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9. Contrastive Knowledge

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I know a hawk from a handsaw

(Hamlet)

Does G. E. Moore know that he has hands? *Yes*, says the dogmatist: Moore's hands are right before his eyes. *No*, says the skeptic: for all Moore knows he could be a brain-in-a-vat. *Yes* and *no*, says the contrastivist: *yes*, Moore knows that he has hands rather than stumps; but *no*, Moore does not know that he has hands rather than vat-images of hands.

The dogmatist and the skeptic suppose that knowledge is a *binary, categorical* relation: *s* knows that *p*. The contrastivist says that knowledge is a *ternary, contrastive* relation: *s* knows that *p* rather than *q*.

I propose to develop the contrastive account of knowledge. Such an account requires five stages of development. One needs to report the *use* of knowledge ascriptions (§1), limn the *structure* of the knowledge relation (§2), show how the ascriptions *express* the relation (§3), analyze or otherwise *illuminate* the relation (§4), and resolve outstanding *paradoxes* (§5). On route, I will compare the contrastive account to *binary* accounts. Once home, I will compare contrastivism to *contextualism* (§6).

The view that emerges links knowledge to *inquiry* and to *discrimination*. There is no such thing as inquiring into *p*, unless one specifies: *as opposed to what?* There is no such thing as discriminating that *p*, unless one adds: *from what?* And likewise I will argue that there is no such thing as knowing that *p*, unless one clarifies: *rather than what?*

1. USE

The first stage of an account of knowledge is to report the *use* of knowledge ascriptions. What are knowledge ascriptions *for*? I propose:

- (1) Knowledge ascriptions certify that the subject is able to answer the question.

I will now clarify, argue for, and address objections to (1).

Clarifications

“Knowledge ascriptions” in (1) refers to tokens containing “knows” in the *informational sense*. In the terms of Gilbert Ryle (1949), (1) covers “knows that”, not “knows how”.¹ More accurately, (1) covers “knows” in the sense of *savoir* not *connaître* (French), and in the sense of *wissen* not *kennen* (German).

“Certify” describes the act performed by the ascriber. In the terms of J. L. Austin (1962), such certification constitutes the *illocutionary force* of the utterance. In the terms of Robert Brandom (1994), such certification consists in the conferral of an *entitlement* (“You may answer the question”), with subsequent *commitment* to endorsing the answer (“Whatever you say”).

“Able to answer” denotes an *epistemic capacity*. It is epistemic in that one may guess rightly without having the requisite ability (just as a blind throw may find the target). It is a capacity insofar as one need not actually speak or otherwise exercise the ability in order to possess it.

“The question” denotes the *options* relevant in the context of ascription. The question need not be explicitly posed, but it is always recoverable from context, since a context may be modeled as “the set of possible worlds recognized by the speakers to be the ‘live options’ relevant to the conversation” (Robert Stalnaker 1999a: 84–5).

By way of illustration, imagine that Holmes and Watson are investigating who stole the sapphire. Here the live options might be: {Black stole the sapphire, Scarlet stole the sapphire, Mustard stole the sapphire}. Now imagine that Holmes finds Black’s fingerprints on the lock. So Watson reports, “Holmes knows who stole the sapphire.” What Watson is *doing* with this speech act, according to (1), is giving his

¹ Though Ryle’s “knows that”/“knows how” distinction does not mark the informational/acquaintance distinction accurately. First, Ryle’s distinction misses other forms of knowledge ascription, such as “knows who”, “knows what”, and “knows where”, which are informational. Second, Ryle’s distinction obscures the fact that “knows how” is informational, as evident in “I know how turtles reproduce”, and Monty Python’s explanation of how to play the flute: “Well, you blow in one end and move your fingers up and down the outside.” See Jason Stanley and Timothy Williamson (2001) for further discussion.

stamp of approval to Holmes, for selecting who stole the sapphire. Watson is identifying someone able to answer the question. He is fingering an answerer.

Arguments

First, (1) *fits our practice*. In the case of Holmes and Watson, one expects Watson to report that Holmes knows who stole the sapphire, only when Holmes is able to answer the question. Or consider our practice of testing students. The professor attributes knowledge to the students on the basis of which questions they are able to answer (“Let’s see what you know”). Or consider our practice of fielding questions. One may say “I know” or “Ask Pam, she knows”. One fingers an answerer.

Second, (1) serves our goal of *scoring inquiry*. Our ultimate epistemic goal is truth, and our method for seeking truth is inquiry.² So it is apt for knowledge ascriptions to be directed to questions, to gauge the progress of inquiry. In this vein, Christopher Hookway remarks: “The central focus of epistemic evaluation is . . . the activity of inquiry . . . When we conduct an inquiry, . . . we attempt to formulate questions and to answer them correctly” (1996: 7).

Third, (1) *explains the other proposals in the literature*. For instance, according to Ludwig Wittgenstein, knowledge ascriptions serve to indicate when “one is ready to give compelling grounds” (1969: §243; also §§50, 483–5). While according to Edward Craig, the role of the knowledge ascription is “to flag approved sources of information” (1990: 11).

Wittgenstein’s and Craig’s proposals must be *relativized to questions*. If one is inquiring into *who* stole the sapphire, then the evidence of Black’s fingerprints on the lock might constitute compelling grounds for “Black stole the sapphire”, and the detective might count as an approved source of that information. But if one is inquiring into *what* Black stole, then the evidence of his fingerprints might not constitute compelling grounds for “Black stole the sapphire”, and the detective might not count as an approved source. The fingerprints may help identify who did the stealing, but they may not help establish what was stolen. In an

² The *Peircean* (following C. S. Peirce 1877) may rephrase the argument of the main text as: “Our ultimate epistemic interest is the fixation of belief. Our method for fixing belief is inquiry.” The same directedness to answers would be called for.

inquiry into *what* Black stole, the owner's testimony that there was a sapphire in the safe might constitute compelling grounds for "Black stole the sapphire", and the owner might count as an approved source of that information. The owner's testimony may help identify what was stolen, but it may not help identify who stole it. While if one is inquiring into *how* Black obtained the sapphire (or *why* he stole it, etc.) then different evidential factors come to the fore. In short, what counts as compelling grounds, and who counts as an approved source, depends on which question is at issue.

Now (1) clarifies Wittgenstein's and Craig's proposals, by imposing the needed relativization to a question. And (1) *explains what is right* about these proposals, suitably relativized. What counts as compelling grounds relative to a question is just what counts as a basis for an answer. Who counts as an approved source relative to a question is just who is able to provide an answer.³

Objections

First, one might object that (1) is *overly intellectual* in its focus on answers. We routinely ascribe knowledge to *animals* (and infants, etc.), though they cannot answer questions or participate in inquiry. Thus, the objection concludes, (1) misconstrues our practice.

In reply, animals may be thought to have the *ability* to answer, which is all that (1) requires. That is, animals may have the *cognitive basis* by which the answer is reached, though they lack the means to express it. Thus Fido might know who feeds him, though he cannot express the answer save through his affections.⁴

Second, one might object that (1) is *socially disruptive* in its relativity to questions. We *traffic* in knowledge ascriptions, without tracking

³ A further example: John Greco addresses the "what are we doing?" question by identifying: "an important illocutionary force of knowledge attributions: namely, that when we credit knowledge to someone we mean to give the person credit for getting things right" (2002: 111). What suffices for 'getting things right' is just what suffices for selecting the right answer.

⁴ Our intuitions to ascribe knowledge to animals seem to sway with our inclinations to ascribe them the concepts involved. For instance, our inclination to say, "Fido knows where he buried the bone", seems to sway with our inclination to say that Fido possesses the concepts *bury* and *bone*. Thus, to the extent that we are willing to ascribe knowledge to animals, we are committed to their possessing the concepts that would form the cognitive basis for answering.

questions. For instance, if Watson tells Lestrade, “Holmes knows that Black stole the sapphire”, then Lestrade may repeat Watson’s words to Scotland Yard, in a different context with a different question on the table. Thus, the objection concludes, (1) undermines our practice.

In reply, trafficking in knowledge ascription must be regarded as a *risky act*, which is all that (1) entails. The careless trafficker may wind up doing something inappropriate. Imagine that, while Holmes and Watson were pursuing the question of who stole the sapphire, Lestrade and Scotland Yard were stuck on the question of whether what was stolen was a sapphire or a paste imitation. If Lestrade now repeats Watson’s words to Scotland Yard, then Lestrade would have acted inappropriately, by representing Holmes *as if* he had tested the sapphire.

There is nothing special about knowledge ascriptions here. We traffic in *assertions* generally, while recognizing that repeating any assertion out of context is risky. Misunderstandings may arise when the originator and the repeater are in *conversational disequilibrium*. That is, if the originator and repeater have different presuppositions, then their assertions may be identical in word but not in deed. We redress misunderstandings if they count.

The ultimate test of (1), of course, is whether it coheres with a successful epistemology. I will argue (§2) that (1) calls for a contrastive view of knowledge. Whether this counts as a further argument for (1), or an objection to it, is left to the reader’s judgment.

2. STRUCTURE

The second stage of an account of knowledge is to limn the *structure* of the knowledge relation. What is its *form*? I propose:

- (2) The knowledge relation has the ternary, contrastive structure:
 $Kspq$.

Here K is the knowledge relation, s is the subject, p is the proposition selected, and q is the proposition rejected.⁵ $Kspq$ may thus be rendered as: s knows that p rather than q .

⁵ The proposition q may be glossed as the disjunction of the ‘relevant alternatives’. As such, two constraints on q are needed: (i) q must be non-empty, and (ii) p and all the disjuncts of q must be pairwise exclusive.

Objection

One might object that (2) is *implausibly radical* in contravening the widespread assumption that knowledge has the binary form: Ksp . Have so many epistemologists been *wrong*?⁶ Thus, the objection concludes, (2) deserves to be met with a blank stare, or at least with steeply arched brows.

In reply, it is unclear *why* the assumption of binarity is so widespread. For what it is worth, I have found no explicit arguments for binarity in the literature. Perhaps binarity is assumed because it reflects the *surface form* of knowledge ascriptions. After all, some knowledge ascriptions look binary: “I know that I parked the car on Elm.” But surface form is *equivocal*. There are interrogative ascriptions that do not look binary: “I know where I parked the car.” And there are declarative ascriptions that look explicitly contrastive: “I know that I parked the car on Elm rather than Main”. In any case, surface form can mislead.

