Knowing the Answer Redux: Replies to Brogaard and Kallestrup

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1. "Knowing the Answer" Revisited and Revised

In "Knowing the Answer" I argued that knowledge-wh is question-relative. For example, to know when the movie starts is to know the answer p to the question Q of when the movie starts. Berit Brogaard and Jesper Kallestrup have each responded with insightful critiques of my argument, and novel accounts of knowledge-wh. I am grateful to them both for continuing the discussion in so thoughtful a way.

In §1 I will recap the main argument of "Knowing the Answer," and revise my account in accord with a suggestion from both Brogaard and Kallestrup. In §2 I will reply to Brogaard's objections, and argue that her positive account does not apply to interrogative *wh*-clauses at all. In §3 I will critique Kallestrup's positive account, and reply to his revenge argument.

1.1. Terminology

A *knowledge-wh ascription* is an ascription of knowledge in which the complement clause is an interrogative *wh*-clause (as opposed to a declarative "that"-clause). Examples include "Ann knows when the movie starts," "Ann knows who wrote the script," "Ann knows how the movie ends," and "Ann knows where to buy the tickets."

Knowledge-*wh* ascriptions are *convergent* iff their interrogative *wh*-clauses denote questions with the same true answer. Supposing that there is in fact a goldfinch in the garden, the following are convergent: "I know whether there is a goldfinch in the garden, or a raven," "I know whether there is a goldfinch in the garden, or a canary," and "I know whether there is a goldfinch in the garden, or at the neighbor's."

An account of knowledge is *binary* iff it renders knowledge as a two-place relation between a subject and a proposition: K*sp*. An account of

knowledge is *question-relative* iff it renders knowledge as a three-place relation between a subject, a proposition, and the question it answers: K*spQ* (colloquially "*s* knows the answer *p* to the question *Q*").[1] Binarity and question-relativity are not exhaustive options. But given the further claim that there is only one knowledge relation of fixed adicity, these options are exclusive.

1.2. Argument

The argument of "Knowing the Answer" may be divided into four stages. First, I argue that extant binary treatments of knowledge-*wh* ascriptions entail that all convergent knowledge-*wh* ascriptions are materially equivalent. Extant binary treatments endorse the following reductive principle:

> (**RED**) *s* knows-*wh* iff K*sp*, where *p* is a true answer to the indirect question *Q* of the *wh*-clause.[2]

Convergent knowledge-*wh* ascriptions embed questions with the same true answer *p*. So given RED, these will come out materially equivalent, since each will be true iff K*sp*. For instance, with the goldfinch examples, RED rules that each of the convergent knowledge-*wh* ascriptions is true iff I know that there is a goldfinch in the garden.

Second, I argue that not all convergent knowledge-*wh* ascriptions are materially equivalent. To continue with the goldfinch examples, knowing whether there is a goldfinch in the garden or a raven is easy. Virtually anyone can tell a goldfinch from a raven, and so virtually anyone can answer that question. Knowing whether there is a goldfinch in the garden or a canary is harder. Perhaps only the expert birder can discriminate a goldfinch from a canary—the rest of us can only guess. And knowing whether there is a goldfinch in the garden or at the neighbor's is incommensurate. This is a question of landscape rather than birds—perhaps only the homeowner will know the answer to that question. Whether one knows the answer thus depends, in part, on the question.

Third, I argue that the natural treatment of knowledge-*wh* ascriptions, which solves the problem of convergent knowledge, is the following question-relative treatment:

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[1] I am ignoring any time or world arguments that might be added as well. The important point is that the question-relative approach adds an argument place for a question, beyond the argument places normally recognized in the knowledge relation.

[2] For a general statement entailing RED see Higginbotham 1996. Examples of views that endorse RED for specific *wh*-terms include Hintikka 1975 (knowledge-*who*), Lewis 1982 (knowledge-*whether*), and Stanley and Williamson 2001 (knowledge-*how*).

(QST) *s* knows-*wh* iff K*spQ*, where *p* is a true answer to the indirect question *Q* of the *wh*-clause.

On RED one is only required to know a proposition that *just so happens* to be a true answer. On QST one must know an answer *as such*. Given that questions denote sets of alternatives, QST can be shown to be (in essence) equivalent to:

(CON) *s* knows-*wh* iff K*spq*, where *p* is a true answer to the indirect question *Q* of the *wh*-clause, and *q* is the disjunction of false answers to *Q*.

On CON one must *discriminate* a true answer from all the false ones. As anyone who has taken a multiple-choice exam will recognize, whether one can make such a discrimination depends in part on which false answers one has to discriminate against. (In what follows I will freely shift back and forth between question-relative and contrastive formulations for ease of exposition.)

CON/QST solves the problem of convergent knowledge by assigning materially inequivalent propositions. For instance, to know whether there is a goldfinch in the garden or a raven, is to know that there is a goldfinch in the garden rather than a raven. To know whether there is a goldfinch in the garden or a canary, is to know that there is a goldfinch in the garden rather than a canary. And to know whether there is a goldfinch in the garden or at the neighbor's, is to know that there is a goldfinch in the garden rather than at the neighbor's. These knowledge states differ in which false answers must be ruled out. They differ in their contrasts.

Fourth and finally, I extend the argument to knowledge-*that* ascriptions. Given that "knows" is univocal between knowledge-*wh* and knowledge-*that* ascriptions, and that it expresses the question-relative relation K*spQ* in knowledge-*wh* ascriptions, it must also express K*spQ* in knowledge-*that* ascriptions. With knowledge-*that* the question is to be recovered from *the question under discussion*—an independently motivated element of the contextual scoreboard (c.f. Roberts 2004). There is much more to be said about each stage of the argument, but this minimal recap should suffice for the discussion to come.

