

## Knowing-How, Showing, and Epistemic Norms

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**Author:** Joshua Habgood-Coote, University of St Andrews

### Introduction

When is it epistemically permissible to assert? According to several influential authors, only knowing that  $p$  puts one in a position to assert  $p$  (Williamson 2000), (DeRose 2002), (Hawthorne 2004), (Turri 2011). Let's call this claim the knowledge norm of assertion, or KNA for short:

KNA: It is permissible to assert that  $p$ , only if one knows that  $p$ .<sup>1</sup>

This norm says that an agent's assertion is permissible only if she knows what she says. If a speaker says that something which is false, unjustified or not known, then there is something inappropriate about that assertion. Crucially, KNA makes a claim about *epistemic* permission: an ignorant or false assertion can still be morally or prudentially

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<sup>1</sup> The knowledge-norm of assertion is formulated in several different ways: as an imperative or must claim (Williamson 2000: 241-3), as a claim about appropriateness (Brown 2008a), or as a claim about permissibility (Turri 2011: 37). There is also debate about whether the norm should also encompass the sufficiency claim (Brown 2008a, 2008b, 2010, 2012). I will not consider these issues since the counterexamples to the knowledge-norm of showing concern the necessity of know-how for appropriate showing, and will cause problems to any of these formulations.

permissible, and a knowledgeable assertion can still be morally or prudentially impermissible.<sup>2</sup>

Buckwalter and Turri (henceforth B&T) have recently opened up a parallel question about the epistemic permissibility of showing, claiming that ‘just as knowledge-that is the norm of *telling*, so knowledge-how is the norm of *showing*’ (2014: 17). This is an important proposal, which if correct would offer insight into the normative significance of knowledge-how, deepen and widen the debate about epistemic norms, and give us a picture of the commonalities between knowledge-how and knowledge-that.

Although they don’t offer a formulation of this norm, the parallel norm to KNA would be a knowledge-how norm of showing, which we’ll call KNS for short:

KNS: It is permissible to show someone how to V, only if one knows how to V.

Some clarifications. KNS is not a descriptive claim about the necessary conditions of an act of showing: it is a normative claim about what the requirements are on *epistemically permissible* showing.<sup>3</sup> Presumably, we are to understand showing here as *intentional* showing. In a case in which A secretly watches B make a tomato rose without B’s knowledge we can say that B *showed* A how to make a tomato rose (Hawley 2010: 402), but I take it that this is not the sense of ‘showing’ that figures in KNS.<sup>4</sup> Moreover, KNS only concerns showing-*how*, and not the kind of activity that is involved in showing

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<sup>2</sup> From this point on, I will use unqualified claims about permissibility to refer to epistemic permission.

<sup>3</sup> Although KNS is only significant if it is possible to show without having know-how. This is a point we will return to in §3.3.

<sup>4</sup> The fact that I focus on cases in which one person learns from another’s teaching should not distract us from the fact that we can also acquire know-how through imitation, practice, and simple trial and error. Since our focus will be on the norms on interpersonal teaching, giving a full account of the ways in which we can acquire know-how is beyond the scope of this paper. Thanks to an anonymous reviewer for raising this issue.

someone an object, or showing that a proposition is true. Lastly, as formulated KNS gives negative evaluation only to *ignorant* instruction, and not to teachers who know but give false instructions.<sup>5</sup> There does seem something inappropriate about a case in which I know how to get to Edinburgh castle, but give you false instructions because I'm just bad at giving directions. We can modify KNS to cover such cases by adding that an episode of showing must *express* knowledge-how (Turri 2011), since mistaken instruction concerning how to V will not express knowledge how to V. I leave this complication implicit below.

My goal in this paper is to argue that KNS is false: that there is not an epistemic norm forbidding showing someone how to do something without knowing how to do it. Although KNS has considerable support from conversational evidence, and from a popular Craig-inspired picture of the function of the concept of knowledge, I will argue that it faces serious problems. In particular, I argue that the supporter of KNS faces a dilemma concerning how they understand *showing*. If they construe showing *broadly* as a general kind of skill-teaching the norm faces counterexamples of agents who know how to teach others how to do something, but do not themselves know how to do it. On the other hand, if they construe showing *narrowly* as involving only teaching by doing, the apparent knowledge requirement on showing can be explained away by more general connections between knowledge-how and action. The falsity of this norm has some interesting wider ramifications. For one thing, it means that one cannot appeal to KNS in order to establish a general norm connecting knowledge (that and how) to pedagogy. The falsity of KNS is

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<sup>5</sup> These cases might either be due to an intention to mislead, or innocent error. Thinking about false instructions is made more complex by the fact that show+wh constructions appear to be factive in the sense that one cannot show how to V, without the demonstrated way being genuine (for parallel discussion of tell+wh see (Karttunen 1797:11), (Vendler 1980: 283-4), (Holton 1997)). To avoid talk of apparent showing, I will assume that the show+wh construction is not factive. For the same reason, I will assume that 'teach' is not a success term meaning that giving false instructions about how to V counts as teaching.

also a strike against the Craigian picture of knowledge, which predicts that KNS is true. This discussion also raises the question of what alternative accounts of the normative role of knowledge-how we might give. In the final section, I will tentatively suggest an alternative knowledge-how norm, which connects knowing-how to intending.

It is worth noting that I will use ‘knows-how’ and ‘knows-that’ to refer to the kinds of knowledge with practical and theoretical bundles of properties, remaining neutral about whether these kinds have propositional or non-propositional objects. I take it that that questions about the normative role of knowledge-how are orthogonal to the question of whether it is a kind of knowledge-that. This category of practical knowledge may considerably diverge from the class of knowledge which ordinary language picks out using the locutions ‘knows how’ or ‘knows how to’ (Hornsby 1980: 84, 2005: 115-6), (Rumfitt 2003: 166), (Glick 2011: 426-9). If Jared reads an instruction booklet about skiing there is some sense in which he counts as ‘knowing how to ski’. However, I will take it that there is a kind of practical knowledge which he lacks until he straps on some skis and gets out on the slopes. I remain neutral on how we should understand the practical bundle of properties associated with knowledge-how. In particular, I will not take a stand on whether knowing how to V entails the ability to V. All of my arguments – crucially the examples of teachers who permissibly show without knowing how – go through irrespective of whether knowledge-how entails ability. Knowledge-how is a fairly distinctive kind of knowledge, meaning that KNS is only one of a family of possible knowledge norms on showing. The central goal of this paper is to argue that there is not an epistemic norm relating practical species of knowledge-how and showing, and I will not have space to argue against all possible knowledge norms.

The plan of action is as follows. In the first section, I will lay out the case for KNS, considering the conversational evidence offered by B&T, and then situating both KNA and KNS within a Craig-inspired picture of the function of our concept of knowledge. In the second section, I consider two preliminary worries about KNS, concerning the alternative conditions that might figure in a norm on showing, and how to understand the activity of showing. In the third section, I argue that the supporter of KNS faces a dilemma, and that various versions of the norm that understand showing differently are implausible.