Perhaps binarity is assumed because it reflects the *intuitive adicity* of knowledge. But adicity is not so easily intuited. Our intuitive judgments merely provide evidence as to the acceptability of utterances (Noam Chomsky 1977). Anything more is *theory*.

Perhaps binarity is assumed because it is required to solve *theoretical problems*. But which? What have accounts of Ksp produced but problems? *What if contrastivity works better?*

Arguments

First, (2) *fits* (1) by logging the question. That is, the contrastive structure $Kspq$ records the information about which question was asked, and so is the right form for the job of fingering who is able to answer.

To begin with, the ability to answer is *question-relative*. Some questions are harder to answer than others. The ability to answer p to the question on the table does *not* entail the ability to answer p to all other

⁶ Some exceptions: Fred Dretske flirts with the contrastive view: “To know that x is A is to know that x is A within a framework of relevant alternatives, B , C , and D . This set of contrasts . . . serve to define what it is that is known” (1970: 1022). Bredo Johnsen describes the intuitive content of knowledge ascriptions as contrastive: “what is known is always a contrastive proposition to the effect that P -rather-than-any-other-member-of-category- C is true” (2001: 401), though he makes this point in service of *skepticism*. And Adam Morton and Anti Karjalainen (2003), as well as Walter Sinnott-Armstrong (2004), uphold contrastivism, though as a *revisionary* proposal.

questions in the field. Anyone who has devised an exam will recognize this—add a trick option, and the question will be harder. Compare:

- (Q1) Is there a *goldfinch* in the garden, or a *raven*?
 (Q2) Is there a *goldfinch* in the garden, or a *canary*?
 (Q3) Is there a goldfinch in the *garden*, or at the *neighbor's*?

All can be answered by p : there is a goldfinch in the garden. But the ability to answer Q1 does not entail the ability to answer Q2 or Q3. Q1 is an easy question. While to answer Q2 one might need an ornithologist, and to answer Q3 one might need the homeowner. So fingering answerers requires logging the question, because the abilities to answer Q1–Q3 are different abilities.

Logging the question requires recording the alternatives. All well-formed questions are multiple-choice questions. As James Higginbotham writes, “An *abstract question* [is] a nonempty *partition* Π of the possible states of nature into *cells*” (1993: 196). These cells are the semantic image of a (possibly infinite) *multiple-choice slate*.⁷

The contrastive structure $Kspq$ logs the question, by recording the alternatives. Here $\{p, q\}$ conforms to the multiple-choice slate— p corresponds to the selected answer and q to the disjunction of the rejected alternatives. Thus one who knows that p : there is a goldfinch in the garden, rather than $q1$: there is a raven in the garden, is able to answer Q1. While one who knows that p rather than $q2$: there is a canary in the garden, can answer Q2. And one who knows that p rather than $q3$: there is a goldfinch at the neighbor's, can answer Q3. Thus differences at q correspond to different abilities to answer different questions. Contrast-relative knowledge is question-relative knowledge, and so befits our question-relative usage.

The second argument for (2) is that contrastivity *models inquiry* by measuring progress. Inquiry is the engine of knowledge (§1), and it is driven by a question-and-answer process.⁸ Drawing on Jaakko Hintikka (1975a, 1981), inquiry may be modeled as a cooperative game played

⁷ The association of questions with multiple-choice slates is known as *Hamblin's dictum* (C. I. Hamblin 1958), and is implemented in Nuel Belnap and Thomas Steel's (1976) erotetic logic, and maintained in the leading linguistic treatments of interrogatives, such as that by Jeroen Groenendijk and Martijn Stokhof (1997).

⁸ This is the *Deweyian view* of inquiry: “Inquiry and questioning, up to a certain point, are synonymous terms.” (1938: 105). See also Isaac Levi (1984), in which expansion of a belief corpus is directed by an ultimate partition over a set of possible answers to a

between Questioner and Answerer, represented by a sequence of question-and-answer pairs $\langle\langle Q_1, A_1 \rangle, \langle Q_2, A_2 \rangle, \dots, \langle Q_n, A_n \rangle\rangle$. Progress in inquiry is movement through the sequence, so answers make for progress. Suppose the chemist is identifying a sample of potassium (K), via the following line of inquiry: $\langle\langle Q1: \text{What element is the sample?}, A1: \text{Potassium}\rangle, \langle Q2: \text{Is the sample ionized?}, A2: \text{No}\rangle\rangle$. To answer Q1, the chemist might run experiments (putting the question to nature) that test for atomic mass. To answer Q2, the chemist might run experiments that test for charge or reactivity (K and K^+ have nearly the same atomic mass, but while K is neutral and reactive, K^+ is positive and inert).⁹

The contrastive structure measures progress, because q measures which stage of inquiry has been concluded. The chemist progresses from ignorance through knowledge that the sample is K rather than some other element: $Kspq_1$; and then knowledge that the sample is K rather than K^+ : $Kspq_2$. The epistemic state that corresponds to no progress is: $\sim Kspq_1 \ \& \ \sim Kspq_2$; partial progress is: $Kspq_1 \ \& \ \sim Kspq_2$; and complete progress is: $Kspq_1 \ \& \ Kspq_2$. In general, progress can be pictured in terms of finding actuality in *widening regions* of logical space. To find w_α from amongst worlds w_1-w_m is to know that $\{w_\alpha\}$ rather than $\{w_1, w_2, \dots, w_m\}$. To make further progress is to find w_α from amongst worlds $w_1-w_n (n > m)$, which is to know that $\{w_\alpha\}$ rather than $\{w_1, w_2, \dots, w_m, \dots, w_n\}$.¹⁰ Thus differences at q correspond to different stages of inquiry. Contrast-relative knowledge is progress-relative knowledge, and so befits the structure of inquiry.

question. For an application to scientific progress, see Scott Kleiner (1988). As Matti Sintonen comments in this regard: "If there is a philosophy of a working scientist it certainly is the idea that inquiry is a search for questions and answers." (1997: 234)

⁹ Note that the entire inquiry is framed within certain presuppositions. At no point, for instance, does the chemist test the option: *the sample is but a dream*. If one looks at dichotomous keys, for instance, one never finds an entry for *pinch yourself*.

¹⁰ On this view of progress, progress essentially consists in *replacing presupposition with evidence*. When the subject is able to answer Q1 and hence able to find w_α from amongst worlds w_1-w_m , the remainder of logical space is simply presupposed away. When the subject progresses through Q2 and is able to find w_α from amongst worlds $w_1-w_n (n > m)$, less is presupposed away and more is ruled out by evidence. The (ideal) limit of inquiry would consist in finding w_α from amongst all of logical space, which would be a full grasp of truth by evidence. Thus movement towards the limit consists in finding w_α from amongst widening spheres of logical space, which would be a greater grasp of truth by evidence, and a lesser need for presupposition. Of course, at each stage short of the limit, assumptions remain. But that does *not* mean that there had been no progress—not all assumptions are equal.

The third argument for (2) is that contrastivity *fits perception*, which is basically a discriminatory ability. Thus the psychophysicist S. S. Stevens remarks: "When we attempt to reduce complex operations to simpler and simpler ones, we find in the end that discrimination or differential response is the fundamental operation. Discrimination is prerequisite even to the operation of denoting or 'pointing to,'" (quoted by C. S. Watson 1973: 278). The discriminatory powers of perception are codified in Weber's Law, which states that just noticeable differences are well-described by: $\Delta S/S = K$. In words: the size of a just noticeable difference in stimulation S is a constant proportion K of the existing stimulus. For instance, in normal humans, just noticeable differences in tonal frequency are well-described by $K = .0025$ (at least for the central portion of the human range). Thus if the existing stimulus S is 1000 Hz, then differences of ± 2.5 Hz will be just noticeable.

The contrastive structure fits perceptual discrimination, by logging both the reported stimulus: p , and what the stimulus was discriminated from: q . Suppose that a normal human subject Norm hears a tone of $S1 = 1000$ Hz. Norm can discriminate $S1$ from a tone of $S2 = 1005$ Hz, but cannot discriminate $S1$ from $S3 = 1001$ Hz. Then he knows that p : the tone is 1000 Hz, rather than $q1$: the tone is 1005 Hz. But he does not know that p : the tone is 1000 Hz, rather than $q2$: the tone is 1001 Hz. In general, for a stimulus S and a perceiver whose just noticeable difference for such stimuli is $K = x$, this perceiver can know that he is perceiving S rather than any difference in S greater than or equal to KS , and cannot know that he is perceiving S rather than any lesser difference. Thus differences at q correspond to what the percept is being discriminated from. Contrast-relative knowledge is discrimination-relative knowledge, and so befits the nature of perception.

In the remaining sections I will add three more arguments for (2), namely that (2) is the best fit for decoding knowledge ascriptions (§3), illuminating the knowledge relation (§4), and resolving the closure paradox (§5).

Comparison

The ultimate test of contrastivity is how it compares to binarity.¹¹ How does $Kspq$ compare to Ksp ?

¹¹ Why not let knowledge come in *both* binary and contrastive forms? Because (i) this would require an ambiguity in "knows" that the evidence does not support, (ii) I will argue

I suspect that K_{sp} induces systematic problems for lack of a contrast slot. Nothing in the K_{sp} relation logs the queried alternatives, the stage of inquiry, or the discriminatory task. So there is no natural fit to fingering answerers, modeling inquiry, and measuring perception. Consider the subject who enjoys *merely partial success*. For instance, consider the subject who can answer, “Goldfinch or raven?” but not, “Goldfinch or canary?”¹² Given binarity, he must either know that the bird is a goldfinch, or not (I leave it to the dogmatist and skeptic to dispute which). But if the subject knows, then his inability to answer, “Goldfinch or canary?” seems inexplicable. With a minimum of logical acumen, he ought to be able to apply his alleged knowledge to answer this further question. So partial success would explode into total victory. Whereas if the subject does not know that the bird is a goldfinch, then his ability to answer, “Goldfinch or raven?” seems inexplicable. He ought not to be able to answer where he is allegedly ignorant. So partial success would collapse into total defeat. K_{sp} seems too impoverished to provide a stable account of partial success in answering, inquiry, and discrimination.¹³

My aim is to develop a contrastive view, not to refute the binary view in all its forms. *That* would be a Herculean task. Perhaps the binary theorist can find some devious strategy to model partial success. But I think it fair to conclude, at the least, that (2) provides *the more natural fit* to the contrast-relative tasks of answering, inquiry, and discrimination.