1.3. Revision

In discussing binary, reductive views of knowledge-*wh*, I had distinguished between various accounts of logical form (KA: fn. 6), including:

>(**RED1**) knowledge-*wh* ascriptions express propositions of the form Ksp.

>(**RED2**) knowledge-*wh* ascriptions express propositions of the form ($\exists p$) (Ksp & p is the answer to Q).

Both are binary in that both involve binary Ksp relations. Yet when I came to the question-relative view, I immediately supposed that the logical form would be:

>(**QST1**) knowledge-*wh* ascriptions express propositions of the form KspQ,

and did not consider the prospects of alternatives such as:

>(**QST2**) knowledge-*wh* ascriptions express propositions of the form ($\exists p$) KspQ.

Both are question-relative in that both involve KspQ relations. The difference is that in QST2 the place of the answer is existentially closed (with the quantifier taking wide scope).

Brogaard (WMD: §3) suggests QST2, giving cases where one is wrong about the true answer. Suppose that Suzy has eaten the cookies, but I suspect Billy, and say (falsely) "I know who ate the cookies." Then on QST1 I have claimed knowledge that Suzy ate the cookies, as the answer to who ate the cookies. That seems wrong as an account of what I have said (indeed, as Brogaard notes, I might not even have heard of Suzy). On QST2 I have only managed to claim (falsely) that there is a proposition such that I know that it answers the question. That allows me to be wrong about which proposition does answer the question, and even to be unacquainted with individuals referenced in the true answer.

Kallestrup (KPC: fn. 2) suggests that RED2 is preferable to RED1 in cases of embeddings. A parallel argument can be given for preferring QST2 to QST1. Thus consider "I know who knows who ate the cookies." This can be true even if I have no idea myself who ate the cookies. I only need to know that Lucy, say, knows who did it. But on QST1 I have managed to claim to know something like the following: Lucy (rather than Timmy) knows that Suzy (rather than Billy) ate the cookies. That seems wrong since I need not have any clue that it was Suzy, or even have heard of her. On QST2 I have only managed to claim ($\exists p$) Ks <($\exists p'$)K$sp'Q'$> Q, which only requires me to know the answer to the question of who knows who ate the cookies, without requiring me to know the answer myself to who ate the cookies.

I accept both arguments and accordingly now endorse QST2. With QST2 I preserve the claims that convergent knowledge-*wh* claims involve materially inequivalent propositions, and that knowledge-*wh* claims include the question. I only now take the place of the answer to be existentially closed.

2. Reply to Brogaard

2.1. Brogaard's Defense of Reductionism

Brogaard offers three connected objections to my argument against reductionism. She (i) rejects my argument against RED as unsound, (ii) offers an independent argument that convergent knowledge claims must be equivalent, and (iii) provides a contextualist diagnosis of our intuitions of inequivalence. Starting with (i), Brogaard claims that my argument "carries weight only against a special version of reductionism." She points out that there are forms of reductionism—such as that of Higginbotham 1996—on which convergent knowledge claims express different propositions with different truth-conditions. Thus suppose that Bush is speaking on television, and consider:

> 1. I know whether Bush or Janet Jackson is speaking on television.

> 2. I know whether Bush or Will Ferrell is speaking on television.

On Higginbotham's treatment, 1 has the truth-condition: $(\exists p)$ (K*sp* & *p* is the answer to the question of whether Bush or Janet Jackson is speaking on television); while 2 has the different truth-condition: $(\exists p)$ (K*sp* & *p* is the answer to the question of whether Bush or Will Ferrell is speaking on television). From this she concludes: "reductionism (properly formulated) is not committed to the equivalence of [convergent knowledge-*wh* claims]," and so labels my argument "unsound" (WMD: §2).

I fear that there was unclarity in my use of "equivalence," so let me take this as an opportunity to do better. My argument against reductionism only turns on issues of *material* equivalence, not identity of truth condition. My argument should be understood as:

> 3. Reductionism entails that all convergent knowledge claims are *materially* equivalent ("the reductive view entails that, if wh_1 and wh_2 have the same true answer, then *s* knows-wh_1 iff *s* knows-wh_2" [KA: thesis 4 of §2]).

But:

4. It is not the case that all convergent knowledge claims are *materially* equivalent (it is not the case that, if wh_1 and wh_2 have the same true answer, then s knows-wh_1 iff s knows-wh_2" [KA: thesis 5 of §2]).

From which it follows (*modus tollens*):

5. Reductionism is false.

The material equivalence claim of 3 *does* follow, even from Higginbotham's version of reduction (§1.1, KA: fn. 6, fn. 8). *Proof*: Suppose wh_1 and wh_2 have the same true answer, and s knows-wh_1. Given that s knows-wh_1, it follows from Higginbotham's truth-conditions that $(\exists p)$ (Ksp & p is the answer to the question posed by wh_1). Given that wh_1 and wh_2 have the same true answer, it follows that $(\exists p)$ (Ksp & p is the answer to the question posed by wh_2). Now it follows from Higginbotham's truth-conditions that s knows-wh_2. So if wh_1 and wh_2 have the same true answer, and s knows-wh_1, then s knows-wh_2. By parity of reasoning, if wh_1 and wh_2 have the same true answer, and s knows-wh_2, then s knows-wh_1. Thus if wh_1 and wh_2 have the same true answer, then s knows-wh_1 iff s knows-wh_2 (QED).[3]

Turning to (ii), Brogaard maintains that the material equivalence of convergent knowledge claims "is true, not false." She offers a counter-argument based on closure plus my principle of *whether*-equivalence (KA: §5), which runs:

6. "I know that Bush is on television" is true in context c. (*supposition*)

7. "I know that Bush or Ferrell is on television" is true in c. (6, *closure*)

8. "I know whether Bush or Ferrell is on television" is true in c. (7, *whether-equivalence*)

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[3] Brogaard allows that "perhaps Schaffer's point is not that (1) and (2) are equivalent but rather than 'if Bush is on television, (1) and (2) are true iff I know Bush is on television' is false" (WMD: §2). She then immediately moves on to her next objection, while continuing to label my argument unsound. I am saying that she should have understood this point *to be* my argument.

