

# SKILLS AS KNOWLEDGE

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## Abstract

This paper advances a unified theory of skillful and intentional action. According to our theory, the distinguishing feature of both skillful and intentional actions is that they are guided by the agent's knowledge of the means of performing the task at hand. This theory leads naturally to an intellectualist view of skills, according to which skills are propositional knowledge states. We show that this view enjoys a number of explanatory advantages over more familiar dispositional accounts of skills.

**Keywords:** skills, knowledge, skilled action, intentional action.

## 1. Introduction

What is the relation between skillful action and knowledge? According to most philosophers, the two have little in common: practical intelligence and theoretical intelligence are largely separate domains. In slogan form: *Book smarts don't translate to street smarts*. This view received its seminal statement in Ryle [1949], who railed against the 'intellectualist legend' that skillful action is action guided by knowledge.

Against this common conception, this paper argues that practical intelligence is a species of theoretical intelligence. Our argument starts with the observation that there is a close connection between skillful action and intentional action. While a number of other philosophers have noted this connection, few have attempted to explain why this connection holds. We seek to fill the gap. We develop a view on which both skillful and intentional action are guided by the agent's knowledge of the means of accomplishing their aim. We show that this view has a number of virtues: it explains why all skillful actions are intentional; it makes sense of a 'control' requirement on both skillful action and intentional action; and it captures intuitions about a broad array of cases.

This account of skillful action has implications for how we understand the nature of skills. In particular, it leads naturally to the 'intellectualist' view that skills are states of propositional knowledge. The resulting theory differs from standard forms of intellectualism in two important respects [Stanley and Williamson 2001; Stanley 2011]. First, most intellectualists

to date have emphasised *know-how* at the expense of skills; indeed, some explicitly distinguish between the two [Stanley and Williamson 2017]. Second, the main case for intellectualism has hinged on linguistic data suggesting a close connection between ‘know-how’ and ‘know that’ constructions — linguistic data that do not obviously extend to skill ascriptions. By contrast, the intellectualist view of skills developed here can underwrite the intuitive connections between skills and know-how; it thus agrees with Ryle [1949] that know-how and skills are one and the same. And it is primarily motivated by consideration of the interrelations between skillful action, intentional action, and knowledge, rather than by linguistic theory and semantics.

## 2. Skillful Actions are Intentional

Our argument starts from the observation that skills characteristically manifest in intentional actions. This point dates back to Ryle [1949: 33], who contrasts a clown with a klutz. Both tumble, but only the clown is skilled at tumbling. The reason for this seems to be that the clown, but not the klutz, tumbles *on purpose*.<sup>1</sup>

We can reinforce this connection by considering other examples of unintentional actions. Consider lucky successes:

**Lucky Shot.** Archie is one of the most skilled archers around. One day, as he is aiming at the bullseye, his hand uncharacteristically slips, and his arrow veers off-course. But a gust of wind intervenes, leading his arrow to land smack on the bullseye.

Intuitively, Archie did not intentionally hit the bullseye on this occasion, since it was a mere accident that he achieved his aim. It also seems that Archie does not skillfully hit the bullseye.

In **Lucky Shot**, Archie has a general disposition to hit the bullseye. However, he does not succeed at hitting the bullseye *in virtue* of exercising this disposition. Perhaps, some might suggest, this is why his action does not qualify as skillful; it has nothing to do with the fact that it is unintentional [Carter and Pritchard 2015]. But consider the following case (from Hawley [2003: 27]):

**Annoyance.** Susie is attempting to annoy Joe; she thinks smoking will do the trick. Whenever she smokes, she unconsciously and inadvertently taps on her cigarette pack. Unbeknownst to Susie, Joe does not mind cigarette smoke, but finds her tapping obnoxious.

Susie is disposed to succeed at annoying Joe whenever she attempts to do so. And she succeeds at annoying him in virtue of exercising this disposition. Still, she does not skillfully annoy Joe. Why not? Here is a natural explanation: because she does not intentionally annoy Joe.

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<sup>1</sup> Other authors have suggested in passing a connection between skillful action and intentional action [Hornsby 2011; Setiya 2012].

