widely and habitually associated with particular knowledge formats and attitudes. Theoretical knowledge is often equated with factual knowledge (see e.g. Jung & Neven 2011; Bengson and Moffett 2011, 12; Stanley 2011, 7). It has also been characterized as “bookish”, “scholastic” (a predicate attached to it by none less than Kant, cf. Cohen (2014, 39)) or “academic” (Hand & Davies 2015, 16). The habitual contrasting of the theoretical with the practical has fueled the assumption that theoretical knowledge is in itself of little practical value and must differ significantly from more practical forms of knowledge. These connotations have likely shaped the widespread beliefs that theoretical knowledge is irrelevant or overrated in specific contexts, like teaching and

---

1 The European Qualifications Framework likewise uses the expressions “theoretical knowledge” and “factual knowledge” more or less synonymously, though it does contain some hints that the two categories may not be completely coextensive (https://ec.europa.eu/llpaeus/en/content/descriptors-page).
education. Showing that theoretical knowledge is not related to the other categories in the ways usually assumed may thus facilitate a more accurate assessment of the costs and benefits of pursuing or propagating theoretical knowledge.²

2. What theoretical knowledge is not (necessarily)

Certain paradigmatic examples of theoretical knowledge seem to dominate the common understanding of the notion and give the impression that theoretical knowledge is necessarily, among other things, knowledge of general theories, or abstract principles, and of little practical value. The following section aims to show that these assumptions are questionable.

2.1. Theoretical knowledge is not necessarily knowledge-that

It is natural to think that theoretical knowledge must be propositional knowledge, or knowledge-that, i.e., the type of knowledge that speakers refer to when they use assertions of the form, ‘S knows that p’, to ascribe knowledge (see e.g. Dummett 1978, 126; Phillips 2014). Part of an explanation might be that the way the content of someone’s knowledge is represented by the proposition in the complement clause of

² Some of the ideas in this paper, especially as to how theoretical knowledge should not be understood, have been presented in Klausen (2013b), which, however, does not provide any positive analysis of theoretical knowledge.
such a construction is similar to how theories in science and elsewhere are typically stated. Thus, if one takes knowledge of scientific theories to be representative of theoretical knowledge in general, one might think that it must be knowledge-that.

Another possible source of this idea is the much-referred-to distinction between *episteme* and *techné* in ancient thought. It is common to understand *episteme* as theoretical knowledge and oppose it to *techné*, which is seen rather as being akin to knowledge-how, craftsmanship, competence or skill, although it is doubtful whether such an interpretation is correct even in the case of Aristotle, who is often credited with having invented the theory-practice distinction (Parry 2014). By mapping the distinction between theoretical and non-theoretical knowledge onto this supposed opposition between *episteme* and *techné*, one might come to think that theoretical knowledge could not be knowledge-how, i.e., the type of knowledge that speakers refer to by asserting something of the form ‘S knows how to Φ’.

But this view seems wrong. Knowing how to interpret x-rays or how to perform a liver transplant can obviously qualify as theoretical knowledge. The same goes for knowing how to galvanize iron or how to build an airplane. If one competently and ingeniously infers from aeronautical and engineering principles how to build an airplane, and even manages to outline a successful step-by-step construction process,
then surely one’s knowledge of how to build a plane is theoretical. So theoretical knowledge may include knowledge-how; it does not have to be knowledge-that. ³

This compatibility with know-how also allows us to dispense with the assumption that theoretical knowledge is necessarily without direct value for practical pursuits. While some seem to think that only non-theoretical knowledge contributes to the execution of skillful performance, the fact that one can have theoretical knowledge of how to perform a liver transplant reveals this as a gross underestimation of the potential practical value of theoretical knowledge.

2.2. Theoretical knowledge is not necessarily knowledge of general principles

Paradigmatic examples of theoretical knowledge tend to be knowledge about general principles or claims. Knowledge of Newton’s laws, for instance, is the kind of thing likely to come to mind when one is trying to come up with examples of theoretical knowledge. But while the tendency to consider knowledge of generalities

³ The precise relation between knowledge-that and knowledge-how is, however, a controversial issue. Some (notably Stanley and Williamson (2001); see also Stanley (2011)) argue that knowledge-how depends on, or even reduces to knowledge-that. Meanwhile, regardless of how these questions are resolved, examples of knowledge which is both theoretical and knowledge-how suffice to show that the two categories intersect, but we shall remain agnostic on the exact relation between knowledge-that and knowledge-how.
paradigmatically theoretical is not surprising, given that theories tend to take the form of general principles or claims, generality is not an essential characteristic of the content of theoretical knowledge. The knowledge that Earth’s core temperature is 5700 K, for example, seems perfectly apt for the predicate ‘theoretical’, and the same goes for the knowledge that the Barringer meteor crater was created 50,000 years ago. It is only about a particular phenomenon but is clearly theoretical knowledge, nonetheless.