## **1. The Knowledge-How Norm of Showing**

### **1.1. Conversational Evidence for KNS**

B&T appeal to four pieces of conversational evidence in support of KNS, which closely parallel arguments for KNA (Williamson 2000: C11), (Turri, 2010, 2011, 2013).

First, they point out the possibility of requesting a demonstration by asking about knowledge-how. For example, it is possible to request someone to show you how to make a campfire by asking ‘do you know how to make a campfire?’. They argue that this conversational move is possible because in general one can request someone do something by asking about whether she is in a good enough position to do so permissibly.<sup>6</sup>

Secondly, B&T observe that one can excuse oneself from a request for instruction by claiming that one lacks the requisite know-how. If you ask me to show you how to tie a Sheepshank knot, I can excuse myself by saying that I don’t know how to tie one. They explain this by pointing out that the knowledge-norm predicts that ignorant instruction is inappropriate, meaning that claiming ignorance functions to excuse.

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<sup>6</sup> This explanation is of a kind with Searle’s explanation of indirect requests (Searle 1979) (McGlynn 2014: 93).

Thirdly, B&T point out that someone offering to show how you to do something opens up the possibility of challenging whether they have know-how. If I offer to show you how to make soufflé you can challenge me by saying ‘I didn’t realise you knew how to make soufflé!’ or ‘are you sure you know how to make soufflé?’. This is predicted by KNS, since if showing were governed by a knowledge norm, someone who offered to show would represent themselves as having know-how, which might be challenged by a hearer who has doubts.

Finally, B&T claim that there are sentences involving knowledge-how analogous to Moorean sentences for assertion (i.e. ‘ $p$ , and I don’t believe/know that  $p$ ’). Their example of such a sentence is:

(1) I don’t know how to do this, but [watch me now:] this is how it’s done (2014: 18).

They claim that the oddness of this sentence stems from the fact that the speaker’s offer to demonstrate represents her as having some know-how which she denies that she possesses.

The fact that these arguments parallel the conversational case for KNA raises the question of whether a supporter of KNS needs to endorse the package of both norms. Strictly speaking, it is possible to endorse one norm, but not the other. However, there are a couple of reasons for thinking that the norms come as a package, which parallel reasons for thinking that knowledge norms on assertion and action come together (Brown 2012). One might think with B&T that the knowledge norms on assertion and showing are *inherited* from a more general knowledge norm on pedagogical activity (B&T 2014: 18-9). Alternatively one might take *showing* to be ultimately a kind of demonstrative assertion

(Stanley 2011: 162-4), which would make KNS an *instance* of KNA. There is a neat explanatory unity to endorsing the package of both norms, as B&T observe. Endorsing both KNA and KNS means that one can offer a unifying account of our evaluations of pedagogy. The idea that knowledge-how and knowledge-that are each associated with the 'being a norm of x' function also provides an explanation of why both kinds of states should count as knowledge, despite their considerable differences (Craig 1990: 155).

## 1.2. Knowledge-Norms and the Function of KNOWS

An additional motivation for endorsing KNA and KNS comes from a hypothesis about the function of KNOWS<sup>7</sup> that we find in (Craig 1990), and (Reynolds 2002, 2008). According to what we might call the *Pooling View*, the function of KNOWS is to facilitate the transmission epistemic states between agents. In this section, I will show that this view supports KNA and KNS.<sup>8</sup>

In *Knowledge and the State of Nature*, Craig explores a distinctive methodological strategy, starting inquiry into the nature of knowledge with a hypothesis about the function of the concept KNOWS. Craig points out that it is a basic feature of human social groups that individuals have access to various different pieces of information about their environments, and suggests that the concept KNOWS-THAT is designed to address this distribution of information across social space.

Any community may be presumed to have an interest in evaluating sources of information; and in connection with that interest certain concepts may be in use

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<sup>7</sup> In what follows I will use capitalisation to refer to concepts.

<sup>8</sup> This is a generalisation of Fricker's point that Craig's view of KNOWS-THAT leads to KNA (Fricker 2015). A number of authors have also suggested that Craig's account naturally fits with the knowledge norm for practical reasoning. (Greco 2008, 2012), (Hannon 2013), (McKenna 2013, 2014).

[...] to put it briefly and roughly, the concept of knowledge is used to flag approved sources of information. (Craig 1990: 11)

His central idea is that by providing us with a standard for evaluating speakers, KNOWS-THAT puts a check on what information gets transmitted between agents, paradigmatically by helping us to choose testifiers on some question (Craig 1990: C2).

In the final chapter of the book, Craig extends his account of knowledge-how. He points out that the information-pooling story cannot apply to KNOWS-HOW, since knowing how to do something systematically diverges from being a good informant. Many skilled agents are pretty inarticulate about how to engage in the activities that they are skilled in, and lots of know-how cannot be picked up from testimony.<sup>9</sup> In light of these facts, Craig offers a story about KNOWS-HOW to parallel his account of KNOWS-THAT. The idea is that KNOWS-HOW facilitates the pooling of *skills* between agents by providing us with a standard for evaluating potential *teachers*, who can either show or tell us how to do something (Craig 1990: 158-60).<sup>10</sup>

Putting together the idea that KNOWS-THAT functions to pool information with the idea that KNOWS-HOW functions to pool skills, we get the general view that the function of KNOWS is to help us to pool epistemic states by providing us with a standard for assessing interactions which have the potential to transmit those states. Let's call this general view the *Pooling View* of the function of KNOWS.

With the pooling view on the table, we can consider its relation to the epistemic norms KNA and KNS. Focusing on knowledge-that, it is tempting to think that the information-pooling view and KNA are competing accounts of the function of knowledge-

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<sup>9</sup> Can know-how ever be picked up from testimony? Poston (2015) is sceptical, but Hawley (2010) argues that it can.

<sup>10</sup> See also: (Reynolds 2002:158-59).

that. It is true that supporters of these views focus on different kinds of examples to motivate their views. Craig focuses on the perspective of the *inquirer*, considering prospective knowledge-ascriptions that are used to flag good informants, whereas supporters of KNA focus on the perspective of the *examiner*, considering retrospective uses of knowledge-ascriptions to assess whether an assertion fulfilled an epistemic rule.<sup>11</sup> However, I think that the impression of conflict is misleading. For one thing, the two views are about different things: the Pooling view concerns the function of the *concept* KNOWS-THAT, whereas KNA is a view about the functional properties associated with the *state* of knowledge-that. It is true that Craig focuses on informant-flagging knowledge ascriptions to illustrate the pooling view. But he's open to other ways in which knowledge-ascriptions can facilitate the pooling of information, pointing out that we can use knowledge-ascriptions to decide whether to assert to others (1990: 63-5), and to recommend informants for others on questions which we ourselves aren't inquiring about (1990: 82-97). He would presumably also be open to Reynolds' suggestion that retrospective knowledge denials can help to facilitate the pooling of information by providing a kind of social pressure to only assert when one is in a good epistemic position (Reynolds 2002).