3. ENCODING

The third stage of an account of knowledge is to show how knowledge ascriptions *express* the knowledge relation. What is the *code*? I propose:

- (3) Knowledge ascriptions encode K_{spq} , by encoding relations to questions.

(§3) that the contrastive form fits all of our knowledge ascriptions, and (iii) I will suggest (§5) that the binary form is paradoxical.

¹² Or, to borrow a case from Dretske (1970), consider the zoo-goer who can answer, “Zebra or mule?”, but not, “Zebra or cleverly painted mule?”

¹³ Perhaps the *contextualist* has a way to model partial success, in terms of the *plurality* of binary K_x relations they postulate as the range of semantic values for “knows”. Here there is the added structure of a subscript to K . For further discussion of contextualism, see §6.

I will now defend (3) by exhibiting three main surface forms of knowledge ascription, and showing the mechanisms for question-relativity encoded in each.

Surfaces

There are three main types of knowledge ascription (in the informational sense of “knows”: §1), which may be distinguished syntactically: (i) interrogative ascriptions, which employ a *wh*-headed complement phrase, such as: “I know what time it is”, (ii) noun ascriptions, which employ a noun (determiner) phrase, such as: “I know the time”,¹⁴ and (iii) declarative ascriptions, which employ a *that*-headed complement phrase, such as: “I know that it is midnight”. An account of encoding is responsible for every type of ascription.

Epistemologists, however, have focused nearly exclusively on declarative ascriptions.¹⁵ Interrogative and noun ascriptions are typically ignored, or else hastily fitted to the Procrustean bed of *Ksp*. Why the focus on declarative ascriptions? These seem relatively rare in natural language, especially when compared to interrogative ascriptions. So why the focus on such an unrepresentative sample? Perhaps the widespread focus on declarative ascriptions is due to the widespread assumption that knowledge is a binary relation (§2). Perhaps here is a case where theory dictates observation: “Our theoretical presuppositions about the natural order tell us what to expect” (Larry Laudan 1977: 15). In any case, it must not be *presumed* that declarative ascriptions are

¹⁴ Noun ascriptions can express either the informational or practical sense of “knows” (§1). Here are three tests for whether a given noun ascription is informational or practical. First, only the practical sense supports comparatives: compare “I know the time very well” and “I know the time better than I know Ben”, with “I know Ann very well” and “I know Ann better than I know Ben”. Second, only the practical sense supports “but not as such” constructions: compare “I know the time but not as such” to “I know Ann but not as such”. Third, only the informational sense entails knowledge-*wh*: “I know the time” entails “I know what the time is”, but “I know Ann” does not entail “I know what Ann is” (nor does it entail “I know who she is” or “I know where she is”, etc.).

¹⁵ Some exceptions: Hintikka (1975*b*) distinguishes the full spectrum of knowledge ascriptions, yet he classifies all the others as departures from the “knows that” form. And David Lewis (1982), Steven Boër and William Lycan (1986), and Stanley and Williamson (2001) discuss (respectively) “knows whether”, “knows who”, and “knows how”. Yet even here Stanley and Williamson contrast “question-embedding uses of ‘know’ and normal clausal-complement uses of ‘know’” (2001: 421; italics added), and all of these philosophers attempt to reduce knowledge-*wh* to knowledge that *p*. The exceptions prove the rule.

more fundamental. Perhaps it is the interrogative ascriptions that are more fundamental, in the sense that it is they that wear their logical forms closer to their surfaces.

Mechanisms

Starting with interrogative ascriptions (perhaps the most frequent in natural language), these embed *questions*. Questions present contrasts (§2). The mechanism of question-relativity is thus on the surface, in the *wh*-clause. So, for instance, if one says, “I know who stole the bicycle”, then the embedded question “who stole the bicycle” presents a set of alternatives, such as: {Mary stole the bicycle, Peter stole the bicycle, Paul stole the bicycle}.¹⁶ Here *p* is the selected answer, and *q* is the disjunction of the rejected alternatives. So if it was Mary who stole the bicycle, then to know who stole the bicycle is to know that *p*: Mary stole the bicycle, rather than *q*: Peter stole the bicycle or Paul stole the bicycle. In this vein, Higginbotham says: “Mary knows who John saw” should be interpreted as: “Mary knows the (or an) answer to the question who John saw” (1993: 205).

Here are three tests that confirm the question-relative treatment of interrogative ascriptions. First, differences at *q* can *affect truth-values*. For instance, suppose that Joe glances at George W. Bush speaking on television, and compare the following knowledge claims:

- (I1) Joe knows whether Bush or Janet Jackson is the speaker.
- (I2) Joe knows whether Bush or Will Ferrell is the speaker.¹⁷

Intuitively, I1 may be true but I2 false. Joe can discriminate Bush from Jackson, but perhaps only First Lady Laura Bush can discriminate Bush from Ferrell. In other words, Joe is able to answer whether Bush or Jackson is the speaker (this is an easy question—Joe knows the answer to *that*), but Joe cannot answer whether Bush or Ferrell is the speaker (this is a hard question—Joe can only *guess*). The difference in truth-value between I1 and I2 is not due to a difference in *s* or in *p*—the

¹⁶ The set of alternatives is determined by (i) the contextually determined domain of quantification, and (ii) the matrix: *x* is a bicycle thief. So if the individuals in the domain are Mary, Peter, and Paul, then the set of queried alternatives is: {Mary stole the bicycle, Peter stole the bicycle, Paul stole the bicycle}.

¹⁷ Background information: Janet Jackson is a pop diva who would be quite hard to confuse with Bush, while Will Ferrell is a skilled Bush impersonator.

subject is Joe and the true answer p is: Bush is the speaker. So the difference must lie elsewhere. The difference is at q , between $q1$: Jackson is the speaker, and $q2$: Ferrell is the speaker. The question is what is differentiating the truth-value.

To take another example (from §2), suppose that Ann sees a goldfinch in the garden, and compare the following claims:

- (I3) Ann knows whether there is a goldfinch or a raven in the garden.
- (I4) Ann knows whether there is a goldfinch or a canary in the garden.
- (I5) Ann knows whether there is a goldfinch in the garden or at the neighbor's.

Intuitively, I3–I5 may differ in truth-value. I3 is a relatively easy item of knowledge. While I4 is harder, requiring some ornithology. And I5 is incommensurable, requiring some sense of the landscape. The difference in truth-value between I3–I5 is not due to a difference in s or in p —the subject is Ann and the true answer p is: there is a goldfinch in the garden. So the difference must lie elsewhere. The difference is at q , between $q3$: there is a raven in the garden, $q4$: there is a canary in the garden, and $q5$: there is a goldfinch at the neighbor's. The question is what is differentiating the truth-value.

A second confirmation for the question-relative treatment of interrogative ascriptions comes from *existential generalization*. If I know who stole the bicycle, then it follows that there is a question (namely, the question of who stole the bicycle) that I know the answer to. Likewise if I know what time it is, then it follows that there is a question (the question of what time it is) that I know the answer to. The question is what is being generalized on.

A third confirmation comes from *substitution*. If I know when Napoleon was born, and if the question of when Napoleon was born is a historical question, then it follows that I know the answer to a historical question. Likewise if I know why the sky looks blue, and if the question of why the sky looks blue is a scientific question, then it follows that I know the answer to a scientific question. The question is what is being substituted for.¹⁸

¹⁸ For further discussion of interrogative ascriptions, see Schaffer n.d.

Turning to noun ascriptions, these are at least semantically equivalent to interrogative ascriptions. Thus, for instance, “I know the time” is semantically equivalent to “I know what time it is”, and “I know the murderer” (in the informational sense) is semantically equivalent to “I know who the murderer is”.¹⁹ The mechanism of question-relativity is thus present in the interpretation of the noun phrase. So if it is noon, then to know the time is that it is to know that p : the time is noon, rather than q : the time is 1p.m. or 2p.m. or . . . or 11a.m. And if the murderer is Oswald, then to know the murderer is to know that p : Oswald is the murderer, rather than q : Castro is the murderer or the CIA is the murderer.

The question-relative treatment of noun ascriptions is confirmed by the same three tests as with interrogative ascriptions. First, differences at q can affect truth-value. For instance, suppose that, in context $c1$, the domain of quantification is {Bush, Jackson}, so that the question of who the speaker is denotes: {Bush is the speaker, Jackson is the speaker}. While in $c2$, the domain of quantification is {Bush, Ferrell}, so that the question of who the speaker is denotes: {Bush is the speaker, Ferrell is the speaker}. Then consider the utterance type:

(N1) Joe knows the speaker.

Intuitively, a token of N1 may be true if uttered in $c1$, but false if uttered in $c2$. After all, Joe knows whether Bush or Jackson is the speaker—which is what N1 is semantically equivalent to in $c1$. But Joe does not know whether Bush or Ferrell is the speaker—which is what N1 is semantically equivalent to in $c2$. There is no difference in s or p here—the subject is Joe and the true answer p is: Bush is the speaker. So the difference in truth-value must lie elsewhere. The difference is at q , between $q1$: Jackson is the speaker, and $q2$: Ferrell is the speaker. The question is what is differentiating the truth-value.

A second confirmation for the question-relative treatment of noun ascriptions comes from *existential generalization*. If I know the time, then it follows that there is a question (namely, the question of what time it is) that I know the answer to. Likewise if I know the murderer, then it follows that there is a question (the question of who the

¹⁹ Thus Irene Heim (1979) refers to this as the *concealed question* use of noun phrases, saying: “As we naturally understand the sentence [“John knows Bill’s telephone number”] we could paraphrase it as “John knows what Bill’s telephone number is”.

murderer is) that I know the answer to. The question is what is being generalized on.

A third confirmation comes from *substitution*. If I know the date Napoleon was born, and if the question of when Napoleon was born is a historical question, then it follows that I know the answer to a historical question. Likewise if I know the reason the sky looks blue, and if the question of why the sky looks blue is a scientific question, then it follows that I know the answer to a scientific question. The question is what is being substituted for.