9. "I know that Bush or Jackson is on television" is true in *c*. (6, *closure*)

10. "I know whether Bush or Jackson is on television" is true in *c*. (9, *whether-equivalence*)

11. So, if "I know that Bush is on television" is true in *c*, then "I know whether Bush or Ferrell is on television" is true in *c* iff "I know whether Bush or Jackson is on television" is true in *c*. (6-10, *conditional intro*)

She says, "Certainly, Schaffer should have no problem with this argument, as he, like most other contextualists, thinks Closure is valid" and soon adds "The only way to reject the above argument is to reject 'Whether' Equivalence or Closure. But, as Schaffer acknowledges, both principles are very compelling" (WMD: §2).

I do indeed find both principles very compelling, but not as Brogaard employs either of them. There is a deep challenge to the question-relative account in the vicinity, which is to provide a plausible analogue of closure. In Schaffer 2007 (c.f. KA: fn. 16) I take up this challenge. Brogaard's inferences from 6 to 7 and to 9 are—on my account of closure—*not valid for all contexts c*. Let *c* be a context in which the question under discussion is whether Bush or Jackson is on television. Then an utterance of "I know that Bush is on television" in *c* will express the proposition that I know that Bush rather than Jackson is on television. The proposed extension—holding *c* fixed of course—would be to knowledge that Bush-or-Jackson rather than Jackson is on television. Yet Bush-or-Jackson is no longer an *alternative* to Jackson. There is no *contrast* left.[4] So I accept closure—suitably extended for a contrastive framework—in a way that *invalidates* Brogaard's inference.

To put the point more intuitively, the idea behind contrastive knowledge is that one can have knowledge under certain presuppositions. One can know that (*assuming it is either Bush or Jackson on television*) Bush is on television (c.f. KA fn. 14). But one cannot use this sort of assumption-limited knowledge to come to know the truth of the assumed—one cannot know that *assuming it is either Bush or Jackson*, Bush or Jackson is on television. That it is Bush or Jackson is simply being assumed in this context. One cannot know something by assuming it!

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[4]   More precisely, Brogaard's closure inference *fails* to instantiate the Expand-*p* rule (Schaffer 2007), because it fails the third conjunct in the antecedent of Expand-*p*: $(\{p_2\} \cap \{q\} = \varnothing)$.

As to *whether*-equivalence, the principle I state runs:

> **(WEQ)** Knows-*that* is contextually equivalent to knows-*whether*: If *p*, then ("*s* knows that *p*" is true in *c*) iff ("*s* knows whether *p*" is true in *c*). (KA: §5, thesis 10)

It seems truistic that, if Moore in fact has hands, then "Moore knows that he has hands" is true in a given context *c* iff "Moore knows whether he has hands" is true in *c*. The contrastive explanation is straightforward: supposing that the question under discussion in *c* is whether Moore has hands or stumps, both "Moore knows that he has hands" and "Moore knows whether he has hands" wind up expressing the very same claim, namely that Moore knows that he has hands rather than stumps.

Brogaard appeals to WEQ to go from 7 to 8 and from 9 to 10. She thus plugs in a disjunctive proposition for *p*, namely the proposition that Bush or Ferrell is on television. But in doing so I fear she plays fast and loose with a crucial ambiguity in knowledge-*whether* claims embedding disjunctions (c.f. Lewis 1982). Thus the words "I know whether Bush or Ferrell is on television" can be read as claiming knowledge with respect to the following multiple choice slate:

> (a) Bush is on television.

> (b) Ferrell is on television.

But the same words can be read as knowledge concerning the following multiple choice slate:

> (c) Bush or Ferrell is on television.

> (d) not (Bush or Ferrell is on television).

When I state the problem of convergent knowledge, the intended reading is the (a)/(b) reading (after all, the true answer is stipulated to be "Bush is on television" as per (a)). So to argue that convergent knowledge claims are equivalent, Brogaard would need to show that knowledge with respect to the (a)/(b) slate is materially equivalent to knowledge with respect to the much easier slate of options:

> (e) Bush is on television.

> (f) Jackson is on television.

But WEQ—properly understood—only yields the (c)/(d) reading when one plugs in disjunctions. Recall the way it takes "Moore knows that he has hands" to the following slate:

(g) Moore has hands.

(h) not (Moore has hands).

(Where (h) gets contextually specified as the 'live alternatives' to (g).) Likewise it only takes "I know that Bush or Ferrell is on television" to (c)/(d). As such Brogaard's application of WEQ does not deliver the conclusion she needs it to deliver.[5]

Moving finally to (iii), Brogaard offers a contextualist diagnosis as to why my argument (though "unsound") appears compelling. Her diagnosis runs:

> When we seek to determine how difficult it is to come to know whether Bush or Ferrell is on television, we consider a high-standards context. When we seek to determine how difficult it is to come to know whether Bush or Jackson is on television, we consider a low-standards context. (WMD: §2)

I find this diagnosis unsatisfying, in two main respects. First, it is not at all clear why the "Bush or Ferrell" question should push us to a 'high-standards' context, but the "Bush or Jackson" question should push us to a 'low-standards' context. No mechanisms are offered. Clearly there need be no difference in what is at stake. I think it is incumbent on Brogaard to provide an account that *predicts* such a shift.