Not only are these two views not in competition: endorsing KNA and KNS helps the supporter of the pooling view to explain how KNOWS plays the pooling function. Note that in each of the kinds of situations described in the previous paragraph, KNOW-THAT facilitates the pooling of information by picking out a state that is the standard for assertion. This suggests that the mechanism by which KNOWS-THAT facilitates the

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<sup>11</sup> On this distinction, see (Williams 1973: 149), (Craig 1990: 19)

pooling of information is by picking out the state which is the norm for assertion.<sup>12</sup>

Similarly one might think that KNOWS-HOW facilitates the pooling of skills by picking out the state that is the standard for showing. This suggests that KNA and KNS are predicted by the pooling picture.

The generalised pooling view certainly presents an attractive view of the significance of our concept of knowledge, and endorsing KNA and KNS gives a nice general picture of how it is that knowledge-ascriptions play the pooling role. The connection between the Pooling view and these epistemic norms also adds significance to the assessment of KNA and KNS, since if these norms were false that would be a considerable strike against the pooling picture.<sup>13</sup>

## **2. Complications for KNS**

In this section I consider two complications for the supporter of KNS. First, I consider some alternative conditions that might figure in a norm on showing, arguing against B&T that there are a number of plausible alternatives to KNS. Secondly, I call into question how we should understand the activity of showing, distinguishing several activities that might come under that heading.

### **2.1. What are the alternatives to knowledge?**

In the case of assertion, the task for the supporter of a knowledge-norm is not only to show that the knowledge-norm is plausible, but that it is more plausible than alternative

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<sup>12</sup> This connection is suggested by (Fricker 2015: 74-84). Williamson also claims that the point of having a speech act governed by the knowledge-norm is to facilitate the pooling of knowledge (2000: 266-9).

<sup>13</sup> One might think that the point of KNOWS is to help us pick out people who can be relied upon to do things for or with us. For a suggestion of this view of KNOWS-HOW, see (Moore 1997, C8), (Hawley 2011: 287-90). Thanks to an anonymous reviewer for raising this issue.

norms that posit different conditions on permissible assertion, such as truth, belief, and justification. B&T claim that supporters of KNS do not need to take up this task:

We see no hope for straightforward analogous alternatives when it comes to the norm of instructional demonstration. Truth and justification do not straightforwardly pertain to procedural knowledge. If there is a standard common to both main forms of human pedagogy – telling and showing – then it is knowledge (2014: 19).

I think that it is pretty clear the B&T's argument for the uniqueness of the knowledge-norm doesn't work. For one thing, it is an open question whether truth, belief justification pertain to knowledge-how. It is easy to find views on which knowledge-how is connected to truth (Stanley and Williamson 2001), belief (Brownstein and Michaelson, 2015), and justification (Hawley 2003), (Brogaard 2011). Putting this issue to one side, even if it turned out that these conditions do not pertain to knowledge-how, this would not rule them out as candidates for an epistemic norm on showing. The plausibility of a norm on showing turns on whether the relevant condition pertains to *showing*, not whether it pertains to knowing-how, and truth, belief and justification *do* pertain to showing. The kind of showing we're interested in is showing-how, and the interrogative phrase 'how to V?' is not the kind of thing that can be true, believed, or justified. However, if we take seriously the thought that interrogative phrases are systematically related to their answers—in this case, propositions of the form *w is a way to V*—we can take these propositions to figure in the relevant norms. This suggests the following truth (TNS), belief (BNS), and justification (JNS) norms on showing:

TNS: It is permissible to show someone how to V in way w, only if w is a way to V.

BNS: It is permissible to show someone how to *V* in way *w*, only if one believes that *w* is a way to *V*.

JNS: It is permissible to show someone how to *V* in way *w*, only if one has a justified belief that *w* is a way to *V*.<sup>14</sup>

As in the case of assertion, these norms need not be mutually exclusive. If knowledge-how is a kind of propositional knowledge that entails justified true belief, then KNS will entail all of these norms. However, as in the case of norms of assertion, the proponent of one of these norms is not just interested in the truth of the normative claims, but in the claim that their norm is the logically strongest norm on showing. For example, the proponent of TNS not only thinks that *truth* is a condition on appropriate showing, but that truth is the logically strongest condition on appropriate showing.

With these norms on the scene, it is fairly easy to generate analogues to any of the putative norms on assertion. Adding in higher-order belief or knowledge condition to JNS or KNS gives norms analogous to the higher-order norms considered by Williamson (2001: 260-3). There will be a version of the reasonable-to-believe norm, which shifts from the doxastic justification in JNS to propositional justification (Lackey 2008). One might also think that the condition on permissible showing is safe success in teaching (Pelling 2013). There will even be norms that have no analogue in the case of assertion, such an *ability* norm, and a *knowledge of ability* norm.

The KNS is not even the only possible knowledge norm on showing. In the introduction of this paper, I made the point that both Intellectualists and Anti-

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<sup>14</sup> In all of these norms the phrase *w is a way to V* is within the scope of the verb. The assumption that show+how is non-factive is also crucial here (see footnote 5).

Intellectualists ought to think that there is a distinction between practical knowledge, and the class of knowledge picked out by sentences involving 'know how'. KNS works with the narrow notion of practical knowledge that I have been calling knowledge-how.

However, one might think that appropriate showing can be made appropriate by non-practical knowledge about how to V, yielding the following norm:

KNS\*: It is permissible to show someone how to V in way w, only if one knows that w is a way to V.

KNS\* is a knowledge-norm on showing, but it is not a knowledge-*how* norm on showing, in the sense that it does not claim that permissible showing requires knowledge with the distinctive practical properties associated with knowing how. I observed in the introduction to this paper that I am not aiming to argue against every possible knowledge-norm relating to showing, only against the knowledge-how norm, but as an aside it is worth noting that KNS\* is rather implausible.<sup>15</sup>

KNS\* negatively evaluates agents who show how to V, but have no beliefs about how to V, or have only beliefs about how to V which are unjustified, false or Gettiered. However, as soon as one knows any proposition about how to V, by the lights of KNS\* one is in a position to appropriately show (all other things being equal).<sup>16</sup> However, the

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<sup>15</sup> KNS\* is really only one of a family of knowledge norms which claim that different kinds of non-practical knowledge about how to V is the norm on showing. KNS\* is the most general of these norms, but there is space to develop a norm that claims that some specific kind of non-practical knowledge about how to V is the norm on showing. For example, one might think that knowledge-how can be broken down into a propositional knowledge component and a practical component, and that the propositional knowledge component is the norm on showing. It would lead us too far astray to consider every possible way to formulate a knowledge norm relating to showing, especially since the evidence considered in section 1 points toward KNS, rather than any more complex knowledge norm. Thanks to anonymous reviewer for this point.

<sup>16</sup> As with the norms stated above, KNS\* says that knowing is necessary for appropriate showing, but not that it is *sufficient* for appropriate showing. This means that it is

kind of propositional knowledge which KNS\* deals in is extremely easy to come by. If Jared reads his skiing manual, and learns that the way to ski is to bend your knees and lean forward, then he knows of some way that it is a way to ski. In fact, even before he has read the skiing manual we might think that Jared knows the relevant kind of proposition, so long as he knows that *skiing* is a way to ski. According to KNS\* Jared can therefore be in a position to appropriately show having read the skiing manual – or even before he has read the manual. But, Jared seems like exactly the kind of teacher who ought to be negatively evaluated by the epistemic norm on showing. KNS\* does not provide this negative evaluation because the kind of propositional knowledge it deals in is far too easy to come by.<sup>17</sup> I take that that KNS\* does not state a sufficiently demanding standard to provide a plausible norm on showing.