Taken together, these examples suggest a close connection between skillful action and intentional action:

**Skillful Actions as Intentional:** Whenever S skillfully  $\phi$ s, S  $\phi$ s intentionally.

This connection can be motivated on theoretical grounds. A number of philosophers have argued that skillful action is subject to a ‘control’ requirement: when someone acts skillfully, their action is under their control (e.g. Shepherd [2014]; Fridland [2014]; Wu [2016]; Pavese [2021b]). Action theorists have independently argued that intentional action is also subject to a control requirement (e.g. Mele and Moser [1994]; Gibbons [2001]). A control requirement seems plausible in light of the foregoing cases. It explains why the clown tumbles both skillfully and intentionally, whereas the klutz does not: the clown is in control of their tumbling, but the klutz is not. It likewise explains why Archie’s shot is neither intentional or skillful: since his hand slips when releasing the bow, his action is not under his control. But this raises a question: why are both skillful and intentional actions subject to a control requirement? If all skillful actions are intentional, we can give an explanation: the control requirement on skillful action derives from the control requirement on intentional action.

Thus **Skillful Actions as Intentional** has a good deal to recommend it. However, some may worry it faces potential counterexamples. For an initial counterexample, suppose that Sherlock Holmes is trying to figure out who stole the diamonds. He has narrowed it down to two suspects: Gordon and Claire. Following a complicated chain of reasoning, he deduces that Gordon must be the culprit. It seems that Sherlock skillfully figured out that Gordon stole the diamonds. But some might be inclined to deny that Sherlock *intentionally* figured out that Gordon stole the diamonds, since he did not intend to figure out that *Gordon* stole the diamonds (rather than Claire). A similar worry can be raised using examples of artistic creation. Bach might skillfully compose a particular melody (the melody of Air on the G String, say), without intending to compose that particular melody.

In response, it will be helpful to turn to a point from the action theory literature. It is widely acknowledged that an action can be intentional *even if the agent did not intend to perform that particular action* [Bratman 1984; Ginet 1990; Bronner and Goldstein 2018]. Consider Bratman’s classic video game example: you are playing a video game, where the goal is to shoot one of two different targets. You win only if you shoot exactly one target. However, shooting either target is difficult, so your best strategy is to fire at both targets simultaneously, hoping to only hit one of them. Suppose you hit the leftmost target, winning the game. It seems you hit the leftmost target intentionally. But you did not intend to hit that particular target. Rather, you only had a more general intention to hit either target.

This case is analogous to the Sherlock example: Sherlock does not intend to figure out that Gordon stole the diamonds; he just has the more general intention to figure out who stole the diamonds, and this person happens to be Gordon. If we are willing to say that you

intentionally hit the leftmost target, we should be equally willing to say that Sherlock intentionally figured out that Gordon stole the diamonds. (Similar remarks apply, *mutatis mutandis*, to the case of Bach).

Let us turn to a second potential counterexample to **Skillful Actions as Intentional**: cases of automatic and unreflective actions [Dreyfus 2002]. Consider a basketball player with lightning fast reflexes: whenever the ball is passed their way, they automatically catch it, and they do so without any conscious reflection. Is their action intentional?

Here the devil is in the details. Suppose we accept that control is a hallmark of intentional action. According to a natural way of filling out the case, our basketball player is in control of their actions. After all, presumably they can flexibly adjust their movements based on their goals and perceptual feedback. This provides reason to deem their action intentional, even though they do not explicitly contemplate the steps of their action while performing it. But suppose we stipulate that their action is not under their control. For example, suppose they will instinctively catch the ball even when doing so will thwart their aims. Once we spell out the details in this way, it is less clear that their action is skillful.