It is, however, worth noting that this is not to deny that knowledge of general principles often plays a significant role in the acquisition of theoretical knowledge. On the contrary, both the above examples of theoretical knowledge of specific facts seem to concern knowledge produced partly by inferring conclusions about something specific from more general truths. Meanwhile, to suggest that theoretical knowledge has to be deduced or inferred from general principles is too strong. Inductive knowledge, for instance, is an example to the contrary. Inferring from a range of observations of a correlation between two types of events to the conclusion that the connection is law-like appears to be a way of gaining theoretical knowledge without starting from a general belief about the phenomena concerned. For instance, the knowledge that humans have a psychological bias towards confirmation of the beliefs they already have (Nisbett & Ross 1980; Kahneman 2011) is based on numerous experiments with a large number of individuals, and not inferred from any general principle about human irrationality. But it is still theoretical. Theoretical knowledge is neither defined by being inferred from general principles, nor by having such principles as its content.
2.3. Theoretical knowledge does not have to be higher-order knowledge

Another misunderstanding about theoretical knowledge is that it is theoretical in virtue of being reflective or higher-order knowledge (Sosa 2009). Such knowledge of one’s knowledge comes from the ability to reflect on one’s stock of knowledge and epistemic procedures (Flavell 1979), which is no doubt an important component of scientific theorizing where methodological clarity is paramount. Yet the category of reflective, higher-order knowledge does not subsume the category of theoretical knowledge. The examples above should suffice to place this point beyond doubt. The knowledge that the temperature of Earth’s core is 5700 K is as good an example of first-order knowledge as any.

---

The expressions “higher-order knowledge” and “reflective knowledge” are used in many different ways in the literature, but mostly defined so broadly as to cover a wide variety of instances of knowledge and processes of belief formation. Sosa’s definition (2009, 139) has been plausibly ameliorated by Schmitt (2009), who holds that reflective knowledge that \( p \) is apt belief that \( p \) accompanied by apt belief that the source of one’s belief \( p \) is reliable; similar accounts could be formulated with other epistemic notions than aptness. Our contention that reflective or higher-order knowledge is neither necessary nor sufficient for theoretical knowledge is effectively supported by all extant accounts of these notions, since they all 1) require some higher-order mental state that does not seem to be required for theoretical knowledge, while 2) allowing that such a higher-order mental state could be formed in a more direct way than what seems to be required for theoretical knowledge.
The identification of reflective or higher-order knowledge with theoretical knowledge also fails with respect to the assumption that reflective or higher-order knowledge is necessarily theoretical. Knowing that one knows the dentist’s address does not automatically qualify as theoretical knowledge despite its second-order nature. While moving to a higher-order of knowledge adds to the complexity of the basis for one’s knowledge, this alone is not enough to make the knowledge in question theoretical.5

Neither propositional form, nor generality nor meta-cognitive content appears to be a requirement for knowledge to be theoretical. So, we need to look elsewhere to provide an analysis of theoretical knowledge. Rather than focusing on the content of knowledge to spell out what theoretical knowledge is, we propose to focus on etiology. In particular, we will argue that the question of directness/indirectness is essential to the meaning of ‘theoretical knowledge’ in ordinary language.

3. Theoretical knowledge, Indirectness, and Inference

5 This is so even if Bjerring and Gundersen are right that “some sort of inferential reasoning is involved in obtaining higher-order knowledge” (2020, 346). For this inferential reasoning is then “most likely implicit and unconscious” (2020, 343) and so need not qualify as being sufficiently indirect (see sections 4 and 5.3 below).
What do ordinary speakers mean by saying that a certain piece of knowledge is merely theoretical? Our suggestion is that the predicate’s meaning concerns how knowers obtain their knowledge.

Consider the example of knowledge based on direct perception, e.g., knowing that there is a mug on the table on the basis of seeing the mug on the table. It seems unnatural to suggest that such knowledge based on direct visual perception could qualify as theoretical. And the same seems to hold for other types of knowledge based solely on direct perceptual experience; knowledge based on touch that a surface is rough, knowledge based on taste that something is sour, and so on. What precludes such knowledge from being theoretical, however, cannot simply be that it somehow depends on perception, since this is true of our empirical knowledge in general, including the knowledge that the Barringer crater was formed 50,000 years ago, and that Earth’s core is 5700 K. That basic perceptual knowledge is not theoretical instead seems related to the issue of directness. Simply put, this type of perceptual knowledge seems to be disqualified from being theoretical in virtue of somehow being too direct, in a sense to be specified.