The existence of alternatives to KNS is significant for two reasons. It means that any view about the norm of assertion can be extended to a unified norm of pedagogy, thereby gaining the virtue of generality that B&T claim is distinctive of knowledge norms. Furthermore, on the face of it each of these norms is in a position to explain at least some of the conversational data set out in section 1. This means that the supporter of KNS not only needs to show that the knowledge norm can explain the conversational data, but also to show that this norm can explain the conversational data *better* than that the various

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compatible with KNS\* that even when an agent has knowledge, their showing can be inappropriate, for some reason other than ignorance. For example, we might think as the cases of assertion and action there are *high-stakes* teaching cases, in which *more* than knowledge is required for appropriate teaching (Brown 2008 174-81; 2010 555-6). Thanks to an anonymous reviewer for this point.

<sup>17</sup> The supporter of KNS\* might argue that there is some other explanation for the inappropriateness of Jared's showing (see footnote 16), but it is difficult to see what that explanation might be: Jared's showing seems to be a paradigm case in which showing fails precisely because it does not meet the relevant epistemic standard. Jared's case certainly seems rather different from the high-stakes cases in which knowledge is insufficient for assertion.

competing norms. If the truth norm can explain the conversational data as well as the knowledge-norm, then this data is neutral between TNS and KNS.

## 2.2. What is Showing Anyway?

B&T seem to have in mind an extremely wide notion of showing. They appeal to a structural analogy between assertion and showing:

Just as knowing that is the norm of *information* transmission, knowing *how* is the norm of *skill* transmission. In brief, just as knowing is the norm of *telling*, so too knowing is the norm of *showing*. (2014: 17)

In this passage B&T suggest that we should use the notion of showing to pick out the general activity of skill transmission. Skill teaching is heterogeneous (Hawley 2010: 400-1). One can teach skills by giving instructions, by engaging in guided practice, by explaining principles, by giving constructive criticism, or even by *telling* someone how to do it. It is not obvious that we would think of all of these activities as involving showing in the everyday sense. Rather, our intuitive notion of showing seems to pick out a kind of teaching in which a teacher non-linguistically represents how to do something, paradigmatically by actually doing that activity herself.

Here the supporter of KNS is faced with a choice-point, concerning how to think of showing. To understand the options here, let's introduce some stipulative terminology. Let's call the general species of pedagogy involved in skill-transmission *teaching*, which includes all of the kinds of pedagogy listed in the previous paragraph. Within this general category, we can distinguish a category of *instruction*, which excludes testimony, but includes all non-linguistic representation, such as the use of diagrams and teaching by

doing. Finally, let's distinguish a category of *demonstration*, which picks out teaching by doing, of which the paradigm will be doing the activity whilst saying '*this* is the way to V'.

The question for the supporter of a knowledge-how norm is whether they want to endorse a knowledge-norm on teaching (KNT), instruction (KNI), or demonstration (KND).

KNT: It is permissible to *teach* someone how to V, only if one knows how to V.

KNI: It is permissible to *instruct* someone how to V, only if one knows how to V.

KND: It is permissible to *demonstrate* how to V, only if one knows how to V.

The existence of these interpretations of KNS is not itself a problem for the supporter of KNS, but it does point toward the dilemma in the next section.

### 3. A Dilemma for KNS

Having distinguished various interpretations of KNS, I argue that the supporter of KNS faces a dilemma. On the one hand, if they go for the more ambitious norms (KNT or KNI) then they face counterexamples of teachers who know how to teach but not to do, meaning that they can teach their students how to do something without knowing how to do that thing. I will call these examples cases of teaching *generative teaching*, in light of the fact that these cases are somewhat structurally similar to Lackey's Creationist Teacher case (2008 C4). On the other hand, if the supporter of KNS settles for the narrower norm (KND) they can avoid worries about generative teaching, but the apparent normative

connection between knowledge-how and demonstration can be explained away by general connections between knowledge-how and action, leaving the norm unmotivated.

### 3.1. Generative Teaching

Let's first focus on the broadest norm: KNT. I will argue against this norm in two stages: first arguing that it is *possible* to teach someone else how to V without knowing how to V by considering some real-life examples of generative teachers who successfully teach how to V whilst lacking a necessary condition for knowing how to V, and secondly contending that generative teaching can be *epistemically permissible* by considering a hypothetical example of generative teaching.

It is not that uncommon to find people teaching others how to do things that they themselves do not know how to do. A prominent example from music is Carmine Caruso, one of the most celebrated brass teachers of the last century. Julie Landsman (a famous Caruso student) describes Caruso thus:

Although he played Saxophone, Violin, and Piano, his specialty was *teaching*, and he particularly specialised in teaching brass players to have great chops.<sup>18</sup>

The important point is that although Caruso was a specialised brass teacher, he did not play—or know how to play—*any* brass instruments. In an interview, Landsman reports that Caruso would take her to musical conventions in order to demonstrate his exercises for brass instruments, because Caruso couldn't play any of his own exercises.<sup>19</sup> Thus, Caruso's teaching was generative: he taught his students skills that he did not

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<sup>18</sup> (Landsman, 2014)

<sup>19</sup> (HipBoneMusic, 2016).

himself possess. Caruso's case is striking because he is a legendary teacher and his students were world-class musicians, but I take that it is not at all unusual for young children to be taught by someone who doesn't play that instrument. An online guide to the Suzuki method makes this point nicely:

Do parents need to learn how to play first? No. Parents are not required to learn to play the violin first, [...] My job as a teacher is to teach the parent how to teach the child. My goal is to prepare the parent for this challenging task, and the musically inexperienced parent can become an excellent home teacher.<sup>20</sup>

There are also examples of sports coaches engaging in generative teaching. Many para-sports coaches are non-disabled. For example, a wheelchair rugby team might be taught by a non-disabled coach who doesn't even know how to get about in a wheelchair.<sup>21</sup> Competitors in artistic gymnastics often have coaches of the opposite gender, despite the fact the male and female disciplines involve different apparatus and scoring systems. This means that a male coach might teach a female competitor how to use apparatus which he has not himself mastered.<sup>22</sup> It is also common to find coaches who switch sports during their coaching career, coaching in sports that they haven't competed in. For example, Team Sky's performance manager Tim Kerrison started out competing in rowing, before going on to coach Olympic swimming, then cycling. Plausibly Kerrison teaches cyclists

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<sup>20</sup> <http://mainesuzukiviolin.com/lessons/> Thanks to Matthew McGrath for pointing this passage out to me.

<sup>21</sup> In a piece about the role of non-disabled athletes in para-sports, Chuck Aoki relates that whilst he was playing for the US wheelchair rugby team, half of the coaches were non-disabled <https://www.paralympic.org/blog/chuck-aoki-do-able-bodied-people-belong-para-sport#!prettyPhoto>.