The second reason I find Brogaard's diagnosis unsatisfying is that she does not say what standards are, nor does she explain how they impact knowledge. I think of the question-relative view as providing the best way of explicating 'high standards' and 'low standards.' (I am ultimately *defending* contextualism, after all: KA §5.) A 'high-standards context' is governed by a hard question, and a 'low-stan-dards context' is governed by an easy question. Such a shift is

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5   Brogaard notes that something has gone awry with respect to the multiple readings of disjunctive *whether*-clauses that Lewis first noted. But instead of considering whether she has misapplied WEQ, she concludes "[I]f we accept [WEQ] and assume that Bush is on television, then Lewis's point does not hold" (WMD: §2). I think she should have concluded—given that Lewis is obviously right about the multiple readings available—that plugging disjunctive propositions into WEQ was a risky game.

predicted by a shift between a hard and an easy question. These impact knowledge precisely because knowledge is a question-relative state. If Brogaard intends her 'standards-based' diagnosis as a rival to my question-relative contextualist diagnosis, I should like to hear more about the details of her rival view. As is I think her style of diagnosis is best implemented *via* question-relativity.

2.2. Brogaard's Positive Account

Brogaard then argues that "neither reductionism nor anti-reductionism makes the grade" (WMD: §3), and goes on to offer a novel proposal based on her preferred semantics for pseudo-clefts. In particular, (i) she claims an association between *wh*-clauses embedded under "knows" and *wh*-clauses in pseudo-clefts, (ii) she argues that *wh*-clauses in pseudo-clefts should be understood as predicates, and so (iii) she proposes to treat knowledge-*wh* as having the form:

(**BRO**) $(\exists x)$ Ks $<x$ is *wh-F*$>$

To illustrate, "I know when the movie starts" becomes "for some time t, I know that t is when the movie starts." For considerations of space I will not discuss Brogaard's account of pseudo-clefts here. Instead I will focus entirely on the claim of association in (i). For if (i) falls then there is simply no connection to be drawn between pseudo-clefts and knowledge constructions that embed interrogative *wh*-clauses.

Brogaard's claim of association between *wh*-clauses embedded under "knows" and *wh*-clauses in pseudo-clefts stems from the following inference pattern:

12. John knows *what Mary did at 3pm*.

13. *What Mary did at 3pm* was feed the dog.

14. So, John knows that Mary fed the dog at 3pm.

Brogaard regards this argument form as valid, or at least as "valid in contexts where there is something that is both salient and what Mary did at 3pm" (WMD: §7). She then proposes to explain the alleged validity by treating the italicized *wh*-clauses in 12 and 13 as having the same meaning. (This then allows her to apply her account of the meaning of the pre-copular constituents of pseudo-clefts to the meaning of *wh*-clauses embedded under knows.)

I do *not* think the argument form of 12-14 is valid. John might well know the answer to the question of what Mary did at 3pm, without having the knowledge that what she did counted as feeding the dog. If John were asked whether Mary (a) baked a cake at 3pm, or (b) opened up a can of meat and placed it in a bowl on the floor at 3pm, or (c) practiced her flamenco dancing at 3pm, John might well be able to successfully answer (b). In so doing he would show knowledge of what Mary did at 3pm. But he need not appreciate the connection between (b) and feeding the dog, in order to select (b) as the right answer.

For a more dramatic illustration, imagine that John and Mary are married, and that Mary has been having an affair with Tom. John is well aware that Mary and Tom are meeting for dinner tonight, but has no idea about the affair. Now consider:

> 15. John knows who Mary is meeting for dinner tonight.

> 16. Who Mary is meeting for dinner tonight is her secret lover.

> 17. So, John knows that Mary is meeting her secret lover for dinner tonight.

17 quite clearly does *not* follow from 15-16 (even when there is someone that is both salient and who Mary is meeting for dinner tonight). *The inferences 12-14 and 15-17 are invalid because the pseudo-clefts (13 and 16) express property identities that the knowing subject (John) may be unaware of.* One cannot freely substitute these property identities inside "knows." This is just opacity.

Given that 12-14 is the only rationale Brogaard offers for associating *wh*-clauses embedded under "knows" and *wh*-clauses in pseudo-clefts, I am concerned that BRO is a non-starter.

Of course it is true that *wh*-clauses embedded under "knows" and *wh*-clauses in pseudo-clefts are both *wh*-clauses. That gives some reason to expect an association. But it is crucial to appreciate that not all English *wh*-clauses are interrogatives. Some merely serve as noun phrases (free relatives).[6] Thus contrast:

> 18. I believe what Mary said.

> 19. I wonder what Mary said.

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[6] For a classic discussion of free relatives see Bresnan and Grimshaw 1978.

In 18 the *wh*-clause is a mere noun phrase ("believe", after all, does not take questions as complements). The meaning of 18 is that I stand in the belief relation to *the (salient) proposition that Mary said*. Only in 19 is the *wh*-clause a real interrogative ("wonder", after all, only takes questions as complements). The meaning of 19 is *not* that I stand in the wonder relation to the (salient) proposition that Mary said. Rather the meaning of 19 is that I stand in the wonder relation to a question *Q*, namely the question of what Mary said.

I will now (i) present five diagnostics for whether a given *wh*-clause is a mere noun phrase or a real interrogative, (ii) show that the *wh*-clauses in Borgaard's pseudo-clefts are mere noun phrases, and (iii) show that "knows" can take real interrogatives. As to (i), the first diagnostic is to disambiguate by extending the *wh*-term into "*wh-ever*" and into "*wh* the hell (on earth/in tarnation)." The "*wh*-ever" (whoever, whatever, whenever, etc.) extension usually selects the noun phrase reading. The "*wh* the hell" (who the hell, what on earth, when in tarnation) extension always selects the question reading.