To capture the relevant notion of indirectness our proposal is to look towards discussions of evidentiality in linguistics, where taxonomies distinguishing between direct and indirect sources of evidence, or information are common (Aikhenvald 2004; Akatsuka 1985; Bybee 1985; Willett 1988). Linguistic research shows that some languages have conventionalized evidential markers indicating the source of evidence for asserted propositions. These markers refer to categories belonging to a cross-
linguistic taxonomy in which indirect and direct sources are the two main overarching categories. Following Willett (1988), propositions characterized as directly evidenced are believed on the basis of direct sensorial experience of the facts they express, e.g., as when the proposition that John’s cat is black is believed based on direct visual perception of John’s cat. In contrast, the source of evidence for a proposition is said to be indirect when the proposition is either reported or inferred. Reported propositions are further divided into three subcategories, those evidenced by second-hand reports, those evidenced by third-hand reports, and those belonging to folklore. Inferred propositions come in two types. One type is results, which are inferred from observable evidence. The other type of inferential knowledge, which includes such things as pure mathematical knowledge, is defined as having reasoning as its evidential source and is inferred from ‘mental construct[s] only’ (Willett 1988: 57).

To determine whether the notion of ‘theoretical knowledge’ may be defined by using Willett’s categories we used COCA, the Corpus of Contemporary American English.6 The corpus was searched for collocations of ‘theoretical’ and ‘knowledge’ outside academic publications, and the occurrences of ‘theoretical knowledge’ in this part of COCA were subjected to qualitative analysis, supported by further data from the associated iWeb Corpus.7

---

6 https://www.english-corpora.org/coca/
7 https://www.english-corpora.org/iweb/
Searches in COCA, excluding academic publications, returned the following results. In the span -1 for the node word ‘knowledge’, there were 49 occurrences of ‘theoretical’, equaling 0.85 per cent of the term’s 5731 occurrences in this part of the corpus. The corresponding 49 occurrences of ‘knowledge’ in the +1 span for the node word ‘theoretical’ equals 0.08 of its 65252 occurrences. The mutual information score for these collocates, which measures their mutual attraction, is 6.84 indicating that their collocation is non-random. Thus, following (Hunston 2002:71; McEnery, Xiao and Tono 2006: 56) a mutual information score of 3 or higher indicates a non-random association between collocated terms.

Our qualitative analysis of the occurrences of ‘theoretical knowledge’ in COCA, suggest that indirectness construed along Willett’s lines is a defining property of theoretical knowledge. While uses of the expression often assert a contrast between theoretical knowledge and ‘practical’ knowledge, skill, or experience, the general distinction characteristic of theoretical knowledge seems to be that it is not obtained from direct experience.

---

8 COCA and the iWeb Corpus were searched on May 4th, 2020. Each search was conducted on across the entire chronological span of samples covered by the corpus searched.

9 While corpus researchers commonly caution that a mutual information score may overestimate mutual attraction between terms where one term occurs infrequently in a corpus (McEnery, Xiao and Tono 2006: 57), this does not affect the measure here. With 5731 and 65252 occurrences of ‘theoretical’ and ‘knowledge’ respectively the risk of an upwards skewed estimate is negligible. For an explanation of how a mutual information score is calculated, see (McEnery, Xiao and Tono 2006: 57).
The following examples are representative of the occurrences of ‘theoretical knowledge’ in COCA, which were found to give evidence regarding the expression’s meaning.

[T]he very instant David settled himself nervously into the very last row of the Kamtoey Theater, he forgot his vows altogether. David sat in the red velvet seat, his heart racing and his skin prickling with a fine nervous sweat. He had a theoretical knowledge of film from his mother, who had told him that a film was like a photograph the size of a wall that moved, but the whole notion struck him as somewhat incredible. He wondered how he would describe the film to his classmates tomorrow. (Quoted from COCA after Mischa Berlinksi, 2007, In the Dark, New England Review, vol 88, 1, p. 99, our italics)