<sup>22</sup> Of the female artistic gymnasts currently profiled on the British Gymnastics webpage, 3 of 13 have male coaches. <https://www.british-gymnastics.org/gymnast-profiles>

various high-level techniques that he does not himself know how to do, such as how to descend mountains on a bicycle at speeds over 90km/h.

I suggest that just as cases of skilled sportspeople who are unable to teach others show us that being skilled at *doing* does not entail being skilled at *teaching*, the cases given in the previous paragraph show us that being skilled at *teaching* does not entail being skilled at *doing*. Following Noë (2005: 283-4) and Stanley (2011: 128), I want to suggest that some teachers know *how to teach* without knowing *how to do*. Although in some cases successful teaching may be informed by knowledge-how to do, in other cases successful teaching can be informed by merely knowing how to teach.<sup>23</sup> When a teacher who knows how to teach V-ing, but not how to V teaches a student how to V their teaching will be generative, because the teacher will inculcate in their student knowledge which the teacher does not herself possess.

We can get further support for the distinction between knowing how to do and knowing how to teach from the empirical literature on the psychology of skill (Brownstein 2014: 557-8), (Montero 2016: 87-91). Flegal and Anderson (2008) found that skilled golf players who describe their performance before acting end up performing less well, whereas novice golf players are not adversely affected by describing their performance (see also Beilock et al 2002). Flegal and Anderson explicitly connect this result to teaching, saying:

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<sup>23</sup> This distinction suggests a general recipe for coming up with counterexamples to KNT. Whatever one thinks of the distinction between skill at doing and skill at teaching, take a case of someone who is skilled at teaching something but not at doing it, and ask whether that agent's teaching is epistemically permissible. I take it that there be at least some cases in which this kind of teaching is permissible.

To the extent that instructors themselves are skilled in what they teach, the recurring need to reflect upon and articulate the basis of their skill [in order to teach] may pose costs to their performance. (2008: 931)

Their thought is that at a certain level of skill, teaching actually *undermines* skilful performance; meaning that those who teach can't do. There is also evidence suggesting that the more a skill is proceduralised, the less an agent is able to describe or remember their performances (Keele and Summers 1976, Brown and Carr 1989, Beilock and Gray 2012). If we think that the ability to describe—or at least decompose—one's own performance is an important part of being a successful teacher, this suggests that being highly skilled at doing also presents a barrier to teaching.

The existence of cases of generative teaching is interesting, but the question that matters to the supporter of KNT is whether there are cases in which generative teaching is *epistemically permissible*. Prima facie, there is nothing inappropriate about the teaching in the cases discussed in above, but to get clear on this issue let's consider a cleaned-up hypothetical example of a teacher who doesn't know how to do:

**COACH:** Janine is a trampoline teacher who specialises in teaching advanced students to perform a double back somersault. This is a difficult move to learn, and requires a good deal of careful practice. Janine is very skilled at giving instructions and constructive criticism and has a very high success rate at teaching this move. However, although she has the physical capacity to perform the move, Janine has never taken the time to learn to do it herself, because of her heavy teaching load.<sup>24</sup>

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<sup>24</sup> For a similar case see (Stanley 2011: 128)

This case is structurally similar to the real-life cases considered above. Janine has mastered the activity of teaching other people to do a double back somersault, and she can successfully teach her students to do the move. However, she has never actually learnt to do it. The fact that Janine hasn't learnt to do the move—together with the reasonable assumption that this knowledge is not innate—entails that it is built into the case Janine does not know how to do a double back somersault. Janine lacks one of the necessary conditions for knowing how to do the move: having *learnt* to do it. Furthermore, there seems to be nothing at all inappropriate—epistemically or otherwise—about her teaching. Janine's teaching is intuitively just as permissible as that of her colleagues who do know how to do the move. This means COACH is a counterexample to KNT: it is a case of someone who doesn't know how to do something successfully and permissibly teaches someone else how to do that activity.<sup>25</sup>

There are three ways in which a supporter of KNT can respond to COACH: they can argue that Janine really *does* know how to do the move, that Janine's teaching is not properly generative, or that her teaching is impermissible.

First, the claim that Janine knows how to do a double back somersault. This line can seem pretty appealing. It would be natural to say:

(2) Janine knows how to do a double back somersault.

and unnatural to say:

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<sup>25</sup> Here is another recipe for cases of generative teaching. If one thinks that knowledge-how can be undermined by Gettier-type luck (Stanley and Williamson 2001: 435), (Poston 2009), (Cath 2011), (Carter and Pritchard 2013), then there will be cases in which someone lacks knowledge how due to the presence of luck, but would otherwise be as well-placed to teach as someone who did have know-how. Thanks to Jessica Brown for this point.

(3) Janine *doesn't* know how to do a double back somersault.

which we might take as evidence that Janine really does know how to do a double back somersault. In thinking about this issue we need to bear in mind the limitations of conversational evidence for determining whether an agent has genuine knowledge-how. Sentences of the form 'S knows how to V' admit of a number of readings, and it is widely accepted in the know-how debate that at least some of these readings do not pick out the philosophically distinctive kind of propositional knowledge (Stanley and Williamson 2001 422-25), (Noë 2005: 284 note 4), instead picking out knowledge how *one* can do something, or knowledge how something *ought* to be done. When we are interested in finding out whether someone has know-how, what matters is not just whether we can utter a truth by saying that they 'know how', but whether their knowledge has the properties distinctive of practical knowledge. If the supporter of KNS starts saying that any knowledge picked out by 'knows how' counts as practical knowledge, then they quickly end up working not with KNS, but with KNS\*, which claims that appropriate showing requires only non-practical propositional knowledge. As observed above, KNS\* is implausible because it does not provide a sufficiently demanding standard on appropriate showing.

Intellectualists and Anti-Intellectualists will have different things to say about what makes knowledge-how distinctively practical. Intellectualists claim that practical knowledge requires knowing a proposition under a *practical mode of presentation* (Stanley and Williamson 2001: 428-30), (Stanley 2011: 122-30), whereas Anti-Intellectualists often claim that practical knowledge requires the *ability* to perform the activity known (Rosefeldt 2004), (Noë 2005), (Glick 2012). Either way, Janine's knowledge about the

double back somersault fails to qualify as practical knowledge.<sup>26</sup> Janine can recognise a double back somersault and she can distinguish good instances of the move from bad ones. But it seems implausible that she thinks about a way of doing the move in a practical way. After all, she's never done the move. Janine also seems to lack the kind of ability that might be associated with practical knowledge. As things Janine is not in a position to do a double back somersault: she's never learnt to do one.