Moving finally to declarative ascriptions (perhaps the rarest form in natural language), these inherit their contrasts from *context*. A context is an implicit question. According to Stalnaker, a context may be represented by a set of possible worlds, “which includes all the situations among which speakers intend to distinguish with their speech acts” (1999b: 99). This set is “the set of possible worlds recognized by the speakers to be the ‘live options’ relevant to the conversation” (1999a: 84–5). Thus a context is a set of options (§1). A set of options is the slate of a question (§2). So if one says, “I know that Mary stole the bicycle”, in a context in which the identity of the bicycle thief is in question, then the value of *p* is: that Mary stole the bicycle, and *q* is: that some other suspect stole the bicycle. If one says this in a context in which Mary’s behavior toward the bicycle is in question, then the value of *p* is: that Mary stole the bicycle, and *q* is: that Mary acted in some other way towards the bicycle. While if one says this in a context in which the nature of Mary’s contraband is in question, then the value of *p* is: that Mary stole the bicycle, and *q* is: that Mary stole some other loot. In general, context provides the default source of contrasts.

The question-relative treatment of declarative ascriptions is confirmed by the same three tests as with interrogative and noun ascriptions. First, differences at *q* can affect truth-value. For instance, suppose that the context set for *c1* is: {Bush is the speaker, Jackson is the speaker}. While the context set for *c2* is: {Bush is the speaker, Ferrell is the speaker}. Then consider the utterance type:

(D1) Joe knows that Bush is the speaker.

Intuitively, a token of D1 may be true if uttered in *c1*, but false if uttered in *c2*. After all, if one is wondering whether the speaker is Bush or Jackson—which is the implicit question of *c1*—then one would do well to ask Joe. But if one is wondering whether the speaker is Bush or

Ferrell—which is the implicit question of $c2$ —then Joe is not the one to ask. There is no difference in s or p here—the subject is Joe and the true answer p is: Bush is the speaker. So the difference in truth-value must lie elsewhere. The difference is at q , between $q1$: Jackson is the speaker, and $q2$: Ferrell is the speaker. The question is what is differentiating the truth-value.

To take the example of the goldfinch in the garden, suppose that the context set for $c1$ is: {there is a goldfinch in the garden, there is a raven in the garden}, the context set for $c2$ is: {there is a goldfinch in the garden, there is a canary in the garden}, and for $c3$ is: {there is a goldfinch in the garden, there is a goldfinch at the neighbor's}. Then consider the utterance type:

(D2) Ann knows that there is a goldfinch in the garden.

Intuitively, what it takes for a token of D2 to be true differs among $c1$, $c2$, and $c3$. In other words, if one is wondering whether there is a goldfinch or a raven in the garden—which is the implicit question of $c1$ —then one might ask virtually anyone. While if one is wondering whether there is a goldfinch or a canary in the garden—which is the implicit question of $c2$ —then one might need to ask the ornithologist. And if one is wondering whether there is a goldfinch in the garden or at the neighbor's—which is the implicit question of $c3$ —then one might need to ask the homeowner. There is no difference at s or p , only at q . The question is what is differentiating the truth-value.²⁰

A second confirmation for the question-relative treatment of declarative ascriptions comes from *existential generalization*. If I know that the time is noon, then it follows that there is a question (namely, the question of what time it is) that I know the answer to. Likewise if I know that Oswald is the murderer, then it follows that there is a

²⁰ John Hawthorne suggests that the question-sensitivity of our intuitions here may be explained away, on grounds that “the very asking of a question may provide one with new evidence regarding the subject matter” (2004: 78). The idea is that Ann has different evidence in contexts $c1$, $c2$, and $c3$, concerning which question was asked of her. *But* this assumes that (i) Ann fields the question, and (ii) Ann trusts the questioner to select the likely options. Ann need not field the question. She might not be privy to the conversation at all. Others might be discussing what she knows. (This situation might arise when one is deciding who to ask—one tries to figure out *in advance* which third party knows the answer.) In any case, Ann need not trust the questioner to select the likely options. She might just play along. (Anyone who has questioned students will recognize this situation.)

question (here, the question of who is the murderer) that I know the answer to. The question is what is being generalized on.

A third confirmation comes from *substitution*. If I know that Napoleon was born in 1769, and if the question of when Napoleon was born is a historical question, then it follows that I know the answer to a historical question. Likewise if I know that the sky looks blue because of Rayleigh scattering (blue's short wavelength causes it to get scattered far more than the longer wavelength colors), then it follows that I know the answer to a scientific question. The question is what is being substituted for.

Here are four additional arguments for the question-relativity of declarative ascriptions. The first additional argument is that declarative ascriptions should *fit the pattern* of knowledge ascriptions generally. Since interrogative and noun ascriptions are question-relative (and since "knows" is not ambiguous here), declarative ascriptions should be expected to be question-relative too.

A second additional argument comes from *focus*. As Dretske recognized, focus is semantically efficacious in declarative ascriptions:

Someone claiming to know that Clyde *sold* his typewriter to Alex is not (necessarily) claiming the same thing as one who claims to know that Clyde sold his typewriter *to Alex*... A person who knows that Clyde *sold* his typewriter to Alex must be able to rule out the possibility that he *gave* it to him, or that he *loaned* it to him... But he needs only a nominal justification, if he needs any justification at all, for thinking it was Alex to whom he sold it. (1981: 373)

Following David Sanford (1991), one can model the effect of focus by sets of relevant alternatives, as follows:

I know that $\left\{ \begin{array}{l} \text{Mary} \\ \text{Peter} \\ \text{Paul} \end{array} \right\}$ $\left\{ \begin{array}{l} \text{stole} \\ \text{begged} \\ \text{borrowed} \end{array} \right\}$ the $\left\{ \begin{array}{l} \text{bicycle} \\ \text{unicycle} \\ \text{tricycle} \end{array} \right\}$

Thus if one says, "I know that *Mary* stole the bicycle", then the value of *p* is: that Mary stole the bicycle, and *q* is: that Peter or Paul stole the bicycle. If one says, "I know that Mary *stole* the bicycle", then the value of *p* is: that Mary stole the bicycle, and *q* is: that Mary begged or borrowed the bicycle. While if one says, "I know that Mary stole the *bicycle*", then the value of *p* is: that Mary stole the bicycle, and *q* is: that Mary stole the unicycle or the tricycle. The semantic efficacy of focus is thus explained: differences in focus determine differences in the

proposition expressed. Focus is a mechanism of contrastivity.²¹ Where focus is semantically effective, it is because contrasts are semantically operative.

A third additional argument comes from the *binding* test. Suppose that Sally has aced her exam. Here one might boast on her behalf: “On every question, Sally knew the answer.” This has a natural reading on which it is semantically equivalent to: “On the first question, Sally knew the answer *to that question*; on the second question, Sally knew the answer *to that question*; etc.” Here the quantifier is binding *q*.²²

A fourth and final additional argument comes from *explicit contrasts*. One can directly articulate the contrasts with “rather than”-clauses. For instance, if one says, “I know that there is a goldfinch in the garden rather than a raven”, then the value of *p* is: there is a goldfinch in the garden, and *q* is: there is a raven in the garden. While if one says, “I know that there is a goldfinch in the garden rather than a canary”, then the value of *p* is: there is a goldfinch in the garden, and *q* is: there is a canary in the garden. Whereas if one says, “I know that there is a goldfinch in the garden rather than at the neighbor’s”, then the value of *p* is: there is a goldfinch in the garden, and *q* is: there is a goldfinch at the neighbor’s. The “rather than”-clause is a mechanism of contrastivity. It explicitly articulates *q*.

The binary surface form of declarative ascriptions may thus be misleading. There are many *precedents* for misleading surfaces. For instance, “Ann prefers chocolate” looks to have the binary form: *s* prefers *x*. But it should be obvious on reflection that there must be an implicit contrast (to vanilla? to double chocolate chip? to peace on earth?), which is what Ann prefers chocolate *to*. To take another example, “Rayleigh scattering explains why the sky looks blue” looks to have the binary form: *C* explains *E*. But it has been argued that there must be an implicit contrast (rather than red? rather than violet?), which

²¹ Thus Mats Rooth (1992) proposes the *alternative semantics* approach to focus, on which focus adds a semantic marker whose value is a contextually determined set of alternatives. So “I know that *Mary* stole the bicycle” gets semantically interpreted as [... that [Mary]_F stole ...], where [Mary]_F induces a dual interpretation, one of which is *Mary*, and the other of which are the other suspects.

²² The binding test is due to Barbara Partee (1989), and is used extensively by Stanley, who maintains: “[B]ound readings within a clause are due to the existence of a variable binding operator standing in a certain structural relationship to a co-indexed variable in that clause” (2000: 412).

is what Rayleigh scattering makes a difference to.²³ Or consider, “I asked Ann where she was going. Ann answered that she was going to the bar.” The second sentence looks to have the binary form: *s* answered that *p*. But it should be obvious on reflection that answering is question-relative.

The binary surface form of declarative ascriptions may have misled Moore. When Moore declared, “I know that I have hands”, perhaps he was misusing the language. Thus Wittgenstein writes: “[C]an one enumerate what one knows (like Moore)? Straight off like that, I believe not.—For otherwise the expression ‘I know’ gets misused” (1969: §6). Wittgenstein suggests that Moore must have “been thinking of something else in the interim and is now saying out loud some sentence in his train of thought” (1969: §465; also §§350, 423, 553). Perhaps the preceding train of thought functions to generate a contrast-setting question.²⁴

The audience can accommodate Moore by charitably imputing an easy question. For instance, on hearing, “I know that I have hands”, one might glance to see whether Moore has hands or stumps. Or one might look a bit closer, to see whether he has hands or prostheses. (What *does* one look for?) Perhaps this is why Moorean declarations seem undeniable, yet empty.

Comparison

How does (3) compare to a binary view of encoding? That is, what are the prospects for interpreting various types of knowledge ascription as expressing K_{sp} ?

²³ Background information: Rayleigh scattering explains why the sky looks blue rather than red, because blue’s short wavelength causes it to get scattered around ten times more than longer wavelength colors like red. But Rayleigh scattering does not explain why the sky looks blue rather than violet. In fact, since violet is an even shorter wavelength than blue, Rayleigh scattering predicts that the sky should look violet. What explains why the sky looks blue rather than violet is that our visual system is relatively insensitive to violet. Contrastive views of explanation are defended by Bas van Fraassen (1980), Alan Garfinkel (1981), and Peter Lipton (1991), *inter alia*.

²⁴ Revealingly, Moore himself uses focused and overtly contrastive ascriptions in key passages. He begins his “A Defence of Common Sense” with the focused ascription that he knows “that there exists at present a living human body which is *my* body” (1959a: 33). And he begins “Certainty” by listing his convictions in contrastive format: “I am at present, as you all can see, in a room and not in the open air; I am standing up, and not either sitting or lying down; I have clothes on, and am not absolutely naked; I am speaking in a fairly loud voice, and am not either singing or whispering or keeping quite silent;” (1959b: 227). Perhaps it is here that Moore captures the content of common sense knowledge.