The second diagnostic is to coordinate the phrase with another phrase in which it is embedded as the complement of "believe" and "wonder." "Believe" takes noun phrases but does not take questions, while "wonder" takes questions but does not take noun phrases (c.f. 18 and 19). Putting these first two diagnostics together, we find the following patterns:

20. I believe whatever Mary said.

21. ?I believe what the hell Mary said.

22. ?I wonder whatever Mary said.

23. I wonder what the hell Mary said.

The third diagnostic is to substitute multiple-*wh* constructions, like "what Mary said to whom." Multiple-*wh* constructions are always real interrogatives. Thus (continuing to use the diagnostics for mutual reinforcement):

24. ?I believe what Mary said to whom.

25. ?I believe whatever Mary said to whom.

26. ?I believe what the hell Mary said to whom.

27. I wonder what Mary said to whom.

28. ?I wonder whatever Mary said to whom.

29. I wonder what the hell Mary said to whom.

The fourth diagnostic is to substitute "whether." "Whether" is a special *wh*-complement that only has an interrogative reading (notice that "whether" does not have an extended "-ever" form):

30. ?I believe whether Mary said anything.

31. I wonder whether Mary said anything.

32. I wonder whether the hell Mary said anything.

33. I wonder whether the hell Mary said what to whom.

The fifth and final diagnostic is to use nonfinite tense. Nonfinite *wh*-clauses are always real interrogatives (Baker 1989). Thus:

34. ?I believe what to say to Mary.

35. ?I believe whatever to say to Mary.

36. I wonder what to say to Mary.

37. ?I wonder whatever to say to Mary.

38. I wonder what the hell to say to Mary.

39. I wonder what the hell to say to whom.

Now with these five diagnostics in hand, I can show (ii) that the pre-copular constituents of Brogaard's pseudo-clefts *are not real interrogatives, by every single test*. They are just free relatives. Here is the extension to "*wh*-ever" and "*wh* the hell" test:

40. Whatever Mary did at 3pm was in violation of the law.

41. ?What the hell Mary did at 3pm was in violation of the law.

Here is coordination with "belief" and "wonder":

42. What Mary said at 3pm is what I believe.

43. ?What Mary said at 3pm is what I wonder.

Here is the multiple-*wh* test:

44. What Mary said to Joe is fascinating.

45. ?What Mary said to whom is fascinating.

Here is the test with "whether":

46. What Mary fed the dog was purchased at Walmart.

47. ?Whether Mary fed the dog was purchased at Walmart.

And here finally is the test with nonfinite tense:

48. What Mary fed the dog is rich in protein.

49. ?What to feed the dog is rich in protein.

So I must conclude that BRO—based as it is on the semantics of certain pseudo-clefts—is at best an account of knowledge constructions with noun phrase complements ("I know the way to Kansas," "I know everything you know"). It is not an account of knowledge-*wh* at all, in the sense of knowledge with respect to an embedded question.[7]

We can use the same five diagnostics to see that (iii) "knows" does take real interrogative *wh*-clause complements:

50. I know what the hell you did last night.

51. I used to wonder why the sky is blue, but now I know it.

52. I know what Mary said to whom.

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[7]   In KA I used examples involving "whether" partly to screen off this confusion. Brogaard switches all the examples to "what." Tellingly, when she offers her positive account, she notices that "The account just offered does not straightforwardly apply to knowledge-*whether*, for '*e* is what Mary did at 3pm' is well-formed, '*p* is whether *q* or *r*' is not" (WMD: §7). By my lights she should have concluded that her account does not apply to interrogatives at all.

53. I know whether Bush or Jackson is on television.

54. I know what to say to Mary.

My question is how to understand knowledge claims with interrogative complements (§1.1; KA: p. 1). The pre-copular *wh*-clauses in Brogaard's pseudo-clefts are not interrogatives. So I must conclude that Brogaard has given a novel account—but one that does not yet address the question I was asking.

3. Reply to Kallestrup

3.1. *Kallestrup's Positive Account*

Kallestrup proposes to retain binarity while denying RED. That is, he proposes to give an account of knowledge-*wh* which retains the binary K*sp* form while allowing that convergent knowledge claims are materially inequivalent. For Kallestrup—unlike Brogaard—accepts the inequivalence of convergent knowledge-*wh* claims: "Schaffer argues to my mind persuasively that there are firm semantic intuitions about the inequivalence of ["I know whether Bush or Janet Jackson is on television"] and ["I know whether Bush or Will Ferrell is on television"]" (KPC: 3).

In this light, Kallestrup proposes (*KP*: 5) the following treatment of the Bush cases (1 and 2). To know whether Bush or Jackson is speaking on television is to know that (George Bush is speaking on television and Janet Jackson is not speaking on television); while to know whether Bush or Ferrell is speaking on television is to know that (George Bush is speaking on television and Will Ferrell is not speaking on television). As my bracketing should indicate, these treatments involve binary K*sp* relations—the Bush examples come out as expressing binary knowledge between a subject and a conjunctive proposition. Moreover, these treatments are clearly not materially equivalent—the conjunctive propositions known differ in their second conjuncts. So far, so good.