It is worth pointing out that Janine's case is significantly unlike the cases of ageing teachers in which an agent knows how to do something, but cannot do it because of physical incapacity (Carr 1981: 53), (Stanley and Williamson 2001: 416). An ageing teacher is *in a sense* able to act,<sup>27</sup> in that in the closest worlds in which their epistemic state is kept the same, but they have relevant physical capacities, and external conditions for performance are met, they will successfully act. In the actual world their ability is masked by external conditions or bodily incapacity. However, Janine meets all of the physical and external conditions for doing a double back somersault in the actual world: she is strong enough, she has access to a trampoline, she isn't afraid of bouncing, and so on. What stands in the way of Janine doing the move is not some environmental barrier or physical impairment, but just not having done enough practice. By contrast, the standard way to understand cases of ageing teachers is to think that these teachers have done all of the practice, but have lost the ability to exercise their knowledge. Although it is undeniably tempting to think that the COACH case is like the cases of ageing teachers, in actual fact the cases are importantly dissimilar. I suggest that not having done practice presents an *epistemic barrier* to success, rather than masking Janine's underlying ability. What Janine

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<sup>26</sup> Because this example goes through on both Intellectualist and Anti-Intellectualist theories I need not make any particular assumptions about what makes knowledge-how practical, in particular whether knowledge-how requires being able to act. Thanks to an anonymous reviewer for raising this issue.

<sup>27</sup> In the sense of having what Glick calls 'internal' ability (Glick 2012).

acquires by practicing is not greater physical strength—we can imagine that she is already strong enough to do the move—but *knowledge how to do the move*. One way to put the general point is that both Intellectualists and Anti-Intellectualists ought to think that at least some practical knowledge—such as knowing how to do the double back somersault—require a process of deliberate practice.<sup>28</sup> Since Janine hasn't done the practice, she doesn't count as having practical knowledge by the lights of either Intellectualists or Anti-Intellectualists.

If Janine does not have practical knowledge, why does it seem intuitively correct to ascribe knowledge-how to her? Plausibly Janine does have lots of non-practical knowledge about the double back somersault (some of which can be picked out by the non-practical readings of 'S knows how to V'). She might have non-practical propositional knowledge about *how the move is done*, *how one ought to do it*, and *how to learn to do it*. It is also not at issue that she knows how—in the practical sense—to *teach* others how to do the move. The fact that Janine has various pieces of non-practical knowledge allows us to explain our intuitive judgements about sentences (2) and (3). We can truly ascribe knowledge to Janine by using (2), but only insofar as we are picking out her non-practical knowledge about *how the move is done*, or about *how one ought to do it*. Similarly, we might think that the denial in (3) can be read either as saying that Janine knows nothing about the double back somersault, or as implicating that she is not well-placed to teach the move.<sup>29</sup> Since she does know something about the move, and certainly knows how to teach it, we might trace the weirdness of the sentence back either to the false assertion that she

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<sup>28</sup> I don't want to suggest that *all* practical knowledge requires practice; only that some does (Hawley 2010:401). There is a large body of empirical evidence stressing the importance of deliberate practice for skill acquisition. See (Ericsson 2006), (Ford et al. 2015).

<sup>29</sup> Asserting 'S knows how to V' often implicates 'S can teach you to V', and denying it can plausibly generate the opposing implication.

knows nothing about the move, or the false implicature that she does not know how to teach it.

A second response to COACH is to argue that although Janine doesn't know how to do the move, her teaching fails to be properly generative. This response comes in several flavours.

One might say that Janine only gives her students *beliefs* about how to do the double back somersault. This way of reading the case is pretty implausible, since it is clear that Janine's students end up not just having beliefs about how to do a double back somersault, but actually *knowing* how to do this move. This knowledge also seems to have its source in Janine. Consider Janine's colleague Lucy, who knows how to do the double back somersault but is unable to do it. Lucy might employ the same teaching methods as Janine to teach her students. If Lucy employs these methods, we would certainly want to say that she generates knowledge of how to do a double back somersault in her students. Since Janine's methods are the same there seem to be no good grounds for denying that Janine also generates knowledge in her students.

Another possibility is that Janine does not teach her students anything at all. One might think that Janine is like a swimming teacher who pushes their students into the pool in that she merely causes her students to learn (or perhaps to teach themselves, see (Ryle 1971)). It is a difficult question where to draw the line between teaching and merely causing to learn, but I think that it is pretty clear that we should think of what Janine does as genuine teaching. In the case of the swimming teacher, there are a number of indications that teaching has not taken place. For example, the students do not rely on the teacher's judgement, and the teacher cannot claim any credit for their knowledge. By contrast Janine's students will rely on her judgement and Janine can take credit for her students learning to do the move. It seems wrong to think of her students as being self-taught.

A final strategy to argue that Janine's teaching is non-generative is to fine-grain the content of her teaching. Although Janine doesn't know how to do a double back somersault, as I pointed out above she plausibly knows how *one ought* to do this move. The supporter of KNT might say that what's really going on in this case is that Janine is teaching her students *how one ought to do the move*, meaning that her teaching is not generative, since she knows how one ought to do the move. Although this is a true description of Janine's teaching that is non-generative there remain many other descriptions of her teaching that *are* generative. We can legitimately describe Janine as simply teaching her students *how to do a double back somersault*. Presumably the supporter of KNT would also want to say that Lucy – Janine's knowable but unable colleague – teaches her students how to do a double back somersault, making it difficult to see how to deny that Janine teaches her students the same thing.

We are left with the claim that Janine's teaching is inappropriate. I think that this line is a non-starter. Unlike in the cases of generative teaching, where there might be thought to be a sense in which the testifiers are being deceitful (Lackey 2008: 115-19), or breaking an epistemic rule in order to achieve a worthwhile result, Janine's teaching seems impeccable.

Real-life cases of generative teaching, together with empirical evidence for a distinction between skill at teaching and skill at doing suggest that it is possible to teach other people how to do something without knowing how to do it. This result in itself is interesting, since it undermines a picture of skill-teaching as the *transmission* of skill (Ryle 1971: 217, 2009: 465), (Small 2014, p. 91) since in cases of generative teaching, the teacher does not have the knowledge which is inculcated in the students. However, the important result for the debate about epistemic norms is that the teaching involved in COACH whilst generative is nonetheless epistemically permissible. This shows us that knowing how to V

is not a condition on permissible teaching, meaning that KNT is false. In at least some cases merely knowing how to teach can be good enough for appropriate teaching.

### 3.2. Generative Instruction.

Since COACH involves teaching via testimony and constructive criticism, this case does not function as a counterexample to KNI and KND, which understand showing more narrowly. Let's now consider the narrower norm KNI, which concerns the category of non-linguistic skill-teaching which we are calling *instruction*:

KNI: It is permissible to instruct someone how to V, only if one knows how to V

In order to find a counterexample to KNI, we need to find a case in which a teacher appropriately teaches her student how to do something by instruction without herself knowing how to do it. Consider the following case of generative instruction:

**TWISTER:** Laura is a diving coach. She had a fairly distinguished county career, but got badly injured meaning that she never learnt to do some of the more difficult moves. For example, she never learnt to do a back somersault. After her injury, she threw herself into coaching and has become a distinguished coach. She is currently teaching Tom a move called *The Twister*. Laura knows that the Twister is a fiendishly complicated move involving two and half back somersaults together with two and half twists. Tom already knows how to do the twists and somersaults

separately, and Laura draws up a diagram explaining how to put the two moves together. Tom quickly gets it, and has soon mastered the move.<sup>50</sup>