Now, intuitions about this sort of case are rather subtle; some may find themselves pulled in different directions. For those who are ambivalent about this example, a more concessive response is also possible — one that takes its cue from some general points about dispositions. Dispositions have ‘characteristic’ manifestations, defined in terms of some appropriate or typical stimulus conditions. For example, the fragility of a glass characteristically manifests in its breaking when dropped. But disposition can also manifest non-characteristically. For example, the fragility of a glass can manifest in the fact that people handle it with care. A natural way of understanding these non-characteristic manifestations is in *evidential* terms: the fact that people handle the glass with care is evidence that the glass is fragile. The same distinction applies to skills. On the view developed here, skills characteristically manifest in intentional actions. For example, a basketball player’s skill at shooting hoops characteristically manifests when the basketball player intends to sink a shot. But skills can also manifest non-characteristically in any action that provides evidence for the presence of the skill. For example, even if the basketball player performs some action that is not under their control, that action may still provide evidence for their skills (for example, by reliably indicating their speed or agility). In this case, the action non-characteristically manifests their skill. So this distinction between characteristic and non-characteristic manifestations of a skill can account for the residual temptation to think that there is some sense in which even their unintentional actions are skillful.<sup>2</sup>

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<sup>2</sup> This distinction between characteristic and non-characteristic manifestations of skill motivates a novel response to a version of the Rylean regress put forward by Fridland [2013] and Weatherson [2017], a point that will be developed in detail in future work. One consequence of this response is that knowledge is not itself a skill (cf. Heatherington [2020] for an interesting view of knowledge as a skill), though it might be a competence or ability. Indeed, we leave open that there is a broader sense of ‘skill’ on which skills are competences or abilities of sort. Beddor and Pavese [2020] propose an analysis of skillfulness in this broader sense.

This suggests an important clarification. **Skillful Actions as Intentional** is a claim about the characteristic manifestations of skills. This is, we think, the primary notion of skillfulness, and it is the sense that theorists have in mind when they advocate the control constraint. But we leave open the possibility that there is a looser sense in which non-intentional actions can be skillful whenever they non-characteristically manifest a skill.

### 3. Intentional Actions Require Knowledge

#### 3.1 *On Behalf of a Knowledge Requirement on Intentional Action*

Suppose that we accept **Skillful Actions as Intentional**. What does it mean to act intentionally?

According to one tradition, part of the answer involves *knowledge* (e.g. Anscombe [1957]; Gibbons [2001]). For our purposes, we will operate with what we take to be a particularly plausible version of this view:

**Knowledge Requirement:** Whenever an agent  $\phi$ s intentionally, their  $\phi$ -ing is guided by certain relevant intentions, together with their knowledge of the means of  $\phi$ -ing.

A few points of clarification are in order. First, while we take intentional action to require certain intentions, this need not involve the intention to perform that very act. As we saw, Sherlock intentionally figures out that Gordon stole the diamonds but he did not intend to figure out that *Gordon* stole them. However, his action was guided by a more general intention: namely, an intention to figure out who stole the diamonds.<sup>3</sup>

Second, what does knowledge of the means involve? We take the means of  $\phi$ -ing to be a sequence of actions that, when performed, makes it sufficiently likely that one will  $\phi$ . (Here what counts as ‘sufficiently likely’ may be vague, and vary with the task at hand; for demanding tasks such as hitting a home run, a relatively low probability of success may still qualify as sufficiently likely.) We also assume this knowledge is propositional. Usually, intentionally  $\phi$ -ing will be guided by propositional knowledge of the form: *m is a means of  $\phi$ -ing*. But not always. For example, when Sherlock intentionally figures out that Gordon stole the diamonds, his deduction is not guided by his knowledge that certain actions are the means of figuring out that *Gordon* stole them, since he is not yet aware that Gordon is the culprit. Nonetheless, his deduction is guided by his knowledge that certain actions are means of figuring out *who* stole the diamonds; moreover, these actions turn out, as a matter of fact, to be means of figuring out that Gordon did it. To put it another way: Sherlock knows *de re* the means of figuring out that Gordon did it, but he does not know this *de dicto*. To deal with this sort of case, one option would be to unpack the **Knowledge Requirement** as the claim that an agent intentionally  $\phi$ s only if i) their  $\phi$ -ing is guided by an intention to  $\psi$ , where  $\psi$ -ing is relevantly associated with

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<sup>3</sup> There is a difficult question about the conditions under which a more general intention counts as ‘relevant’ to one’s action. For our purposes we can remain noncommittal on this issue; this is a question that faces action theorists of all stripes. See Bratman [1984] for relevant discussion.