I suspect that binary views face systematic problems with respect to all types of knowledge ascription. (Here I continue to focus on *invariantist* binary views, postponing discussion of contextualism until §6.) Consider the interrogative ascription: “Ann knows whether there is a goldfinch or a raven in the garden.” The natural way to chop this ascription to fit the Procrustean bed of Ksp , is to treat p as: there is a goldfinch in the garden. In general, the natural way to fit interrogative ascriptions into the binary mold is to treat them as expressing Ksp , where p is the true answer to the question posed by the *wh*-clause.²⁵

The binary treatment of interrogative ascriptions, though, is counter-intuitive. It implies that “Ann knows whether there is a goldfinch or a raven in the garden”, “Ann knows whether there is a goldfinch or a canary in the garden”, and “Ann knows whether there is a goldfinch in the garden or at the neighbor’s” all express the same proposition. (Or at least, that all have the same truth conditions). When intuitively these can differ in truth-value.²⁶

My aim is to develop a contrastive view, not to refute binary views. Perhaps the binary theorist can find some devious strategy to encode interrogative ascriptions (similar issues arise with respect to the other types of ascription). But I would suggest, at this point, that (3) supplies *the more natural code* for the full range of question-relative knowledge ascriptions.

²⁵ Thus Higginbotham proposes the rule: “know ($x, \wedge \pi$) \leftrightarrow ($\exists p$) (know(x, p) & p answers π)” (1996: 381). Instances of this rule are implicit in Hintikka’s treatment of “knows who”, Lewis’s treatment of “knows whether”, and Stanley and Williamson’s treatment of “knows how”. Thus, for Hintikka, “ a knows who b is” is analyzed as: ($\exists x$) a knows that ($b = x$) (1975b: 4). For Lewis, “Holmes knows whether . . . if and only if he knows the true one of the alternatives presented by the ‘whether’-clause, whichever one that is” (1982: 194). And for Stanley and Williamson, “Hannah knows how to ride a bicycle” is “true if and only if, for some contextually relevant way w which is a way for Hannah to ride a bicycle, Hannah knows that w is a way for her to ride a bicycle”. From which they conclude: “Thus, to say that someone knows how to F is always to ascribe them knowledge-that” (2001: 426).

²⁶ A less natural possibility is to transform p into a big conditional. Here “Ann knows whether there is a goldfinch or a raven in the garden” is to be transformed (somehow) into: “Ann knows that if (there is a goldfinch or a raven in the garden), then there is a goldfinch in the garden.” But this gives the wrong truth-value *when all the options are false*. For instance, “Moore knows whether he has tentacles or flippers” seems false, since Moore has neither tentacles nor flippers. But the ‘corresponding’ conditional is: $Km((p \vee q) \supset p)$, where p is: that Moore has tentacles, and q is: that Moore has flippers. And this knowledge claim is *true* (or at least the binary theorist should think it true), since Moore should know that the antecedent of the conditional is false, and Moore knows that conditionals with false antecedents are true.

4. KNOWLEDGE

The fourth stage of an account of knowledge is to analyze or otherwise *illuminate* the relation. What is *knowledge*? I propose:

- (4) $Kspq$ iff: (i) p , (ii) s has proof that p rather than q , and (iii) s is certain that p rather than q , on the basis of (ii).

I should emphasize from the outset that (4) is the least important and least promising part of the contrastive view. It is the least important insofar as $Kspq$ is compatible with virtually any analysis of knowledge (even none at all). And it is the least promising insofar as the history of philosophical analyses suggests that counterexamples are inevitable. Thus (4) is merely intended as a *useful gloss*.

Clarifications

Overall, (4) is a contrastive implementation of the contextualist idea that knowledge is the elimination of relevant alternatives (Austin 1946; Dretske 1981; Lewis 1996; Ram Neta 2002).

Piecewise, the first condition is the *truth* condition. (Note that since p and q are mutually exclusive, p 's truth implies q 's falsity.)

The second condition is a contrastive interpretation of *justification*. It is a form of *restricted infallibilism* about evidence. It is infallibilist insofar as it requires proof, which is conclusive evidence, evidence that could not possibly obtain without p being true. But it is restricted insofar as the space of possibilities open to disproof is restricted to: $\{p\} \cup \{q\}$.²⁷

The third condition is a contrastive interpretation of *belief* (plus a provision that belief and justification must be appropriately related via *basing*²⁸). It is a form of *restricted indubitabilism* about belief. It is indubitabilist insofar as it requires certainty, which is an absence of any

²⁷ I have not said what *evidence* consists in, nor whether the notion can be reduced. Though what I say is compatible with Lewis's (1996) conception of one's evidence as one's total experience. Lewis defines *elimination* as follows: possibility p is eliminated for s (at t) iff p is inconsistent with s 's total experience e (at t). S has conclusive evidence that p rather than q , on this interpretation, iff q is eliminated for s . (Notice that the actuality possibility cannot be eliminated; thus p , if true, is ineliminable.)

²⁸ Basing is a hybrid of *causation* and *rationality*: one's proof must be a rationalizing, non-deviant cause of one's certainty. For further discussion of basing see Keith Allen Korcz (2000).

doubt that p is true. But it is restricted insofar as the space of possibilities open to doubt is restricted to: $\{p\} \cup \{q\}$.

Arguments

First, (4) fits (1) by *comprising the ability to answer*. That is, the analysis in (4) is the right form for the task of fingering answerers as per (1), because to meet (4) is to be an answerer. In this way, (4) implements Hector-Neri Castañeda's idea that, "knowledge involves essentially the non-doxastic component of a power to answer a question" (1980: 194).

The first condition, the truth condition, is required to fit (1). That is, being able to select the truth is a necessary condition on being able to answer the question. Questions with no true alternatives involve false *presuppositions*,²⁹ and ought to be rejected rather than answered.

The second condition, the contrastive justification condition, is also required to fit (1)—having proof for p rather than q is a necessary condition on being able to answer: $p \vee q$? As long as one's evidence is compatible with multiple queried alternatives, the inquiry cannot be concluded. This comports with the methodological insight of Sherlock Holmes: "It is an old maxim of mine that when you have excluded the impossible, whatever remains, however improbable, must be the truth" (*The Adventure of the Beryl Coronet*).

The third condition, the contrastive belief condition, is also required to fit (1)—being certain that p rather than q is a necessary condition on being able to answer: $p \vee q$? As long as one is in doubt, the inquiry is still open. This comports with the Peircean view of doubt as the irritant that spurs inquiry. (The basing relation is required as well: if one's certainty is not based on the proof, then the inquiry has not been closed on proper grounds.)

Perhaps meeting all three conditions is still insufficient for being able to answer. But what could be lacking? Imagine taking a multiple choice exam, having proof that all but one answer is wrong, and being certain of the true answer on this basis. What could be lacking, as far as knowing the answer?

The second argument for (4) is that it resolves numerous problem cases in the literature, including *lottery cases* and *Gettier cases*, via

²⁹ Question Q presupposes proposition p iff p is entailed by all answers to Q (Belnap and Steel 1976).

restricted infallibilism. Lottery cases beg for infallibilism: the ticket holder does not know in advance that her ticket will lose rather than win, no matter how long the odds, because her evidence remains fallible—she might be wrong, she might win, she does not know that she will lose. Gettier cases also beg for infallibilism: the passerby who sees a clock stopped twenty-four hours ago on 3p.m. does not know that it is now 3p.m. rather than 4p.m., despite some evidence for a true belief, because his evidence remains fallible—he might be wrong, the clock might be off, he does not know what time it is. Here the fallibility of the connection between evidence and truth is what opens up the possibility of a merely accidental correlation.³⁰ (Such an infallibilism does not induce skepticism, since the infallibilism is restricted. Knowledge is still possible, when the alternatives in q are eliminable.)

Objections

First, (4) faces *the problem of the giveaway question*. The giveaway question arises when p and q are both dubious hypotheses for s , p is luckily true, and q is easily eliminable. For instance, suppose that Poirot can prove that it was Mayerling who was murdered, but has no evidence that it was Darrow who did the deed. Then, on (4), Poirot can count as knowing that Darrow killed Mayerling rather than that Darrow killed Japp. Yet intuitively, it might seem that Poirot knows nothing of the sort—he need not even know who Darrow is.

In reply, perhaps Poirot does know that Darrow killed Mayerling rather than Japp. After all, if Poirot were to engage the question, “Did Darrow kill *Mayerling*, or *Japp*?”, he would be able to answer properly—he can eliminate all but one option. Poirot would pass the test. This is an epistemic achievement. The knowledge claim marks this achievement. It distinguishes Poirot’s epistemic standing from that of Poirot’s sidekick Hastings, who does not even know who was murdered. Poirot at least knows that it was *Mayerling* rather than *Japp* who Darrow murdered.³¹ Or try: Poirot knows whether Darrow killed *Mayerling* or *Japp*.

³⁰ For further discussion of the restricted infallibilist solution to lottery and Gettier cases, see Lewis (1996), Stewart Cohen (1998a), and Mark Heller (1999).

³¹ In this vein, Johnsen imagines that Milan Kundera might just happen to be in Ventimiglia, and claims that he (Johnsen) would at least know that Kundera is in Ventimiglia rather than *Johnsen’s office* (2001: 405).

A second reply (which I reserve as backup) would be to add a further condition to (4). The most natural addition would require some sort of *positive evidence* for p . This would entail that Poirot does not know that Darrow murdered Mayerling rather than Japp, on grounds that Poirot lacks evidence for the proposition that Darrow killed Mayerling. Here there is room to explore a mixture of fallibilism and infallibilism, on which s must have infallible evidence that p rather than q , plus fallible evidence that p . I leave this for further exploration.³² As indicated above, I am merely aiming for a useful gloss here.

Second, one might object that (4) *induces skepticism*. The contrastivist promises to resist skepticism, by allowing Moore to know that he has hands rather than stumps. But, the objection runs, (4) does not allow for this, since there are stump-possibilities that Moore cannot eliminate, such as possibilities in which Moore has stumps but is dreaming of hands, or has stumpy arms stapled onto his envatted brain. Thus, the objection concludes, (4) disallows knowledge.