In this case, Laura instructs Tom on how to do The Twister by drawing up a diagram explaining how the various parts of the move fit together. We are to suppose this kind of instruction successful, and it certainly seems that there is nothing inappropriate about Laura's teaching. However, I think that we should deny that Laura knows how to do the Twister. In order to know how to engage in any complex activity – in the practical sense – one needs to know how to do the sub-activities that make it up. To know how to make lemon drizzle cake, one needs to know how to make lemon icing. To know how to cycle from Edinburgh to Aberdeen, one needs to know how to cycle from Edinburgh to the Forth road bridge. Although Laura knows how to put the different parts of the Twister together, she does not have practical knowledge about one of the basic parts of the move: the back somersault. Hence she doesn't know how to do the Twister because she lacks one of the necessary conditions for knowing how to do it. As in COACH, Laura might be said to 'know how to do the Twister', in the sense that she has non-practical propositional knowledge about what one needs to do in order to perform this move, but she does not know how to do a Twister in the practical sense. This lack of knowledge does not stand in the way of her teaching. Since Tom knows how to do all of the basic parts of the Twister, all he needs to learn is how the different parts of the move fit together, which is something that Laura can teach him. Crucially for this example to function as a counterexample to KNI, there doesn't seem to be anything inappropriate about Laura's demonstration: she

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<sup>50</sup> There are interesting variants of this case concerning the instruction of groups. A coach who has never played Rugby might instruct her team how to do a particular move – say, a Springbok Loop – without knowing how to do any of the sub-activities involved in that move. Thanks to Matthew McGrath for this suggestion.

knows how the various parts of the move go together and fully understands the system for representing dives on a whiteboard, and she need not deceive Tom about her ignorance of how to do a back somersault. On the natural description of this case, Laura *successfully* and *permissibly* shows Tom how to do a move that she doesn't know how to do.

A supporter of KNS who wanted to defend KNI from TWISTER has the same moves available that we saw in response to COACH. They can argue that Laura really does know how to do the Twister, that her teaching is not properly generative, or that Laura's teaching is impermissible. As with COACH, none of these responses are particularly plausible.

Once we have the distinction between practical knowledge and the knowledge picked out by 'knows how' in mind, it is implausible that Laura has the interesting kind of practical knowledge about the TWISTER. She has practical knowledge about teaching the move, and knows many facts about how to do it, how one ought to do it, and so on. However, she does not in the relevantly practical sense know how to do it, because she lacks practical knowledge about one of its sub-activities.

Pushing the line that Laura's teaching is not generative also seems implausible. Tom ends up not only with beliefs about how to do the Twister, but really knowing how to do the Twister. Laura's contribution to Tom's learning also seems properly to be called *teaching*. Tom relies on her instruction about what moves make up the Twister, and Laura can take credit for Tom's knowledge. One could also try the fine-graining move here. For example, one might insist that Laura only teaches Tom the proposition *one does a Twister by doing a two and half back somersault and two and a half twists*. However, as above it is difficult to see how one can possibly avoid saying that she also teaches him to do the Twister.

Finally, the defender of KNI might try claiming that Laura's teaching is epistemically impermissible. As above this move seems like a non-starter. Laura is teaching

beyond what she is competent to do, but not beyond what she is competent *to teach*. She does not need to mislead Tom: she can be quite open about the fact that she doesn't know how to do a back somersault, and this would not detract from the appropriateness of her teaching.

COACH relied on the fact that practical knowledge about some activity sometimes requires practicing performing that activity, whereas knowing how to teach an activity does not requiring practicing that activity (although it might require practice at teaching). TWISTER relies on the fact that practical knowledge about some complex activity requires practical knowledge of how to engage in the relevant sub-activities, whereas knowing how to *teach* some complex activity does not require practical knowledge about these sub-activities. This gap between knowing how to do and to teach provides us with another recipe for constructing examples of generative showing in which teachers who don't know how to V nonetheless appropriately teach others how to V, including teaching by instruction. At this point, I think that we should conclude that the prospects for a version of KNS that construes showing broadly as teaching or instruction are poor.

### **3.3. Demonstrating, Knowing How, and Intentional action**

So far we have been working with a fairly broad notion of showing. In this section, we will consider a much narrower notion of showing, which construes it as teaching by doing: what we have been calling demonstration. The norm under consideration is:

KND: It is permissible to demonstrate how to V, only if one knows how to V

Since demonstrating to someone else how to V involves intentionally V-ing, a counterexample to this norm would involve an agent demonstrating how to V by

intentionally V-ing without knowing how to V. It is difficult to find compelling cases in which someone acts intentionally without know-how, so I won't try to construct counterexamples to this norm. Instead, I will argue that insofar as this norm only looks plausible it is because of more general connections between knowing how and intentional action.

There are two ways to explain away the appeal of KND: by appealing to the idea that knowledge how to V is *necessary* for intentionally V-ing, and by appealing to the idea that knowing how is the norm of intention.

One explanation of why it is so difficult to find cases of intentional action without knowledge-how is that knowing how is a necessary condition for the intentional action.

Let's call this principle NEC:

NEC: If S is intentionally V-ing, then S knows how to V.

Note that unlike KNS, NEC is a necessity claim about the conditions entailed by action, and not a norm on appropriate action. This principle is contentious: it has some prominent supporters,<sup>31</sup> but it faces some serious problems.<sup>32</sup> I don't want to adjudicate this debate here, but only to make a conditional claim: if NEC is true, then the demand that one demonstrate only what one knows how to do becomes trivial. Since demonstrating how to V involves intentionally V-ing, if NEC is true then demonstrating how to V entails *knowing how to V*, meaning that it becomes impossible to flout KND. Since

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<sup>31</sup> See (Anscombe 1957: 89), (Stanley and Williamson 2001: 442-3), (Gibbons 2001: 597-8) (Stanley 2011: 185-90), (Hornsby 2016).

<sup>32</sup> For example, NEC has trouble with luckily successful action (Setiya 2008, 2009, 2012), and seems to rule out the possibility of learning to do something by practicing doing it. Thanks to an anonymous reviewer for raising these worries.

a genuine norm requires the possibility of acting without fulfilling the relevant condition, if NEC is true then KND is *not* a genuine norm.<sup>33</sup>

An alternative strategy for explaining away KND is to posit a norm connecting knowledge-how and intending. One might think that knowledge-how is the norm of intention.<sup>34</sup> This idea might be formulated in a claim like INT:

INT: It is permissible intend to V, only if one knows how to V.

As with NEC, I am not in a position to make the case for INT here, although we shall see below that variants on the conversational phenomena that B&T appeal to support this norm.<sup>35</sup> The point I want to make is again conditional: if INT is correct, then there is something normatively deficient about ignorant demonstrations because the intention to perform the activity being demonstrated fails to fulfil a standard on intentions. To be clear, the point isn't that INT entails KND. These norms relate to different activities—INT to intending, and KND to demonstrating—and an evaluation of an intention to V need not be inherited by the activity that one intends to do. If INT is true, then it is not permissible to *intend* to demonstrate how to V without knowing how to V; however, this says nothing about the permissibility of the demonstration itself. Nonetheless, if knowledge-how is the

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<sup>33</sup> Although it is tempting to think that NEC *entails* KND (albeit a trivial version of KND), this is not the lesson that I want to draw. Instead, my contention is that if NEC is true then KND *cannot* be a genuine norm.