$\varphi$ -ing, ii) their  $\varphi$ -ing is guided by their knowledge that  $m$  is a means of  $\psi$ -ing, and iii)  $m$  is in fact a means of  $\varphi$ -ing.<sup>4</sup>

Why accept the **Knowledge Requirement**? One argument is that it explains all of our cases from §2. Start with Ryle's contrast between the clown and the klutz. When the clown tumbles intentionally, their success is guided by their knowledge of the means of tumbling. When the klutz tumbles, they do so independently of any knowledge about the means of tumbling. Next, consider **Lucky Shot**. Archie has knowledge of the means of hitting the bullseye. But his success on this occasion is not guided by this knowledge; rather, it is guided by the wind. On to **Annoyance**: Susie does not have knowledge of the means of annoying Joe; *a fortiori*, her action is not guided by such knowledge.

Still, some might wonder: is knowledge really necessary? Why isn't true belief enough? To answer this, let us start by considering cases where an agent's action is guided by an unjustified true belief about the means of performing a task. Consider:

**Escape Room.** Sam is participating in an escape room: he is locked in a warehouse, and in order to get out he needs to enter the correct ten digit sequence into a combination lock. The expected way of escaping is to complete ten puzzles, each of which yields one of the digits of the combination. However, Sam does not bother with this. His favourite number is 1915114112, and he irrationally believes that his favourite number will do the trick. He confidently punches it in. By an incredible stroke of luck, it turns out his favourite number coincided with the correct code. The lock opens.

Sam succeeds in punching in the correct code. And his success is guided by a true belief that entering 1915114112 is the means to do so. Still, it seems that Sam does not *intentionally* punch in the correct code. After all, it was purely a matter of luck that his favourite number turned out to be the right combination (cf. Mele and Moser [1994]). The **Knowledge Requirement** explains this intuition: Sam does not intentionally punch in the correct number because he does not *know* that 1915114112 is the means of doing so.

Could one maintain that an action is intentional as long as it is guided by a *justified* true belief about the means of performing it, even if that belief does not amount to knowledge? To answer this, it will be helpful to consider cases where an agent acts on a Gettiered belief about the means of achieving their goal. For example:

**Occupational Hazard.** Smith and Jones have both applied for a certain job; Smith has good reason to think that Jones got it. Filled with resentment, Smith forms an intention to kill the person who got the job. Smith also justifiably believes that Jones has a deadly

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<sup>4</sup> In the simplest case, the relevantly associated intention is simply an intention to  $\varphi$ , in which case condition iii) is redundant. Condition iii) is only needed in cases like those of Sherlock (or Bratman's [1984] video game example), where one acts intentionally without intending to perform that very act.

peanut allergy but that he (Smith) does not. A plot hatches: Smith makes a peanut butter smoothie for lunch and shares it with Jones, omitting any reference to its ingredients. Sadly for Smith, he was wrong twice over: Smith got the job, and it is Smith, not Jones, who is allergic to peanuts. (It is a recently acquired allergy, for which he lacked any evidence.) As a result, Smith dies by his own hand.

Intuitively, Smith does not intentionally kill the person who got the job. To reinforce this intuition, note that it is purely a matter of luck (or ill-luck) that Smith fulfils his intention, suggesting that his action was not under his control. Yet Smith's action is guided by a justified true belief that sharing a peanut butter smoothie with Jones is a means of killing the person who got the job.<sup>5</sup>

While we have introduced **Escape Room** and **Occupational Hazard** to support the idea that intentional action requires knowledge, they can also be used to support **Skillful Actions as Intentional** (§2). In **Escape Room**, Sam does not skillfully punch in the correct code. In **Occupational Hazard**, Smith does not skillfully kill the person who got the job. So these cases provide further evidence that when an action is not intentional, it is not skillful.