Serena said there was no movement on the up-and-down; but hell, those bandits know how to get around without smiling for the sat’-cams. Anything worth noticing would have been under trees or camo overhangs or down in the bunkers. You know how it is. " Lyle and Angel said they knew how it was. I chimed in, too; but for me it was more a theoretical knowledge, cadged from recon photos, official briefings, or picking the brains of Insiders. I’d written about it in " The Ambush. " People tell me how my stories make everything come alive for them—a funny expression to use about stories of combat—but only I knew how dead the words felt under my fingertips. (Quoted from COCA after Michael Flynn, 1998, Rules of Engagement, Analog Fiction and Fact, vol.118, 3, p. 15, our italics)
Wulfrith looked dubiously at his glass. He saw no particular reason to ask for wine as any part of his reward. As for women, he had seen a few on his rare trips accompanying Master Clootie to Stinkberry village, and while he had some vague theoretical knowledge of what women were for, he wasn’t clear on why he, personally, might want one or more of the creatures — though in recent weeks he was beginning to think he’d like to experiment a little. Still, he admitted to himself, if someone were to give him a woman, at present, he wouldn’t know what to do with her. (Quoted from COCA after Lawrence Watt Evans and Esther M. Friesner, 1993, *Split Heirs*, New York: Tor books, our italics)

Corresponding to the general pattern found in the COCA and the iWeb Corpus¹⁰ these examples all portray theoretical knowledge as characterized by indirectness. The first excerpt refers to second-hand knowledge from the testimony of David’s mother as theoretical. The second quote uses the predicate about knowledge based on a combination on second-hand testimony and observation-based inference, and the third quote uses the predicate to comical effect by applying it to what is most likely testimonial knowledge about sexual relations.

We hence propose to draw on Willett’s conception of indirectness to say what theoretical knowledge is. In all the examples discussed, inference or testimony plays an important role in how the knowledge in question is produced: knowledge based solely on aeronautical and engineering principles of how to build a plane, knowledge of the Barringer crater’s age, knowledge of earth’s core temperature is 5700 K, knowledge of

---

¹⁰ https://www.english-corpora.org/iweb/
Newton’s Laws, a virgin’s knowledge of sexual relations, and so on. It is plausible then to think that theoretical knowledge is theoretical not because of its content but in virtue of being indirect.

4. An account of ‘theoretical knowledge’

In the preceding section, we suggested that whether knowledge is theoretical depends on its being indirect in a sense similar to Willett’s category of indirectness. We now want to propose an analysis of a prevalent notion of theoretical knowledge building on this suggestion. On this proposal, the prevalent notion of theoretical knowledge is defined as follows.

Theoretical Knowledge

S’s knowledge of x, Kx, is theoretical iff, to a sufficient degree, the basis for Kx is testimony, or inference, or a combination thereof.

Intuitively put, the idea is this: a subject’s knowledge of something is theoretical iff it is sufficiently indirect.

The qualifier ‘sufficiently’ is important because it does not seem that knowledge needs to be based entirely on testimony or inference to be theoretical. If one year in spring Linda sees Canada geese in Nova Scotia and never sees Canada geese again but reads everything written about them and comes to know that they are migratory birds which come back to Nova Scotia every year, then her knowledge may be considered
theoretical although part of its basis is perceptual experience. In that case her knowledge is still sufficiently indirect to be theoretical. On the other hand, if Linda sees a hen, a goose, and cow on a farm, and infers that there are more than two animals there, her knowledge about the animals does not seem to qualify as theoretical although it is partly based on inference. In that case her knowledge is not sufficiently indirect to be theoretical.

It would be an intractable task, of course, to specify exactly where the relevant threshold is, but more importantly there are strong reasons not to expect a fixed threshold level to determine for every context when an instance of knowledge is theoretical. Ascriptions of theoretical knowledge plausibly have a context-sensitive semantic value such that what ‘theoretical knowledge’ denotes depends on context. That is, ‘theoretical’ may have a context-sensitive semantics with a constant Kaplanian character but varying content (Kaplan 1989). The standards for judging knowledge theoretical in the context of doing theoretical physics, for example, may differ from the standards that are typically operational when one contemplates whether instances of culinary knowledge is theoretical. Evidence for such contextualism comes from general considerations about gradable adjectives. By virtue of allowing combination with the degree-modifiers ‘more’ and ‘less’ when it modifies the noun ‘knowledge’ the term ‘theoretical’ exhibits a canonical mark of linguistic gradeability. And, according to the leading linguistic theory of gradable predicates (Kennedy 2007; Kennedy and McNally 2005), gradable adjectives are generally context-sensitive and semantically linked to scales which measure the degree to which phenomena exemplify the property
they predicate. Based on these linguistic considerations we want to suggest that the predicate ‘theoretical’ in ‘theoretical knowledge’ is context-sensitive.11 Accordingly, rather than trying to specify a constant threshold level of indirectness required for knowledge to be theoretical, we propose that this threshold varies and is determined by the conversational context.