In reply, there are possibilities that Moore can eliminate, which is what (4) requires for knowledge. Here it will help to leave the shifty ‘that’-clauses of English behind, and speak directly of the worlds they denote. There are plenty of worlds that Moore can eliminate, including worlds in which he veridically perceives his stumps. And there are plenty of worlds that Moore cannot eliminate, including actuality and its skeptical variants. In general, for any subject s and true proposition p , s will have a *discriminatory range* R over p , where R is the union of those $\sim p$ -worlds which s is able to discriminate from actuality. For all nonempty subsets R^- of R , s is in a position to know that p rather than that R^- obtains. Whereas for all nonempty subsets S^- of the complement of R , $\sim KspS^-$ holds.

So does Moore know that he has hands rather than stumps? *Yes*, in a sense. What Moore knows can be more fully described as follows: he knows that he has hands rather than *stumps that are apparent*. Or more fully: Moore knows that he has hands rather than *stumps that he would veridically perceive*. Fuller descriptions are always available. Which worlds these descriptions denote is contextually variable. Thus, strictly speaking, what follows from (4) is that “Moore knows that he has hands rather than that he has stumps” is *true* in contexts in which “that he has

³² Dretske expresses some ambivalence on this point, saying that the subject, “needs only a nominal justification, if he needs any justification at all” for the non-contrasted aspect of the knowledge claim (1981: 373).

stumps" denotes worlds within Moore's discriminatory range R . The context-invariant truth is of the form: Moore knows $\{w_\alpha\}$ rather than $\{w_1, w_2, \dots, w_m\}$.

Comparison

How does (4) compare to various binary views of knowledge? If the task is to provide a finite, non-circular, and intuitively fitting set of necessary and sufficient conditions, all views may prove equally hopeless. If the task is merely to provide a useful gloss of a relation (a decent approximation), perhaps (4) proves best.

The advantage of (4), shared only by some versions of contextualism, is the ability to steer between, "the rock of fallibilism and the whirlpool of skepticism" (Lewis 1996: 221), by implementing a restricted infallibilism. This is an advantage insofar as fallibilism is *implausible*, *arbitrary*, and *lottery-wracked*. Fallibilism is implausible insofar as it licenses the breathtaking conjunction: "I might be wrong, though I still know." Fallibilism is arbitrary insofar as any line of evidence (or shading of a penumbra) below 1 is arbitrary. Fallibilism is lottery-wracked insofar as any line below 1 will be exceeded by evidence that, in a suitably large lottery, a given ticket is a loser. Implementing a restricted infallibilism is also an advantage insofar as unrestricted infallibilism is *skeptical*. These points are all controversial, and I cannot defend them here. This is left to the reader's judgment. But I would suggest, for these reasons, that (4) offers the *more illuminating gloss* of knowledge, rivaled only by contextualism.

5. SKEPTICISM

The fifth and final stage of an account of knowledge is to resolve outstanding *paradoxes*. How does contrastive knowledge *help*? I propose:

- (5) Contrastive knowledge resolves the closure paradox.

Paradox

The closure paradox is typically formulated in binary terms, as follows:

- (C1) Moore knows that he has hands.
 (C2) Moore doesn't know that he is not a brain-in-a-vat.

- (C3) If Moore doesn't know that he is not a brain-in-a-vat, then he doesn't know that he has hands.³³

These premises are individually plausible, but conjunctly contradictory.

There are four main replies to the closure paradox from within a binary framework: the *skeptic* denies C1, the *dogmatist* denies C2, the *denier of closure* denies C3, and the *contextualist* denies that C2 and C3 entail the falsity of C1 (by maintaining that the denotation of "knows" shifts, rendering the argument equivocal). These positions have been extensively debated.³⁴ So I will simply state what I find objectionable about each position, to set the stage for the contrastive solution.

I object to skepticism and dogmatism on two parallel counts. First, the denials of C1 and C2 strike me as *absurd*. At least, some explanation is needed of their plausibility. Second, skepticism and dogmatism *collapse distinctions*.³⁵ Suppose that Student, Assistant, and Professor are visiting the zebras at the zoo. Student is remarkably ignorant, and can't even discern a zebra from a mule; Assistant can discern a zebra from a mule by its stripes, but cannot discern a zebra from a cleverly painted mule; Professor can discern a zebra even from a cleverly painted mule by anatomical features that no mere paint job can disguise. The skeptic confuses Student with Assistant, denying that either knows that the beast is a zebra, since neither can eliminate the painted mule hypothesis. The dogmatist confuses Assistant with Professor, maintaining that both know that the beast is a zebra, since both can eliminate the unpainted mule hypothesis. Both skepticism and dogmatism thereby distort partial knowledge.³⁶

³³ This formulation is found in Keith DeRose (1995) and Stephen Schiffer (1996), *inter alia*. See Peter Unger (1975) for arguments that this is the *root* skeptical argument. See Anthony Brueckner (1994), Cohen (1998*b*), and Jonathan Vogel (n.d.) for further discussion of how closure relates other skeptical concerns such as underdetermination.

³⁴ For a defense of skepticism, see Unger (1975); for a defense of dogmatism, see Peter Klein (1981), Ernest Sosa (1999), and James Pryor (2000); for a defense of the denial of closure, see Dretske (1971) and Robert Nozick (1981); for a defense of contextualism, see G. C. Stine (1976), Cohen (1988 1999), DeRose (1995), Lewis (1996), and Neta (2002).

³⁵ Heller levels this criticism at the skeptic: "[Skeptical] standards fail to draw the distinctions that are important to us. Even though neither my wife nor I can rule out the possibility of an evil genius deceiving us about where the leftovers are, she is in a better epistemic position than I am" (1999: 119).

³⁶ Though see Schaffer (2004*b*) for a defense of the skeptic from these objections. Overall, I would rate skepticism the second-best option.

I object to the denial of closure on two counts. First, the denial of C3 seems *absurd*, at least without some explanation of its plausibility. Second, denying closure *collapses inferences*. Surely deduction transmits knowledge. How could it not, given that our ultimate epistemic interest is truth, and deduction preserves truth? How could it not, given that mathematical proof is deductive and mathematical proof yields knowledge? Pending a replacement for C3, the anti-closure view cripples knowledge.³⁷

I object to contextualist solutions on four counts. First, the compatibility of C1 and C2 seems *absurd*, at least without some explanation of the appearance of incompatibility.³⁸

Second, the way that C1 and C2 are rendered compatible is *overly concessionary* to both skepticism and dogmatism. For the contextualist concedes that dogmatism holds in the courtroom, so that there one can count as knowing that one is not a brain-in-a-vat. But surely one can never know so much. And the contextualist concedes that skepticism holds in the classroom, so that there one cannot count as knowing that one has hands. But surely one can never know so little. Thus the contextualist is stuck with the implausibilities of both views, and their subsequent conflation. In any given context, the contextualist must either confuse Student with Assistant, or Assistant with Professor. In no context can the contextualist successfully distinguish all three.

Third, the contextualist machinery turns our knowledge attributions *manic*. The contextualist swings from highs of dogmatism to lows of skepticism, at the mere drop of a skeptical scenario. Surely our dispositions to ascribe knowledge are more stable (Johnsen 2001: 395; see also Dretske 1991: 192; Richard Feldman 1999: 106).

Fourth, contextualism renders “knows” too shifty to score inquiry consistently (§2). Scoring inquiry requires being able to evaluate how a subject performs through a sequence of questions. This requires having epistemic vocabulary that can keep a consistent score through a range of contexts. But “knows” as the contextualist conceives it cannot keep a consistent score, because “knows” as the contextualist conceives it is continually warped by the present context.

³⁷ See Williamson for a defense of closure based on the idea that “deduction is a way of extending one’s knowledge” (2000: 117). For extended discussion see Hawthorne (2004: 31–50).

³⁸ As Schiffer notes in a criticism of the contextualist solution, “If that’s the solution, what the hell was the *problem*?” (1996: 329).

Resolution

The contrastivist rejects the closure paradox as formulated, since C1–C3 all concern binary knowledge. I will now argue, on behalf of (5), that contrastivism (i) dissolves the paradox, (ii) explains the plausibility of its premises, and (iii) answers all the objections leveled above at the other approaches.

Contrastivism dissolves the paradox by revealing how ordinary knowledge and skeptical doubt are compatible: they concern different contrasts. Moore knows that he has hands rather than stumps. Moore does not know that he has hands rather than vat-images of hands. In interrogative terms, Moore knows whether he has hands or stumps, but does not know whether he has hands or vat-images of hands. In general, for any subject s and proposition p , s is in position to know that p rather than q for any proposition q within s 's discriminatory range (§4). Whereas for any q that extends beyond s 's discriminatory range, $\sim Kspq$.

Some of the inferential relations that hold between contrastive knowledge states can be adduced from the notion of discriminatory range. A valid schema will preserve discrimination of truth. It will preserve the elimination of all-but- p . Here are two valid schemas:

Expand- p : if $p_1 \rightarrow p_2$ then $Ksp_1q \rightarrow Ksp_2q$ ³⁹
 Contract- q : if $q_2 \rightarrow q_1$ then $Kspq_1 \rightarrow Kspq_2$

And here are four *invalid* schemas, which do not preserve discrimination of truth:

*Contract- p : if $p_2 \rightarrow p_1$ then $Ksp_1q \rightarrow Ksp_2q$
 *Expand- q : if $q_1 \rightarrow q_2$ then $Kspq_1 \rightarrow Kspq_2$
 *Replace- p : $Ksp_1q \rightarrow Ksp_2q$
 *Replace- q : $Kspq_1 \rightarrow Kspq_2$.

³⁹ These schemas are only valid as *idealizations*. Expand- p , for instance, needs limitation to prevent the p -worlds from *swallowing* q . Contrastivity needs to be preserved under p -expansion. So a more accurate statement of expand- p would be: if $p_1 \rightarrow p_2$ and $p_2 \cap q = \emptyset$, then $Ksp_1q \rightarrow Ksp_2q$. Expand- p should also be restricted to cases of competent deduction (here I am following Williamson 2000). So an even more accurate statement of expand- p would be: if (i) $p_1 \rightarrow p_2$, (ii) $p_2 \cap q = \emptyset$, (iii) s competently deduces p_2 from p_1 , and (iv) s comes to be certain that p_2 rather than q on the basis of (iii), then $Ksp_1q \rightarrow Ksp_2q$. These details won't matter for what follows.