Kallestrup then generalizes his account to knowledge-*whether* involving two alternatives: "If *p* is true, then K (whether-*p*-or-*q*) reduces to K (*p*-and-not-*q*)" (*KP*: 7) He does not generalize further to other *wh*-terms, or to cases with many true and/or false answers, but I think his intentions are fairly clear:

> (**KAL**) *s* knows-*wh* iff K*sp*, where *p* is a conjunctive proposition such that (i) for some true answers p_1-p_m to the indirect

question Q of the *wh*-clause, p_1-p_m are conjuncts of p, (ii) for all false answers q_1-q_n to Q, their negations are conjuncts of p, and (iii) there are no further conjuncts of p.[8]

KAL is a new proposal, which does concern interrogative *wh*-complements. What I especially like about KAL is that *it includes the contrasts*. While CON/QST includes the contrasts as a third argument of the knowledge relation, KAL includes the contrasts inside the second argument, as negated conjuncts within the proposition known.[9]

Praise aside, I now offer three objections to KAL. The first objection is that KAL is incompatible with the truistic *whether*-equivalence principle WEQ (§2.1, KA: §5, thesis 10). For instance, given that I have hands, "I know that I have hands" is true in a given context iff "I know whether I have hands" is true in that context. Both RED and CON validate this truism. On RED, if p, then both "s knows that p" and "s knows whether p" are true in c iff Ksp. On CON, if p, then both "s knows that p" and "s knows whether p" are true in c iff Kspq, where q disjoins the alternatives to p relevant in c. This is a good result for both RED and CON.

Yet KAL invalidates WEQ. On KAL, "s knows that p" is true in c iff Ksp, but "s knows whether p" is true in c iff Ksp^*, where p^* is the conjunction of p and the negation of the other queried alternatives in c. The equivalence is lost. (This is a consequence of the way KAL shoves the contrasts inside the proposition known in the knowledge-*wh* case, while leaving the knowledge-*that* case untouched.) For instance, according to KAL, to know that I have hands, I only need to stand in the knowledge relation to the proposition that I have hands. But to know whether I have hands I need to stand in the knowledge relation to the more complex conjunctive proposition that I have hands and … (where the remainder is filled in by conjuncts

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[8] In only requiring *some* true answers to be conjuncts, but requiring *all* false answers to have their negations as conjuncts, I am going beyond anything Kallestrup says (his examples only involve two alternatives, one true and the other false, so the quantificational issues don't arise). But I think this is the most plausible way to generalize his view. In any case none of the objections I will be making will turn on these issues. (*Addendum*: Kallestrup (*p.c.*) endorses KAL with (ii) revised to (ii'): "for all *salient* false answers …")

[9] In this respect KAL is reminiscent of some attempts to reduce contrastive explanatory locutions to conjunctive explanations (Ruben 1987; Temple 1988).

negating every relevant alternative). Knowledge-*that* and knowledge-*whether* have disconnected.[10]

The second objection is that KAL makes convergent knowledge-*wh* ascriptions *nearly equivalent*. To my mind, the intuitions of inequivalence for convergent knowledge-*wh* ascriptions are intuitions of *substantial inequivalence*:

> (**SUB**) Some convergent knowledge-*wh* ascriptions are substantially inequivalent from each other, denoting knowledge states that are not just a trivial closure inference away from each other.

For instance, the knowledge of whether there is a goldfinch in the garden or a raven was supposed to be easy knowledge accessible to virtually anyone, while the knowledge of whether there is a goldfinch in the garden or a canary was supposed to be harder knowledge to achieve, perceptually accessible to only the expert birder. It is not the case that virtually anyone can gain the kind of knowledge that is the special province of the expert birder, merely by a dash of easy knowledge and a splash of trivial reasoning. The knowledge states involved are substantially inequivalent.

CON gets this right. On CON, to know whether there is a goldfinch in the garden or a raven, one must rule out the raven alternative (which is easy to rule out); while to know whether there is a goldfinch in the garden or a canary, one must rule out the canary alternative (which is harder to rule out). There is no valid closure inference from $Kspq_1$ to $Kspq_2$, for arbitrary q_1 and q_2.[11] These knowledge states come out substantially inequivalent, as SUB demands.

But KAL violates SUB. On KAL, if two knowledge-*wh* ascriptions are convergent, each knowledge state is *just a trivial closure inference away* from the other. To illustrate, suppose I know whether there is a goldfinch in the garden or a raven. Then (by KAL) the content of my knowledge would be: there is a goldfinch in the garden and there is not a raven in the garden. With such knowledge, I would be just

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[10]   Kallestrup could in principle hold that "I know that p" actually expresses the more complex conjunctive proposition Ksp^* (where p^* is the conjunction of p and the negation of the other queried alternatives in c). This would restore WEQ, but at the cost of squandering the main advantage of binary accounts, which is to provide a simple and direct treatment of knowledge-*that* ascriptions. Indeed—since p^* includes the contrasts—this is just a different way of implementing the idea that the contrasts are always included in what is known, with the strange consequence that knowledge is restricted to conjunctive propositions.

[11]   For fuller discussion of contrastive closure principles, see Schaffer 2007. The inference in the main text would count as falling under the *in*valid Replace-q rule.

a trivial closure inference away (using conjunction elimination) from knowledge that there is a goldfinch in the garden. And then I would be just one more trivial closure inference away (using the presupposition that there is only one bird in the garden) from knowledge that there is a goldfinch in the garden and there is not a canary in the garden. By KAL, this *is* knowledge whether there is a goldfinch in the garden or a canary. Indeed, on KAL, as long as I can know whether there is a goldfinch in the garden or an elephant, I can easily come to know whether there is a goldfinch in the garden or at the neighbor's. So while KAL makes it possible for a subject to know-wh_1 but not know-wh_2 for convergent wh_1 and wh_2, this possibility is only available to the logically incompetent. Thus KAL allows virtually anyone to cook up the kind of knowledge that is supposed to be the speciality of the expert birder, merely by a dash of easy knowledge and a splash of trivial reasoning. This seems wrong.