Further, while philosophers are often very much concerned with individual instances of knowledge, the typical ordinary language use of ‘theoretical knowledge’ applies the predicate to a body of knowledge rather than to an individual instance. In the iWeb Corpus, there are 514 occurrences of ‘theoretical knowledge of’ which refer predominantly to bodies of knowledge categorized by the phenomena or subject area that they are about. In comparison, the only occurrence of ‘theoretical knowledge that’ is the following: ‘Pilate had a theoretical knowledge that it was contrary to the evidence before him to condemn Christ to death.’ While this does not imply that individual instances of knowledge are prohibited from being labelled ‘theoretical’, the infrequency of such uses of the term suggests that they may require special pragmatic circumstances not to come across as odd.

11 Whether ‘know’ by itself is context-sensitive, as proposed by Cohen (1999), DeRose (1995, 2006), and Lewis (1996), is a further question. For present purposes, however, we shall leave this issue aside. The same goes for the additional questions raised by discussions concerning the gradeability of knowledge-how expression Stanley (2011).
Our proposal, then, is, that in ordinary language, theoretical knowledge is knowledge obtained in such a way that its basis exhibits a degree of indirectness above a contextually determined threshold, while pragmatic restrictions on its use explain why the predicate ‘theoretical’ is most frequently applied to bodies of knowledge as opposed to single propositions. In section 5.2., we spell out in more detail how this pragmatic explanation works.

5. Challenges and replies

Is theoretical knowledge theoretical in virtue of its indirectness? In this section, we discuss objections to this proposal.

5.1 The ambiguity of ‘theoretical knowledge’

One objection likely to arise concerning our account is that usage of the expression ‘theoretical knowledge’ is less uniform than we have suggested so far. Meanwhile, we do not deny that there may be alternative uses of ‘theoretical knowledge’, although they deviate from more conventional discourse practice. Non-literal uses, for example, would not be prohibited by our analysis. What we want to insist, however, is that our analysis captures a prevalent meaning of the expression which accounts for a great deal of the systematicity in its use. That an expression may be used in non-standard ways does not defeat the purpose of analyzing its typical meaning.

Furthermore, the systematicity in how ‘theoretical knowledge’ is used together with our intuitions regarding its application strongly suggest that the predicate has a
stable ordinary language meaning. The simplest explanation of the pattern that we have found is that it reflects facts about the predicate’s usual meaning in ordinary language.

5.2. Infelicitous uses

While it seems fine to say that someone’s knowledge that earth’s core temperature is 5700 K is theoretical knowledge, there are other individual instances of knowledge which it seems odd to call theoretical, although they fit our definition. For example, if Annie came to know that the New England Patriots won Superbowl LIII by reading it in the paper, then his knowledge is theoretical by our definition. Yet, saying that Annie’s knowledge that the New England Patriots won the Superbowl is theoretical, might come across as slightly odd.

Our explanation is that the expression’s markedness ties its application to contexts where the distinction between direct and indirect knowledge is salient. Markedness, as we use the term here, pertains to a relation between two expressions where one is the hyponym of the other. In such a pair, one term may be marked in virtue of having greater phonetic length. Relative to ‘knowledge’ the expression ‘theoretical knowledge’ is marked in this way. Whereas unmarked expressions tend to become associated with unmarked, stereotypical circumstances, their marked

12 This understanding of markedness aligns with how (Horn 1984) understands the term. For distinctions between the sense of markedness used here and further theoretical senses of the term, see (Haspelmath 2006).
counterparts generally tend to become associated with those marked circumstances where they tend to be used (Horn 1984: 22). With respect to ‘theoretical knowledge’ the marked circumstances are those situations where the distinction between directly and indirectly acquired knowledge is salient or important. This explains why applications of the predicate to bodies of knowledge seem more natural than uses applying the expression to an individual instance of knowledge. When we have occasion to speak of a body of knowledge, the distinction between directly and indirectly acquired knowledge tends to be salient because the holistic aspects of a body of knowledge, such as the integration of its parts and their mode of presentation, are highly significant to the cognitive abilities that a body of knowledge affords a subject. When we speak about individual instances of knowledge, on the other hand, we are usually less interested in cognitive ability and more interested in the information a subject has. This asymmetry, we think, explains why using the expression ‘theoretical knowledge’ about individual instances of knowledge may require certain circumstances to be in place in order not to be awkward.