This brings us to a further advantage of the **Knowledge Requirement**: it allows us to capture the commonalities between skillful and intentional action. Earlier we argued that skillful and intentional actions are under the agent's control. But how should we understand this notion of control? The **Knowledge Requirement** suggests a promising answer:

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<sup>5</sup> Are there any Gettier cases where intuitions pull the other way? Some readers might wonder about Cath's [2011] **Lucky Lightbulb** case. In Cath's example, Charlie wants to change a lightbulb. Being unversed in such matters, he pulls down a manual of everyday household tasks, looks up the instructions for lightbulb-changing, and proceeds to follow them. It turns out that the author of the manual was a prankster, who riddled the book with inaccurate instructions. But when the instruction manual went to the printers, a correct set of lightbulb-changing instructions were substituted at the last minute, due to a misprint. Intuitively, Charlie intentionally changed a lightbulb. But, Cath contends, he does not know the means for changing the lightbulb, since his belief is Gettiered. However, there is reason to question whether this is a genuine Gettier case. In a recent experimental study, Carter, Shepherd and Pritchard found that ordinary people tend to judge that Charlie has propositional knowledge of the means of changing the lightbulb [Carter, Shepherd, and Pritchard 2019:711]. This suggests that there are important differences between **Lucky Lightbulb** and paradigmatic Gettier cases. While a full discussion of these differences is outside the scope of this paper, here is one suggestion. In prototypical Gettier cases, the agent's belief is unsafe — that is, there is a nearby circumstance where the agent forms *the very same belief* on similar grounds, but their belief is false. Take **Occupational Hazard**: there is a nearby world where either Smith did not get the job, or Smith has not recently acquired a peanut butter allergy. In that world, Smith would have believed the same proposition (*sharing a peanut butter smoothie with Jones is a means of killing the person who got the job*), but his belief would have been false. But in **Lucky Lightbulb**, it is less clear that Charlie's belief is unsafe. In the nearby world where the instruction manual is free from misprints, Charlie would have formed a very different belief about the way to change a lightbulb, since he would have come to believe an altogether different set of instructions. So there is no nearby world where he holds the very same belief falsely. These observations are reinforced by [experimental work](#), where Pavese, Henne, and Beddor (manuscript) empirically tested judgments about intentional action and knowledge. We found that in a variety of Gettier cases, ordinary people tend to deny that the agent acted intentionally — indeed, they tend to do so at roughly the same rate that they deny that the agent knows the relevant proposition. For further discussion of Gettier cases and intentional action, see Gibbons [2001] and Beddor and Pavese [2021].

**Epistemic Theory of Control:** Someone is in control of their action if and only if their action is guided by certain relevant intentions, together with their knowledge of the means of fulfilling those intentions [Pavese 2021b; Beddor and Pavese 2021].

On the resulting view, failures of intentional control are typically failures to be guided by one's knowledge.<sup>6</sup>

Indeed, we can go further. Because control is an integral component to both skillful and intentional action, the hope arises that we could leverage the **Epistemic Theory of Control** into a unified account of skillful and intentional action. In the next section, we develop a unified account along these lines. But before doing so, it will be helpful to defend the **Knowledge Requirement** from some important objections.

### 3.2 *Objections to the Knowledge Requirement*

A first worry is that the **Knowledge Requirement** over-intellectualizes intentional action. Surely, the objection runs, small children and animals can act intentionally, even though they lack the concept of 'means'.

In response, it will help to clarify what is involved in knowing the means of performing some action. Recall that the means of  $\varphi$ -ing are a sequence of actions that, when performed, makes it sufficiently likely that one will succeed in  $\varphi$ -ing. So in order for someone to know the means of  $\varphi$ -ing, all they need to know is that certain actions are sufficiently likely to result in  $\varphi$ -ing;<sup>7</sup> they do not need to conceptualise these actions as 'means'.

Some might worry this only pushes the problem back a step: does this require that small children and animals have the concept of probability? Fortunately, by now there is a rich literature on probabilistic knowledge. One theme in this literature is that we regularly ascribe probabilistic knowledge to small children and animals. For example, we might say that Fido knows *he is likely to get a treat if he sits*, even though it is doubtful that Fido has the concept of probability. Any adequate account of such ascriptions will need to avoid over-intellectualizing probabilistic knowledge.

Providing a full account of probabilistic knowledge is outside the scope of this paper. That said, by now some promising options have emerged. To give just one example, one might follow Moss [2018] in maintaining that animals have degrees of belief, and that degrees of belief can constitute knowledge. On this view, for Fido to know that he is likely to get a treat is just for Fido to have a sufficiently high degree of belief that he will get a treat — a degree of belief that

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<sup>6</sup> One might impose a stronger constraint on control, and require that one know what one is doing while doing it, or that one know what means one is taking when performing the action. For our purposes, we set this additional complexity aside. See Beddor and Pavese [2021] and Pavese [2021b] for further discussion.