<sup>34</sup> See (Habgood-Coote MS)

<sup>35</sup> On the face of it INT faces problems with intentions to learn. One might think that INT makes it impermissible to learn to V by practicing V-ing, and that it cannot explain cases in which one intends to V by first learning to V, then V-ing (see Setiya 2008: 406). These cases are tricky for the supporter of INT, but she does have moves to explain such cases (see (Habgood-Coote MS)). For example, one might think that someone who is learning to V cannot permissibly form the full intention to V, but that they can form the intention *to try to V*. Similarly, as Setiya suggests, one might think that someone who is intending to V by learning can only permissibly intend *to learn how to V*. Thanks to two anonymous reviewers for raising these worries.

norm of intention, then an offer to demonstrate something that one doesn't know how to do will be accompanied by a normatively deficient intention to do that activity. A nice feature of this norm is that it predicts that intentions to teach or show will be evaluated by knowing *how to teach*, which fits well with the cases of generative teaching above.<sup>36</sup>

With NEC and INT in play, we are in a position to explain away B&T's original motivation for KNS. I will do this in two steps: by pointing out that the conversational phenomena hold up only when there is a presupposition that teaching will involve demonstration, and by observing that the phenomena in the case of demonstration can be explained by either NEC or INT.

In support of the first point, consider activities that one cannot teach by demonstrating. Let us suppose that a back double somersault is something that one can *only* learn to do by engaging in guided practice. If both participants in a conversation know this fact, then B&T's conversational evidence breaks down. Asking 'do you know how to do a double back somersault?' in this context would *not* function as a request to teach. It would not be plausible for a student who knew that guided practice was the only way to learn the double back somersault to challenge Janine's offer to teach by pointing out that she doesn't know how to do the move. It would also be no excuse for Janine in COACH to say – truly – that she didn't know how to do a double back somersault. Janine could even felicitously utter the supposedly Moorean sentence:

(4) I'll teach you how to do a double back somersault, but I don't know how to do one.

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<sup>36</sup> INT does not entail a pedagogical knowledge-how norm on teaching (requiring that one know how to teach in order to appropriately teach). Rather it entails a pedagogical knowledge-how norm on *intending* to teach. Thanks to an anonymous reviewer for raising this issue.

This suggests that the conversational evidence given in §1.1. only concerns *demonstration*. However, the conversational dynamics concerning demonstration can be explained by either of the two knowledge-action connections suggested above.

If knowledge-how is a necessary condition on intentional action, then we can explain the possibility of requesting a demonstration by asking about know-how by claiming that this question functions as an indirect request which picks out a necessary condition for demonstration (much as one can ask someone to pass the salt by asking them whether they are able to (Searle 1979)). Similarly, we can explain challenges and excuses that appeal to know-how by observing that if NEC is true, then it is not possible to demonstrate how to do something without knowing how to do that activity. On this story, the conjunction of an offer to demonstrate with a denial of know-how is odd because it involves offering to do something while saying that one won't be able to fulfil that offer.

If knowledge-how is a norm of intending, then we can explain the conversational phenomena by putting them in the context of broader phenomena relating to offers to act. Just as we can solicit demonstrations by asking whether someone knows how, we can ask people *to do* stuff for us by asking them whether they know how. Asking someone whether they know how to prune an apple tree can function as an indirect request for them to do so. Similarly for challenges and excuses: if I offer to lead us to a restaurant, you can challenge my offer by asking me whether I know how to get there, and if you ask me to, I can excuse myself saying that I don't know how to get there. We might also put the Moorean sentences concerning offers to demonstrate into the context of other sentences involving offers to do stuff, which seem just as bad:

(5) I'll prune your apple tree, but I don't know how to prune apple trees.

(6) I'll lead us to the restaurant, but I don't know how to get there.

These more general phenomena can be explained by INT without the need to posit a norm relating to demonstrations.

In this section, I've shown that although there is some reason to think that there is an interesting connection between knowledge-how and demonstration, this connection can be explained by the idea that knowledge-how is a necessary condition on intentional action, or the idea that knowledge-how is the norm of intending. These principles leave no room for a knowledge-how norm specifically on demonstration, since NEC blocks KND from being a genuine, and INT explains the badness of ignorant demonstration in terms of the badness of underlying intentions. This discussion suggests that in general we ought to be cautious in offering arguments for epistemic norms stemming from their ability to explain conversational data, since conversational data can admit of multiple explanations appealing to different normative principles.

## **Conclusion**

One consequence of the recent focus on the question of whether knowledge-how is a species of propositional knowledge has been a neglect of the respects in which knowledge-how is interesting *qua* species of knowledge (Hawley 2003: 19). In this paper I have contributed toward redressing this balance by paying attention to the normative role of knowledge-how. I have argued against one picture of the normative role of knowledge-how – the knowledge-how norm of showing. I have argued that the conversational evidence which seemed to support the norm admits of multiple explanations, that versions of the norm concerning teaching and instruction are subject to counterexamples, and that

positing a norm on demonstration is undermined by general connections between knowledge and action.

Our discussion has a number of interesting consequences. First, the cases of generative teaching show that it is mistaken to think of skill teaching as the transmission of skill from teacher to student. Secondly, since there is no plausible knowledge-how norm relating to skill-transmission, one cannot appeal to KNS in order to establish a general knowledge-norm relating to pedagogy, as B&T do. This doesn't show that there are no general knowledge norms. For example, one might generalise the knowledge-action connection, endorsing both the knowledge-that norm of action (Hawthorne and Stanley 2008), and the knowledge-how norm of intention. Thirdly, the failure to find a normative connection between know-how and showing puts pressure on the Craigian Pooling picture of the function of KNOWS-HOW, which predicted the truth of both KNA and KNS. This suggests that we need to look elsewhere for an account of the function of KNOWS. For example, we might think that we should understand the function of KNOWS in practical terms, by focusing on its role in facilitating responsible practices of co-operation (see footnote 13).<sup>37</sup> Finally, the fact that know-how is not the norm of teaching-how has some interesting educational consequences. If KNT were true, the dictum 'those who can't do, teach' would have serious bite.<sup>38</sup> By contrast, I have suggested that what matters for successful skill teaching is knowing *how to teach* rather than knowing *how to do*.<sup>39</sup>

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<sup>37</sup> One might offer a practical function for KNOWS-HOW and keep the pooling story about KNOWS-THAT. This view is unattractive because it loses a general explanation of the function of KNOWS.

<sup>38</sup> I take it that this dictum is a criticism, and not a descriptive claim.

<sup>39</sup> Thanks to Mark Bowker, Jessica Brown, Joshua Dever, Katherine Hawley, Matthew McGrath, Andrew Peet, Fenner Tanswell, Alexander Sandgren, Kieran Setiya, Caroline Toubourg, Brian Weatherson, and audiences at St Andrews and MIT. This research was supported by a UK Arts and Humanities Research Council Doctoral Scholarship.

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