The kind of inequivalence KAL generates is too thin. If one accepts the intuitions of inequivalence as I report them (as Kallestrup does [*KP*: 3]), then I think one must accept SUB. On the other hand, if one rejects these intuitions then one may as well retain RED. Either way, I see no line of argument that supports the kind of thin inequivalence KAL delivers.

The third objection is that KAL does not fit the *conceptual role* of knowledge ascriptions. Knowledge ascriptions serve such roles as indicating who has evidence, identifying experts, and fingering who can answer the question at hand (KA: 7):

> (**ROL**) Knowledge ascriptions indicate who has evidence, identify experts, and finger answerers.[12]

Convergent knowledge-*wh* claims require different evidence, identify different experts, and finger different answerers. For instance, to know whether there is a goldfinch in the garden of a raven, one need only the evidence of a passing glance, and virtually anyone (with working color vision, and minimal birding skills) may serve as expert and

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[12] The idea that knowledge ascriptions indicate who has evidence is due to Wittgenstein, who says that knowledge ascriptions serve to indicate when "one is ready to give compelling grounds" (1969, §243; also §50, §483-5). The idea that knowledge ascriptions identify experts is due to Craig, who says that the role of the knowledge ascription is "to flag approved sources of information" (1990: 11). And the idea that knowledge ascriptions finger answerers is due to Hookway: "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). See Schaffer 2005 for some further discussion.

answerer. To know whether there is a goldfinch in the garden or a canary, one may need more subtle evidence of wing coloration, and perhaps only the birder may serve as expert and answerer. And to know whether there is a goldfinch in the garden or at the neighbor's, one may need evidence of landscape, and perhaps only the homeowner may serve as expert and answerer. (Imagine devising a multiple choice test where the subject gets to look at the scene and give her answer. Think of who will be able to handle the question "goldfinch or raven?" who will be able to handle the question "goldfinch or canary?" and who will be able to handle the question "the garden or the neighbor's?".)

CON is designed around ROL. Who counts as having evidence, expertise, and answers depends, in part, on the question. The task of discriminating a goldfinch from a raven calls for different evidence, involves different expertise, and can be handled by different subjects than does the task of discriminating a goldfinch from a canary, or of discriminating the garden from the neighbor's. Whether one can make the needed discrimination depends, in part, on what one needs to discriminate *against*. CON fits ROL because *all these roles are contrast-relative roles*.

Yet KAL cannot sustain ROL. For instance, recall how KAL violates SUB. Being able to tell (via perception) whether there is a goldfinch in the garden or a canary is no longer the province of the expert. It has become accessible to virtually anyone who can tell a goldfinch from a raven (or even who can tell a goldfinch from an elephant), through trivial reasoning. So ascribing knowledge as to whether there is a goldfinch or a canary can no longer be used to identify the expert, since it no longer requires the sort of discrimination that distinguishes the expert.

Overall it seems to me that CON remains by far the leading view of "knows" with embedded questions, capable of sustaining WEQ, SUB, and ROL. RED is a distant second, managing only to sustain EQI. KAL is a lagging third (and BRO is not in the game). KAL does render convergent knowledge-*wh* ascriptions inequivalent, but in too insubstantial a way to do justice to the intuitions of inequivalence. And for that it pays the price of squandering WEQ, while remaining unsuited for ROL.

3.2. Kallestrup's Revenge Argument

Kallestrup concludes by posing a "revenge" problem for CON. This concerns cases of convergent knowledge-*wh* ascriptions that he claims *should* come out materially equivalent, contrary to the contrastive verdict. Before turning to the specific cases he gives, I should note at the

outset that any such "revenge" would fall equally on both CON and KAL. But in any case I will argue that there is no threat of revenge to be feared.

So suppose that Jones is in the office, and consider the following two convergent knowledge-*wh* ascriptions:

> 55. I know who is in the office.

> 56. I know where Jones is.

Kallestrup intuits that both 55 and 56 *should* reduce to my knowing that Jones is in the office, as per (neither CON nor KAL but) RED. My reaction to such a case is that these ascriptions should not so reduce, *for exactly the same reasons as in the Bush cases and the goldfinch cases.*[13] 55 requires knowing that it is Jones, rather than some other contextually salient person, who is in the office. This requires evidence that discriminates between people. 56 requires knowing that it in is the office, rather than in some other contextually salient place, that is where Jones is. This requires evidence that discriminates between places. Someone skilled at recognizing faces but not places might well handle the first question properly but not the second.

Kallestrup is alive to such a reaction, and moves to a case modified in two respects. The first modification is to stipulate that "the relevant conversational features determine no specific set of alternatives" (*KP*: 10). Kallestrup suggests that this kind of case could arise from out-of-the-blue assertion. The second modification is to stipulate that the subject gains knowledge on the basis of out-of-the-blue reliable testimony: "I am simply told by a reliable informant whom I have no reason not to trust that Jones is in the office, and on the basis of her testimony come to know that Jones is in the office" (*KP*: 10). Kallestrup thus concludes with:

> In this case, it thus seems implausible that the truth-values of [55] and [56] should come apart. They are both true in virtue of the truth of ["I know that Jones is in the office"]. So, intuitively, some if not all convergent knowledge claims are equivalent, that is, some—at least superficially—distinct knowledge-*wh* claims are true in virtue of a single knowledge-*that* claim. But

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[13]   Indeed I see no relevant difference between these cases. Exactly the same issues would arise for the following pair: "I know what bird is in the garden," and "I know where the goldfinch is."

contrastivism cannot honor this point since it entails that all knowledge-*wh* claims embedding distinct *wh*-phrases are inequivalent. (*KP*: 12)

I offer two replies to Kallestrup's threat of revenge. My first reply is that neither of Kallestrup's modifications seem to me to touch the above argument that 55 and 56 are *inequivalent*. No challenge has been raised to the claim that the subject who can discriminate faces but not places can truly assert 55 but not 56. But this already suffices to show that the knowledge states denoted by 55 and 56 (assuming fixed denotations) cannot coextend.