<sup>7</sup> Or that those actions are sufficiently likely to result in  $\psi$ -ing, where  $\psi$ -ing is some action that is relevantly associated with  $\varphi$ -ing (cf. the discussion in §3.1).



qualifies as knowledge because it satisfies analogues of standard conditions on knowledge (for example, it is reliably formed). One consequence of this view is that Fido can have probabilistic knowledge without having a well-developed conception of probability.<sup>8</sup>

A second objection is that the **Knowledge Requirement** seems to have the absurd result that basic actions can never be intentional. Define a basic action as an action one performs, but not by performing another action. Now, take a basic action like lifting one's finger. According to the **Knowledge Requirement**, one can only lift one's finger intentionally if one has knowledge of the means of lifting one's finger. But, by the definition of basic actions, there are no such means.

While this is an important worry, there are two possible responses. The first is to expand our conception of *means*. Rather than restricting our conception of means to actions, we should think of means as anything that is picked out by the locution 'by *V*-ing', where *V* may or may not be an action. In this broader sense, intentions can qualify as means even though they are not themselves actions. Perhaps then, even basic actions such as lifting one's finger require means — i.e., an *intention* to lift one's finger. This points towards an alternative conception of basic actions: they are actions whose only requisite means are intentions [Setiya 2012].

Some might wonder whether the over-intellectualization objection resurfaces here: does this mean that small children and animals need to have the concept of *intention* in order to act intentionally? We are not sure how much weight one should put on this concern; here much depends on empirical issues in animal and childhood concept acquisition. (Perhaps small children and animals have some rudimentary knowledge of volitional states.) But for those who find this worry compelling, another response is available: we could maintain that every basic action is its own means. According to this view, basic actions only require trivial means; non-basic actions are actions that require non-trivial means. This avoids the over-intellectualization worry; it merely requires that in order to intentionally lift one's finger, one needs to have the concept of *lifting one's finger*.

On the resulting view, someone intentionally lifts their finger provided their action is guided by their knowledge that one can lift one's finger by lifting one's finger. How could this trivial knowledge guide their action? The answer is that even when it comes to basic actions, the agent needs to have a practical way of representing the action in question — that is, a way that enables the agent to perform the action when they intend to do so. Suppose a doctor asks me to raise my right index finger. In order to comply with the instruction, I need to be able to represent my right index finger, and I need to do so in a way that will enable me to lift this particular finger. This suggests an answer to the question of how seemingly trivial knowledge can guide the agent. The relevant knowledge is not simply the (trivial) knowledge that  $\varphi$  is a means for  $\varphi$ -ing, but rather the knowledge that  $[\varphi]$  is a means for  $\varphi$ -ing, where the bracket stands for a

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<sup>8</sup> See Pavese [2020] for more discussion of the role of probabilistic knowledge in action theory. See Beddor and Goldstein [2021] for a theory of how credences can constitute knowledge.

practical way of identifying the action by which a subject can perform the action when they intend to do so.

Once we bring practical modes of presentation into the mix, one might wonder why knowledge is needed. In order for someone to intentionally perform a basic action, why isn't it enough that they practically represent this action? To answer this, imagine that you wake up after participating in experimental surgery. The doctor announces that the synapses governing the motor movements on your right hand have been rewired to control your left hand movements. Thus if you try to move a given finger on your right hand in the usual way, you will end up moving the corresponding finger on your left hand. As a matter of fact, all of your synapses have been successfully rewired, except for those governing your right index finger (but you don't realise this). So you retain a practical mode of presentation for the basic action, *moving your right index finger*. Still, it seems you are not in a position to intentionally move this finger, since you justifiably believe that you could not move it in the usual way. Indeed, according to a weak belief requirement on intention, intending to  $\varphi$  requires believing that it is (or at least might be) possible for one to  $\varphi$ . If this is correct, then you cannot even *intend* to move your right index finger (in the usual way). By contrast, if you came to learn that the synapses governing your right index finger have not been rewired, it seems you would be in a position to intentionally move your finger. Thus, even when it comes to basic actions, practically representing an action does not suffice for one to be able to perform that action intentionally; some cognitive state is also needed.<sup>9</sup>

A final objection is more indirect. Rather than trying to counterexample the **Knowledge Requirement**, it proceeds by arguing that our examples supporting the **Knowledge Requirement** can be equally well explained using other resources. To address this concern, let us consider some of the most promising alternative explanations.