Nonetheless, as the above discussion shows there are situations where calling an individual instance of knowledge ‘theoretical’ seems perfectly fine and natural. Saying that knowledge of the Barringer crater’s age or earth’s core temperature is theoretical does not sound the least bit odd. Such utterances are felicitous because speaking of instances of knowledge where the known proposition could only be known indirectly renders salient the distinction between knowing directly and knowing indirectly. In such cases, applying the predicate theoretical functions as a characterization of our
epistemic access to the proposition known. In contrast, when a proposition may be known both directly and indirectly, referring to knowledge of it as theoretical knowledge has no such function to serve. Knowledge of a Superbowl result is a case in point. So, unless further pragmatic conditions are met calling testimonial knowledge of a Superbowl result theoretical knowledge would seem misplaced.

When the conversational context makes the difference between knowing directly or indirectly salient, however, even knowledge of a Superbowl result may be called theoretical without infelicity. In the following utterance, for example, the ascription of theoretical knowledge is felicitous: ‘Annie’s family all went to the Superbowl and saw the game. Annie’s knowledge of the result was only theoretical. She read about it in the newspaper.’ The infelicity of calling knowledge of a Superbowl result theoretical hence seems to disappear when certain pragmatic preconditions are in place. That uses of ‘theoretical knowledge’ aligned with our proposed definition are not automatically felicitous, however, is not an indictment of the definition, since truthfulness does not ensure that one meets the pragmatic conditions on appropriate assertion.

5.3. Ubiquity?
Another putative objection to the proposed definition is that it threatens to render all our knowledge theoretical. One might argue that while this fact is hidden from our cognitive phenomenology, what is responsible for our beliefs are multitudes of subconscious inferences. But if that is right, then all our knowledge appears to be theoretical.
Our response is that while there is no constraint on the kind of inference which may produce theoretical knowledge, there is a requirement that the inferences should not be subpersonal. Since we are concerned with an ordinary language notion the relevant kind of inference is restricted to inferences which may be identified by ordinary speakers to guide their everyday discourse. This means that the relevant kind of inference needs to be accessible to consciousness, at least in some form. Subconscious inference is not what we are looking for.

This of course is not to insist that consciousness generally plays an extensive role in our cognitive processes. While it has become more common to assert the existence of cognitive phenomenology in recent years (Klausen 2008; 2013a; Bayne and Montague 2011), it is still quite controversial to claim that cognitive processes have a distinctive phenomenology. In addition, it seems plausible to assume that typical processes of e.g. scientific reasoning are more or less automatic and do not necessarily involve much conscious awareness. The consciousness requirement in question, however, is fairly minimal, and does not commit us to any controversial view about consciousness or reasoning. The point of the requirement is not to posit some specific conception of conscious thinking, but only to invoke the common distinction between conscious (and personal) and unconscious (and subpersonal) processes. Knowledge based on inferences in the sense relevant must have been produced in a way that involves conscious processes of some sort, on the personal, as opposed to the purely information processing, level (see e.g. Davies 2000). But the inferences in question need not be phenomenally conscious. Something like Ned Block’s notion of access
consciousness – a mental state, the contents of which are readily available for use in reasoning and poised for rational control of action, and thus able to reach the “central executive system” (Block 1995) – will suffice. A similar functional notion is standardly employed in psychology. Thus, in a recent standard work, conscious inferences are defined as those that “have access to working memory to hold the results of intermediate computations” (Johnson-Laird 2008, 71; see also ibid. 57). Such inferences are far from fully transparent to the subject and not necessarily the object of any comprehensive thematic awareness, but retain a conscious aspect in the form of an awareness restricted to the outcomes of lower-level processes that are themselves unconscious. We do not normally build a mental representation of the premises in our reasoning or know how we used it to formulate a conclusion; but we are aware of our attempt to reason, the significance of the premises, and the conclusion that seems to follow (Johnson-Laird 2008, 61). In the proposed definition of theoretical knowledge, the intended denotation of the term ‘inference’ is conscious inference so construed. Since only limited parts of our knowledge is based on such inferences this answers the concern that the definition renders all of our knowledge theoretical.