Since Replace- q is invalid, one cannot use the fact that Moore knows that he has hands rather than stumps to infer that Moore knows that he has hands rather than vat-images of hands. The fact that the vat possibility lies outside Moore's discriminatory range does not entail that the stumps possibility does too.

Ordinary knowledge concerns discriminations in a limited range. Skeptical doubts reveal the limits of that range. Since the existence of possibilities outside one's discriminatory range does not imply the absence of any possibilities inside that range, skeptical doubts do not imply any absence of ordinary knowledge. Thus ordinary knowledge and skeptical doubt are compatible. Paradox dissolved.

Why then are the premises of the paradox so plausible? The contrastivist explanation is that (i) we charitably accommodate binary knowledge ascriptions by imputing a question (§3), and (ii) the natural questions for C1–C3 in fact generate contrastive truths. Starting with C1, the natural question would concern whether Moore has hands or is some sort of amputee. Indeed, the only implicit questions for C1 that would generate falsity would be those concerning skeptical scenarios, supplying of which would be both unnatural and unaccommodating. In the case of C2, the implicit question that leaps out concerns whether Moore is handed or envatted. Since Moore cannot discriminate between these alternatives, we naturally assent to C2. And finally in the case of C3, we naturally interpret it as embedded in an inquiry that concerns whether Moore is handed or envatted. So we naturally think of C3 as saying: if Moore does not know that he's not a brain-in-a-vat rather than a brain-in-a-vat, then he doesn't know that he's a hand-owner rather than a brain-in-a-vat. This has the form: $\sim Ksp_1 \sim p_1 \rightarrow \sim Ksp_2 \sim p_1$, where $p_2 \rightarrow p_1$ (hands entails not-vatted). This is a valid inference, as it is an instance of the contrapositive of Expand- p .

Putting this together, the contrastive reformulation of closure is:

- (C1') Moore knows that he has hands rather than stumps.
- (C2') Moore does not know that he is handed rather than envatted.
- (C3') If Moore doesn't know that he's not envatted rather than envatted, then he doesn't know that he's handed rather than envatted.⁴⁰

⁴⁰ This is the reformulation that preserves the truth of each premise. Alternatively the paradox could be reformulated so as to preserve the incompatibility of the premises via: C3'*: If Moore doesn't know that he's handed rather than envatted, then he doesn't know

To put the reformulation in interrogative terms:

- (C1'') Moore knows whether he has hands or stumps.
- (C2'') Moore does not know whether he has hands or is envatted.
- (C3'') If Moore does not know whether he is non-envatted or envatted, then he doesn't know whether he is handed or envatted.

Each premise is true. There is no paradox. The plausibility of each of C1–C3 is due to our naturally processing them as something like C1'–C3' (equivalently: C1''–C3'') respectively.

Contrastivism, finally, answers all the objections leveled above against skepticism, dogmatism, the denial of closure, and contextualism. With respect to skepticism and dogmatism, contrastivism explains the plausibility of C1 and C2, as per the previous paragraph. And contrastivism captures the distinctions that skepticism and dogmatism collapse. Student does not know that the beast is a zebra rather than a mule. Assistant knows that the beast is a zebra rather than a mule, but does not know that the beast is a zebra rather than a painted mule. Professor knows that the beast is a zebra rather than a mule, and that the beast is a zebra rather than a painted mule. What distinguishes these characters is their discriminatory ranges.

With respect to the denial of closure, contrastivism explains the plausibility of C3, as above. And contrastivism captures the inferences that the denier of closure disallows, via *Expand-p* and *Contract-q*. In particular, *Expand-p* preserves the sense in which deductive proof is knowledge-transmitting.

With respect to contextualism, the contrastivist can explain the apparent incompatibility of C1 and C2 as due to neglect of the covert contrast variable. And covert variables can induce confusion among competent speakers. The compatibility of C1' and C2' allows the contrastivist to avoid conceding dogmatism in one context and skepticism in another, as the contextualist must. Ordinary knowledge and skeptical doubt do not need to be cordoned off into separate contexts. They coexist in both the courtroom and the classroom. Moore always knows that he has hands rather than stumps, and never knows that he has

that he has hands rather than stumps. But C3'* is false—just because “Hands or vat-images of hands?” falls beyond Moore’s discriminatory range does not imply that “Hands or stumps?” does too.

hands rather than vat-images of hands. The context-invariance of C1' and C2' provides the stability that contextualism precludes. The invocation of skeptical possibilities does not change which discriminations *s* can make one whit. Thus one can track *s*'s discriminatory range through a sequence of questions, and thereby properly keep score of inquiry.

Comparison

Contrastivism reveals that the closure paradox is *an artifact of binarity*. Contrastivism provides the following recipe for binary paradoxes. First, find an easy question that *s* can successfully answer by *p*. This will generate a context in which "*s* knows that *p*" encodes a true proposition: $Kspq_1$. Treat this as binary knowledge: Ksp . Second, find a hard question that *s* cannot answer involving *p*. This will generate a context in which "*s* knows that *p*" encodes a false proposition: $Kspq_2$. Treat this as binary ignorance: $\sim Ksp$. Third, conjoin and tremble. Skeptical scenarios merely help provide hard questions for the second step ("Or has she just dreamt the whole episode?")

For all we philosophers might fret over skepticism, ordinary inquiries never shipwreck on skeptical possibilities. No court case has ever been dismissed due to the closure paradox ("Your Honor, that witness knows nothing!"). Ordinary inquiries succeed because ordinary questions are restricted. *The wile of the skeptic is to shift the question*. Thus resolving the closure paradox requires rendering knowledge in a structure that logs the question: the contrastive structure.

6. CONTEXTUALISM

Epistemic contrastivism is cousin to the family of *epistemic contextualisms*. It might prove useful, by way of epilogue, to clarify the relations.⁴¹

Contextualisms feature three main family traits, which I label *indexicalism*, *relevantism*, and *equivocationism*. Indexicalism is the thesis that "knows" functions like an indexical in having a stable character but a context-dependent content. Relevantism is the thesis that what one knows is determined by a set of relevant alternatives. Equivocationism

⁴¹ See Schaffer (2004a) for a more extended discussion of these issues.

is the thesis that the closure paradox involves an equivocation between the contents of “knows” generated by the first two premises (§5).⁴² To clarify the relations between contrastivism and the family of contextualisms, it will prove most helpful to compare contrastivism to indexicalism, relevantism, and equivocationism directly, as separate positions.

Indexicalism

Contrastivism and indexicalism are similar in the following way. On both theories, a binary knowledge ascription may be true in one context, and false in another.

But contrastivism and indexicalism differ in two main ways. First, the mechanism of context-dependence is different. With indexicalism, it is the content of the relation denoted by “knows” that is contextually shifty. With contrastivism, it is the value of the contrast relatum q that is shifty. Thus indexicalism, but not contrastivism, is committed to the postulation of context-dependence without representation in logical form.⁴³

Second, the extent of context-dependence is different. With indexicalism, since it is the occurrence of the term “knows” that induces shiftiness, every knowledge ascription must be shifty. With contrasti-

⁴² While more recent contextualisms (such as DeRose 1995; Lewis 1996) exhibit indexicalism, relevantism, and equivocationism together, these traits are independent. Indexicalism does not entail relevantism, since the context-dependence of “knows” might turn on something other than relevance, such as the degree of justification required by the stakes. Cohen (1988) is perhaps best read this way. And indexicalism does not entail equivocationism, since, for instance, “knows” might not be variable enough for skeptical doubts. DeRose (1995) allows though does not endorse this position. Relevantism does not entail indexicalism, since relevance might be determined purely in terms of s 's objective situation, with no reference to the context of utterance. Dretske (1991) and Hawthorne (2004) endorse this view. And relevantism does not entail equivocationism, since, for instance, skeptical possibilities might never be relevant. Austin (1946) takes this line. Equivocationism, finally, does not entail either indexicalism or relevantism, since the equivocation might be due to polysemy (with neither sense indexicalized or involving a relevance function). Norman Malcolm's (1952) distinction between the “strong” and “weak” senses of “knows” might serve as a prototype for such a view.

⁴³ Stanley (2000) argues that it is implausible to postulate context-dependence that is unrepresented in logical form, except for the cases of the obvious indexicals, demonstratives, and pronouns. Stanley's argument applies against indexicalism but not contrastivism. There are plenty of precedents (including “prefers” and “explains”: §3) for verbs with additional contrast slots, while there seem to be no precedents for verbs that are indexicalized.

vism, since it is the value of q that is shifty in binary ascriptions, interrogative, noun, and overtly contrastive ascriptions must be relatively stable, since these at least partially fix the value of q . This seems intuitively correct: “Moore knows that he has hands” seems shiftier than “Moore knows that he has hands rather than stumps”. Further, this stable form of knowledge ascription is required by the scorekeeping function of knowledge (§5).

Relevantism

Contrastivism and relevantism are similar in the following way. On both theories, whether one knows is calculated with reference to a set of alternatives.

But contrastivism and relevantism differ in two main ways. First, what one knows is different. With relevantism, by eliminating the relevant alternatives, one knows that p . With contrastivism, one knows that p rather than q . The relevantist is still in the grip of binarity.

Second, the alternatives are generated in different ways. With relevantism, the alternatives are generated by a relevance function. With contrastivism, the alternatives are generated by an explicit or implicit question (§3). But what is ‘relevance’? By far the best account of relevance is to be found in Lewis (1996).⁴⁴ But Lewis’s account is subject to counterexamples (see Vogel 1999). Worse, it is (i) *imprecise*, (ii) *epistemically tailored*,⁴⁵ and (iii) *ad hoc* in certain respects (such as why resemblance with respect to evidence is non-salient). The contrastive mechanisms (§3), on the other hand, are (i) *precise*, (ii) *linguistically general* mechanisms, and their application is (iii) *motivated* by the role of knowledge in inquiry.

Equivocationism

Contrastivism and equivocationism are similar in the following way. On both theories, ordinary knowledge and skeptical doubts are compatible.

⁴⁴ Lewis’s account may be the only serious account of relevance. Dretske (1981: 373–7) makes a number of programmatic remarks, but otherwise one finds little of substance on this topic in the entire literature. Not for nothing does Sosa warn that relevantism “will remain unacceptably occult” (1986: 585). See also Vogel (1999).

⁴⁵ Lewis begins by invoking the linguistic mechanism of *quantifier domain restriction*. This much is linguistically general. But then most of Lewis’s subsequent rules of ignoring are epistemically tailored.