First, some might propose that intentional action — and control — only requires that one's action is guided by one's intentions; there is no need to invoke knowledge as well. This proposal would handle some of our cases nicely. It accounts for Ryle's contrast between the clown and the klutz; after all, the klutz's tumbling is not guided by an intention to tumble. Similarly with Archie in **Lucky Shot**: while he intends to hit the bullseye, his success is not *guided* by his intention.

However, this proposal struggles to accommodate some of our other cases. Go back to **Annoyance**. Susie intends to annoy Joe. Moreover, this intention guides her in annoying Joe.

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<sup>9</sup> Some may grant that in order to intentionally perform a basic action  $\varphi$ , one needs to believe that [ $\varphi$ -ing] is a means of  $\varphi$ -ing. Still, one might wonder: why does this belief need to amount to knowledge? Here, a couple points are worth making. First, note that beliefs of this sort will normally amount to knowledge. After all, this belief is guaranteed to be true, since it is necessarily true that [ $\varphi$ -ing] is a means of  $\varphi$ -ing. So the truth requirement on knowledge will automatically be satisfied, as will various modal conditions, such as safety. Second, we have argued that *control* requires knowledge of the means, not just true belief or justified true belief. In so far as a control requirement on intentional action extends to basic actions (as seems plausible), this suggests that here too knowledge is required. For further discussion, see Pavese [2021a:1603–8] and Valaris [2021].

After all, her intention causes her to perform various actions that lead her to successfully annoy Joe; moreover, she is disposed to monitor whether her actions have this effect. (If she detected that Joe was indifferent to her actions, she would change tactics.) Similarly, consider **Escape Room** and **Occupational Hazard**. Sam's decision to enter a particular code into the computer is guided by his intention to shut down the reactor, together with his true belief about the means of doing so. And Smith's act of sharing a peanut butter smoothie with Jones is guided by his intention to kill the person who got the job, together with his justified true belief about the means of doing so. So while guidance by intention may be necessary for intentional action, it is not sufficient.

An alternative explanation starts with the observation that many of our cases involve deviant causal chains: cases where an agent's intention causally contributes to its fulfilment, but the intention and the fulfilment are not connected up in the 'right way'. For example, in **Occupational Hazard**, Smith fulfils his intention of killing the person who got the job, but he does so in a deviant way. Perhaps, some may suggest, this is why Smith's action does not qualify as intentional — again, no need to invoke knowledge.

However, this alternative explanation also fails to handle **Escape Room**. There, Sam's intention to enter the correct code, together with his true belief about the means of entering the correct code, non-deviantly causes his success. Still, he does not enter the correct code intentionally (cf. Mele and Moser [1994]).

Even if we stick with Gettier cases, not all cases where an agent acts on a Gettiered belief involve deviant causal chains. Consider the following variant of Russell's stopped clock case (from Russell [1948: 170–1]):

**Lucky Timing.** During World War II, a British spy named Silvia needs to send a radio signal to her undercover contact in France. It is crucial to the success of the operation that the signal is sent exactly at 4 o'clock Tuesday afternoon, not a minute earlier or a minute later. For this reason, the radio transceiver comes with a clock that is usually highly reliable. Unbeknownst to Sylvia, the clock's mechanism stopped working at exactly 4pm Monday afternoon (Sylvia has had no opportunity to inspect the clock in the interim). By a stroke of luck, Sylvia looks at the clock at exactly 4pm on Tuesday, and promptly sends the radio signal.

Sylvia sends the radio signal at the right time. But, intuitively, she does not do so intentionally; it was sheer luck that she glanced at the clock at exactly 4pm. Here there is no deviance in the causal path from intention to fulfilment. By contrast, the **Knowledge Requirement** delivers the right result. While Silvia knows that the right time to send the signal is 4pm, she does not know that it is *now* 4pm and hence that *now* it is the right time to send the signal.