In addition, it need not be a problem for our proposal, if it should turn out that theoretical knowledge is in fact quite widespread. It is a potential virtue of our analysis that it may draw attention to the prevalence and practical importance of theoretical

---

13 We are not, on the other hand, committed to the view that there is a significant form of non-phenomenal consciousness. We simply remain agnostic on the issue.
knowledge and help discard myths about its exclusivity. Meanwhile, our definition is restrictive in not taking several kinds of theory-relatedness or theory-involvement to be relevant. We have already emphasized that knowledge of theories or other special “theoretical objects” is not required for theoretical knowledge. Moreover, the fact that large parts of our observational knowledge may be theory-laden does not force us to count it as theoretical. It is a fascinating fact that theoretical knowledge can become internalized in a way that makes the world appear to us accordingly – e.g. that theoretical concepts come to be integrated with immediate perceptual experience. But if the knowledge obtained from such processes is not based on conscious inference, it is not theoretical, on the ordinary language conception of the notion.

5.4. Conflicts with traditional views

A further expectable objection to our proposal is that it ignores the philosophical tradition. Theoretical knowledge has been a central topic for philosophical reflection from Plato onwards – and the traditional accounts do not match our analysis. The classical view, epitomized in different ways by Plato and Aristotle, depicted theoretical knowledge as detached, contemplative, immediate and vision-like, and as related to a special class of objects (typically the basic, unchanging constituents of the world). While the exact relationship between theoretical knowledge and practice in ancient philosophy is complex and contested, and Plato and Aristotle arguably held somewhat different views about it, Aristotle’s firm insistence that theoretical knowledge is useless
and should be pursued merely for its own sake\textsuperscript{14} is usually seen as typical (see e.g. Cooper 2012). Our analysis, by contrast, depicts theoretical knowledge as being indirect, indifferent to subject matter, often (albeit not always) practically useful, and as something that may be pursued for the sake of everyday or practical goals. It is thus at odds with the tradition.

The short reply to this objection is that we are concerned with actual usage – and with an \textit{ordinary} language notion of theoretical knowledge – not with etymology, traditional understanding or the special notions framed by philosophers. And our evidence indicates that the contemporary, ordinary notion is different from traditional philosophical notions. Surely no one today would think that a body of knowledge is barred from being theoretical by not being the product of a pure rational insight. And though there may be a widespread assumption that “theory” and “practice” are somehow different, practical uselessness or disengagement does not seem to be built into the ordinary language conception of theoretical knowledge. It is natural to understand e.g. the Manhattan Project as building on paradigmatically theoretical knowledge, even though it was defined by an explicitly practical goal (viz. producing the atomic bomb in order to win the war). So, its conflict with the philosophical tradition does not seem to raise a particular problem for our analysis.

\textsuperscript{14} Some of the most emphatic statements of this view can be found in the early Protrepticus (Chroust 1964, e.g. B44). See also Nightingale (2004).
5.5. What about philosophy of science?

An objection similar to the preceding concern is that our analysis does not sufficiently reflect the insights of sophisticated views in the philosophy of science concerning the nature of scientific theories. The questions discussed in debates between proponents of the syntactic, semantic, and pragmatic views of theories (Mormann 2007), for example, are hardly even touched upon by our proposal here. But this is perfectly natural considering the level of conceptual refinement required to appreciate the precise details which set apart the competing views in this domain. While some philosophical distinctions and notions may make their way into ordinary language nothing of this kind appears to have happened here. Nor do the standard philosophical views of what theories are rely on anything like a common sense understanding of the concept. Rather than being pre-occupied with how the folk conceive of theories philosophers of science have been concerned with the theories themselves, their constitution, and how they relate to reality. So, although it might be compatible with philosophical accounts of theories, there is little reason to think that an analysis of what ‘theoretical knowledge’ means in ordinary language has to respect philosophical accounts of what theories are.

5.6. Is the distinction too superficial?

At this point those who expected the proposed analysis to show that theoretical knowledge is substantially different from other kinds of knowledge may be disappointed. They might be inclined to object that the term has to pick out something
akin to a natural kind for its distinction to have any real value. But this is much too narrow a view of the purpose of philosophical analysis. Rather than seeking to carve the world at its joints, the aim of analysis may be to account for the systematicity in the usage of terms that we navigate by in ordinary life and everyday discourse. The meaning of such terms may well be shaped by practical aims and social concerns which do not align neatly with the structure of fundamental reality. So, there can be no guarantee that the concepts underlying their systematic use are related to substantial ontological distinctions.