But contrastivism offers a better solution to the closure paradox in four main ways (§5): (i) contrastivism provides a better explanation of the apparent incompatibility of ordinary knowledge and skeptical doubt; (ii) contrastivism avoids conceding dogmatism in some contexts and skepticism in the others, by allowing ordinary knowledge and skeptical doubts to be compatible *in the same context*: “Moore knows whether he has hands or stumps; but he does not know whether he has hands or vat-images of hands”; (iii) contrastivism avoids manic swings from dogmatism to skepticism thereby; and (iv) contrastivism allows “knows” to serve its inquiry-scoring function, since one can keep a consistent score through a range of contexts. Assistant can successfully answer the question: “Zebra or [normal] mule?” After it emerges that Assistant cannot answer the question: “Zebra or painted mule?”, one can still report Assistant’s previous success: “At least he knows whether the beast is a zebra or a normal mule.”⁴⁶

REFERENCES

- Austin, J. L. (1946) ‘Other Minds’, *Proceedings of the Aristotelian Society*, 20: 149–87.
- (1962) *How to Do Things with Words* (Cambridge).
- Belpap, Nuel, and Thomas Steel (1976) *The Logic of Questions and Answers* (New Haven).
- Boër, Steven, and William Lycan (1986) *Knowing Who* (Cambridge).
- Brandom, Robert (1994) *Making it Explicit* (Cambridge).
- Brueckner, Anthony (1994) ‘The Structure of the Skeptical Argument’, *Philosophy and Phenomenological Research*, 54: 827–35.
- Castañeda, Hector-Neri (1980) ‘The Theory of Questions, Epistemic Powers, and the Indexical Theory of Knowledge’, in Peter French, Theodore Uehling, Jr., and Howard Wettstein (eds.), *Midwest Studies in Philosophy*, v. *Studies in Epistemology* (Minneapolis), 193–238.
- Chomsky, Noam (1977) *Essays on Forms and Interpretation* (Amsterdam).
- Cohen, Stewart (1988) ‘How to be a Fallibilist’, *Philosophical Perspectives*, 2: 91–123.

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- (1998a) 'Contextualist Solutions to Epistemological Problems: Scepticism, Gettier, and the Lottery', *Australasian Journal of Philosophy*, 76: 289–306.
- (1998b) 'Two Kinds of Skeptical Argument', *Philosophy and Phenomenological Research*, 52: 143–59.
- (1999) 'Contextualism, Skepticism, and the Structure of Reasons', *Philosophical Perspectives*, 13: 57–89.
- Craig, Edward (1990) *Knowledge and the State of Nature: An Essay in Conceptual Synthesis* (Oxford).
- DeRose, Keith (1995) 'Solving the Skeptical Problem', *Philosophical Review*, 104: 1–52.
- Dewey, John (1938) *Logic: The Theory of Inquiry* (New York).
- Dretske, Fred (1970) 'Epistemic Operators', *Journal of Philosophy*, 67: 1007–23.
- (1981) 'The Pragmatic Dimension of Knowledge', *Philosophical Studies*, 40: 363–78.
- (1991) 'Knowledge: Sanford and Cohen', in Brian McLaughlin (ed.), *Dretske and his Critics* (Oxford), 185–96.
- Feldman, Richard (1999) 'Contextualism and Skepticism', *Philosophical Perspectives*, 13: 91–114.
- Garfinkel, Alan (1981) *Forms of Explanation: Rethinking the Questions in Social Theory* (New Haven).
- Greco, John (2002) 'Knowledge as Credit for True Belief', in Linda Zagzebski and Michael DePaul (eds.), *Intellectual Virtue: Perspectives from Ethics and Epistemology* (Oxford), 111–34.
- Groenendijk, Jeroen, and Martin Stokhof (1997) 'Questions', in Johan F. A. K. van Benthem and Alice G. B. ter Meulen (eds.), *Handbook of Logic and Language* (Amsterdam), 1055–124.
- Hamblin, C. L. (1958) 'Questions', *Australasian Journal of Philosophy*, 36: 159–68.
- Hawthorne, John (2004) *Knowledge and Lotteries* (Oxford).
- Heim, Irene (1979) 'Concealed Questions', in R. Bäuerle, U. Egli, and A. von Stechow (eds.), *Semantics from Different Points of View* (Berlin), 51–60.
- Heller, Mark (1999) 'Contextualism and Anti-Luck Epistemology', *Philosophical Perspectives*, 13: 115–29.
- Higginbotham, James (1993) 'Interrogatives', in Kenneth Hale and Samuel Jay Keyser (eds.), *The View from Building 20: Essays in Honor of Sylvain Bromberger* (Cambridge), 195–228.
- (1996) 'The Semantics of Questions', in Shalom Lappin (ed.), *The Handbook of Contemporary Semantic Theory* (Oxford), 361–83.
- Hintikka, Jaakko (1975a) 'Answers to Questions', *The Intentions of Intentionality and Other New Models for Modalities* (Dordrecht), 137–58.

- Hintikka, Jaakko (1975b) 'Different Constructions in Terms of the Basic Epistemological Verbs: A Survey of Some Problems and Proposals', *The Intensions of Intentionality and Other New Models for Modalities* (Dordrecht), 1–25.
- (1981) 'On the Logic of an Interrogative Model of Scientific Inquiry', *Synthese*, 47: 69–84.
- Hookway, Christopher (1996) 'Questions of Context', *Proceedings of the Aristotelian Society*, 96: 1–16.
- Johnsen, Bredo (2001) 'Contextualist Swords, Skeptical Plowshares', *Philosophy and Phenomenological Research*, 62: 385–406.
- Klein, Peter (1981) *Certainty: A Refutation of Skepticism* (Minneapolis).
- Kleiner, Scott (1988) 'Erotetic Logic and Scientific Inquiry', *Synthese*, 74: 19–46.
- Korcz, Keith Allen (2000) 'The Causal-Doxastic Theory of the Basing Relation', *Canadian Journal of Philosophy*, 30: 525–50.
- Laudan, Larry (1977) *Progress and its Problems: Towards a Theory of Scientific Growth* (Berkeley, Calif.).
- Levi, Isaac (1984) 'Abduction and Demands for Information', *Decisions and Revisions: Philosophical Essays on Knowledge and Value* (Cambridge).
- Lewis, David (1979) 'Scorekeeping in a Language Game', *Journal of Philosophical Logic*, 8: 339–59.
- (1982) 'Whether Report', in Tom Pauli (ed.), *Philosophical Essays Dedicated to Lennart Åqvist on his Fiftieth Birthday* (Uppsala), 194–206.
- (1996) 'Elusive Knowledge', *Australasian Journal of Philosophy*, 74: 549–67.
- Lipton, Peter (1991) *Inference to the Best Explanation* (New York).
- Malcolm, Norman (1952) 'Knowledge and Belief', *Mind*, 51: 178–89.
- Moore, G. E. (1959a) 'A Defence of Common Sense', *Philosophical Papers* (London), 32–59.
- (1959b) 'Certainty', *Philosophical Papers* (London), 227–51.
- Morton, Adam, and Antti Karjalainen (2003) 'Contrastive Knowledge', *Philosophical Explorations*, 6: 74–89.
- Neta, Ram (2002) 'S Knows that p', *Noûs*, 36: 663–81.
- Nozick, Robert (1981) *Philosophical Explanations* (Cambridge).
- Partee, Barbara (1989) 'Binding Implicit Variables in Quantified Contexts', in *Proceedings of the Chicago Linguistics Society*, 25 (Chicago), 342–65.
- Peirce, C. S. (1877) 'The Fixation of Belief', *Popular Science Monthly*, 12: 1–15.
- Pryor, James (2000) 'The Skeptic and the Dogmatist', *Noûs*, 34: 517–49.
- Rooth, Mats (1992) 'A Theory of Focus Interpretation', *Natural Language Semantics*, 1: 75–116.
- Ryle, Gilbert (1949) *The Concept of Mind* (Chicago).

- Sanford, David (1991) 'Proper Knowledge', in Brian McLaughlin (ed.), *Dretske and his Critics* (Oxford), 38–51.
- Schaffer, Jonathan (2004a) 'From Contextualism to Contrastivism', *Philosophical Studies*, 119: 73–103.
- (2004b) 'Skepticism, Contextualism, and Discrimination', *Philosophy and Phenomenological Research*, 69: 138–55.
- (n.d.) 'Knowing the Answer', unpublished typescript.
- Schiffer, Stephen (1996) 'Contextualist Solutions to Scepticism', *Proceedings of the Aristotelian Society*, 96: 317–33.
- Sinnott-Armstrong, Walter (2004) *Pyrrhonian Skepticism* (Oxford).
- Sintonen, Matti (1997) 'Explanation: The Fifth Decade', in Matti Sintonen (ed.), *Knowledge and Inquiry: Essays on Jaakko Hintikka's Epistemology and Philosophy of Science* (Amsterdam), 225–38.
- Sosa, Ernest (1986) 'On Knowledge and Context', *Journal of Philosophy*, 83: 584–5.
- (1999) 'How to Defeat Opposition to Moore', *Philosophical Perspectives*, 13: 141–53.
- Stalnaker, Robert (1999a) 'Assertion', *Context and Content* (Oxford), 78–95.
- (1999b) 'On the Representation of Context', *Context and Content* (Oxford), 96–113.
- Stanley, Jason (2000) 'Context and Logical Form', *Linguistics and Philosophy*, 23: 391–434.
- and Timothy Williamson (2001) 'Knowing How', *Journal of Philosophy*, 98: 411–44.
- Stine, G. C. (1976) 'Skepticism, Relevant Alternatives, and Deductive Closure', *Philosophical Studies*, 29: 249–61.
- Unger, Peter (1975) *Ignorance: A Case for Scepticism* (Oxford).
- Van Fraassen, Bas (1980) *The Scientific Image* (Oxford).
- Vogel, Jonathan (1999) 'The New Relevant Alternatives Theory', *Philosophical Perspectives*, 13: 155–80.
- (n.d.) 'Varieties of Skepticism', unpublished typescript.
- Watson, C. S. (1973) 'Psychophysics', in Benjamin B. Wolman (ed.), *Handbook of General Psychology* (Englewood Cliffs, NJ), 275–306.
- Williamson, Timothy (2000) *Knowledge and its Limits* (Oxford).
- Wittgenstein, Ludwig (1969) *On Certainty*, ed. G. E. M. Anscombe and G. H. von Wright (Oxford).