By my lights, all Kallestrup has argued is that the knowledge states denoted by 55 and 56 may sometimes be grounded in the same evidence (in this case, a common snippet of testimony). But that could not possibly establish that 55 and 56 are themselves materially equivalent. After all, consider the following two claims:

57. I know that Jones is not on Mars.

58. I know that the office is not empty.

The knowledge states denoted in 57 and 58 are not materially equivalent, on anyone's view. But they too can be grounded in the same evidence—indeed, they too can be based on the one snippet of testimony that Jones is in the office.

My second reply is that Kallestrup's modifications *beg the question*. In particular, his stipulation that out-of-the-blue testimony provides non-contrastive knowledge that Jones is in the office (without there being any "specific set of alternatives") is a stipulation of the existence of non-contrastive knowledge. Such a stipulation begs the question against the view that all knowledge is contrastive. If it could be stipulated that there exists non-contrastive knowledge, contrastivism would have been refuted from the start!

Kallestrup does motivate his stipulation by considering out-of-the-blue assertion: "Cases of this kind should be familiar, e.g. when one asks, without further ado, who the tallest living man is, or where the last quadruplets were born" (*KP*: 10). He sees that he is already disagreeing with the contrastivist in this regard:

Pace Schaffer, … some instances of propositional knowledge are not generated by a multiple-choice question-and-answer process involving specific sets of alternatives some of which are

eliminated by the exercise of discriminatory abilities, and some by asking those in the know. (*KP*: 10)[14]

So it seems to me that the real issue is not revenge at all. The real issue is whether there can be instances of propositional knowledge without contrasts. And so I would suggest that Kallestrup's deep challenge to contrastivism is the challenge that there might be contexts of knowledge ascription without contrasts to be found.

The contrastivist is indeed committed to there being contrasts found in every context. More precisely, the contrastivist is committed to something like the following:

> **(QUD)** For all contexts c in which a non-contrastive knowledge-*that* ascription ("s knows that p") might be completed, there is a function from c and p to an implicit question under discussion Q, that determines which KspQ relation has been expressed.[15]

So I am suggesting that Kallestrup's deep challenge to contrastivism is best understood as a challenge to QUD.

QUD, however, is a consequence of leading linguistics accounts of context (*KA*: 12-3). For instance, Stalnaker suggests that a context can be modeled as a set of possible worlds—*the context set*—"which include all the situations among which speakers intend to distinguish with their speech acts" (1999b: 99), and which is thus "the set of possible worlds recognized by the speaker to be the 'live options' relevant to the conversation" (1999a: 84-5). Ginzburg posits that the conversational

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[14] Point of clarification: I would not say that some alternatives "are eliminated by the exercise of discriminatory abilities, and some by asking those in the know." I only say that all alternatives must be eliminated (full stop). Whether the elimination is effected by perception or testimony (or memory, or reason, or any other 'sources' of knowledge there may be) plays no role, and deserves no mention. Indeed, on my view, hearing someone testify is just another perceptual encounter with the world. Like any perceptual encounter, the knowledge it supports depends on the relevant alternatives. If we are presupposing that perception is veridical, and only questioning whether I have hands or stumps, then perception provides the answer. Likewise if we are presupposing that a given testifier is a truth teller, and only questioning whether he will say one thing or another, then hearing the testimony provides the answer. By my lights there should be no special principles for testimony in the theory of knowledge.

[15] Strictly speaking the limitation to a function (unique output) could be lifted, and one could allow contexts in which an "s knows that p" ascription went *indeterminate*, expressing some range of question-relative knowledge relations KspQ_1-KspQ_n. (The approach that will emerge in the main text is perhaps a notational variant on this idea. On the approach that will emerge, there is functionality from context to contrasts, but there may be indeterminacy as to which context is in play.)

scorecard includes a slot for the *question under discussion*, which plays a role in topic choice and ellipsis licensing, *inter alia* (1996: 414; c.f. Roberts 2004). Given this account, there is always a contextually implicit question available. It is just what we are addressing, at any stage of the conversation. So pending any reason to doubt these leading accounts of context, I must conclude that QUD withstands the challenge.

(Of course there may be indeterminacy.[16] Such indeterminacy is to be modeled as indeterminacy concerning which context set is governing the conversation at that stage. We clarify indeterminacies when it matters. Thus if someone were to declare out-of-the-blue, "I know that Jones is in the office," we might bother to ask for clarification if it mattered to us what itch of doubt had spurred such a strange announcement.[17])

Overall, it seems to me that the threat of revenge is empty. 55 and 56 are inequivalent in just the same way that the goldfinch examples, and the Bush examples of 1 and 2, are inequivalent. I think that Kallestrup succeeds in raising a deep challenge about contexts, but have claimed that the leading linguistic accounts of contexts vindicate question-relativity.[18]

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[16] When Kallestrup says that "no specific set of alternatives" is determined (*KP*: 10), he might only be saying that this is a case of indeterminacy. But from that, no objection to CON/QST would follow.

[17] Here I am following Wittgenstein's critique of Moore: "can 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, plausibly to my mind, 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 §s 350, 423, 553). I would add that what Moore was thinking of must have served to generate a question—to inspire some itch of doubt—which the knowledge ascription is intended to scratch.

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