6. Implications and perspectives

We have repeatedly emphasized our modest ambitions. This does not mean that we consider our analysis inconsequential. But we assume that its primary significance lies not in revealing any deep metaphysical truth about the nature of theoretical knowledge, nor in challenging dominant positions in contemporary epistemology, but in its practical implications. As already suggested, we consider it possible that adopting our definition will reveal that theoretical knowledge plays a more ubiquitous role in human life than has often been assumed. The precise extent to which this is the case and what specific roles it plays remains to be studied. But our proposed definition should make for more clearly focused and illuminating studies than those which have uncritically assumed theoretical knowledge to be closely correlated with specific social contexts and practices, like science, higher education or bookish or formal school learning, as
opposed to the workshop or informal learning contexts (see e.t. Bromme & Brophy 1986; Vince & Tiberghien 2014; Burgin 2016).

Our analysis may also serve to break the dichotomy between “theoretical” and “practical knowledge” which, continues to influence much thinking and policy with regard to education, research and professional practice. Moreover, by requiring that theoretical knowledge must be indirect, the analysis, undemanding though it may seem, still identifies a distinctive form of knowledge which cannot be subsumed under an indiscriminate category of knowledge practices, competences or the like. It allows that theoretical knowledge may be practical but does not blur the conceptual boundaries between the two notions.

Even though our analysis does not bear directly on theories about other forms of knowledge, it does highlight the general fact that the same things can be known in different ways. This might seem like a platitude. If one considers e.g. knowledge based on testimony, perception and reasoning distinctive forms of knowledge, then it is indeed trivial that they can have the same object. But as we noted earlier, it has been common to take at least theoretical knowledge to have a distinctive kind of object. Our analysis does away with this assumption, and in showing that theoretical knowledge is defined by its source or cognitive etiology, it allows that the knowledge some people have of a phenomenon is theoretical while the knowledge other people have of the same phenomenon is not theoretical.

Further, while few would deny its great importance at a certain fundamental level, many tend to see theoretical knowledge as elitist and to contrast it with other
allegedly more useful and convenient forms of knowledge. Our analysis supports a more favorable picture of its role in our everyday dealings with the world.

Objects of theoretical knowledge can be made objects of non-theoretical knowledge since the trained expert may have to depend less on inferences than you (in this regard, the “automatism” or “just do it-“ view of expertise (Dreyfus 2005; pace Montero 2016) seems to be correct). A trained expert may be able to know through direct perception something that you could only know by inference, for example that a bird belongs to a certain species. The expert, however, can do so only because she and others have previously engaged in inferential activities, probably of a more complex sort than any which a layperson will ever apply to the field in question. Professional expert knowledge need not, and may often not, be theoretical knowledge; but it may be greatly advanced by it.

Theoretical knowledge can also be packed into concepts, signs and other kinds of artifacts, like measuring instruments, enabling us to register (i.e. know non-theoretically) “theoretical” properties like temperature, biological species, velocity or even – in the case of diagrams – conceptual opposition directly, without having to draw very much on our inferential capacities. Obtaining theoretical knowledge is thus not necessarily a burdensome task, nor does its production and proliferation generally make it harder for us to cope cognitively with the world we live in. It often serves to relieve us of intellectual burdens and to make features of the world cognitively accessible to people in general that would otherwise have remained beyond the ken of
all but a specialized few. We leave it to future studies to work out, discuss and eventually examine empirically, the practical implications that this might have.

7. Conclusion

While the term ‘theoretical knowledge’ is commonly used, its meaning tends to be somewhat unclear. This situation can be remedied by a careful analysis of the ordinary language meaning of the term. Such an analysis shows that the concept of theoretical knowledge is distinct from concepts denoting other familiar types of knowledge, e.g., knowledge-how, knowledge-that, knowledge of general theories, and higher-order knowledge. Instead, an instance of knowledge is theoretical if and only if it results from a knowledge-formation process involving sufficiently complex inferences above the subpersonal level. This in turn has significant consequences regarding both the value and cognitive role of theoretical knowledge. It implies that theoretical knowledge may be more widespread than is usually assumed, and that its value with respect to practical concerns may be much higher than people normally expect, and it allows that knowledge which experts acquire by virtue of their proficiency with theoretical concepts need not be theoretical.\textsuperscript{15}

\textsuperscript{15} Earlier versions of this paper were presented at the 2016 annual meeting of the Danish Philosophical Association at the University of Copenhagen and at workshops at the University of Southern Denmark in 2015 and 2018. We are grateful for the helpful comments we received.
References


Bjerring, J., & Gundersen, L. (2020). “Higher-order knowledge and

from the participants at these events. Thanks are also due to a number of anonymous reviewers for suggestions that helped improved the paper.
doi:10.1017/can.2019.36


Typology of Gradable Predicates.” Language 81: 345-381