A final alternative explanation is worth considering. In many of our cases, the agent does not accomplish their aim by virtue of any sort of *skill*. Some might thus propose the following as an alternative explanation:

**Skill Requirement:** An agent  $\varphi$ s intentionally only if they succeed at  $\varphi$ ing in virtue of exercising their skill at  $\varphi$ ing.

We do not think this proposal is wrong, exactly. But without giving an account of skills it is importantly incomplete. This lacuna is particularly glaring, given the explanatory ambitions of our paper. After all, our ultimate goal is to give a unified treatment of skillful and intentional action. On the view to be developed here, skills involve propositional knowledge of the means of accomplishing one's task. But then the **Skill Requirement** is not an alternative to the **Knowledge Requirement**.

Here is one way one might try to supplement the **Skill Requirement** with a positive account of skills that avoids reference to knowledge. Perhaps the most common conception of skills in the literature takes skills to be dispositions to succeed at the task at hand:

**Success Dispositionalism:** S is skilled at  $\varphi$ -ing if and only if S is disposed to  $\varphi$  successfully whenever S attempts to do so.<sup>10</sup>

However, combining **Skill Requirement** with **Success Dispositionalism** fails to capture the full range of cases. Recall our discussion of **Annoyance** from §2. We noted that Susie is disposed to annoy Joe whenever she attempts to do so. Moreover, she succeeds at annoying Joe in virtue of exercising this disposition. So **Skill Requirement**, when combined with **Success Dispositionalism**, does not explain the intuition that she does not intentionally annoy him.

To avoid counterexample, we might instead identify skills with dispositions to *intentionally* succeed at the relevant task:

**Intentional Success Dispositionalism:** S is skilled at  $\varphi$ -ing if and only if S is disposed to  $\varphi$  *intentionally* whenever S attempts to  $\varphi$  [Setiya 2012].

However, the resulting account is at an explanatory disadvantage. After all, our project is to give an explanatorily illuminating account of skillful and intentional action. But, on the explanation under consideration, we analyse intentional action in terms of the exercise of skills, which are themselves analysed in terms of intentional action.

In conclusion, a number of considerations support the **Knowledge Requirement**. The requirement explains our intuitions about a wide variety of cases, and we have yet to find an alternative theory of intentional action that explains these intuitions equally well.

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<sup>10</sup> For examples of **Success Dispositionalism**, see Ryle [1949], Carter and Pritchard [2015], and Beddor and Pavese [2020].

## 4. Intellectualism About Skills

### 4.1 Skills Require Knowledge

Suppose that we accept both of our premises: **Skillful Actions as Intentional** and the **Knowledge Requirement**. Together they entail that skillful action requires propositional knowledge:

**Skillful Action Requires Knowledge:** If S skillfully  $\phi$ s, then S's  $\phi$ -ing is guided by certain relevant intentions, together with S's knowledge of the means of  $\phi$ -ing.

From this it is natural to draw a corresponding conclusion about *skills*:

**Skills Require Knowledge:** If S is skilled at  $\phi$ -ing, then S knows the means of  $\phi$ -ing.

After all, skillful actions are guided by skills. So if skillful actions require propositional knowledge, presumably these actions are guided by a state that also requires propositional knowledge.<sup>11</sup>

The resulting view has a good claim to be considered a form of intellectualism. After all, Ryle [1949: 26] characterised intellectualism as the view that the exercises of practical intelligence manifest propositional knowledge. Still, it is natural to wonder whether we can go a step farther. Can we develop jointly necessary and sufficient conditions for skills in terms of knowledge?

### 4.2 From Necessity to Sufficiency

The idea that propositional knowledge is sufficient for skills faces two important challenges. For an initial challenge, consider:

**Swimming Spectator.** Mary, who has never swum, is watching the Olympics. One of the foremost swimmers, Sarah, is performing the backstroke. Mary thinks: 'That's how you do the backstroke'.

Here there is an action — *swimming in the manner Sarah is instantiating* — which Mary knows to be a means of performing backstroke. But this does not suffice for Mary to be skilled at performing the backstroke.

This sort of case is familiar from discussions of intellectualism about know-how. A standard reply on behalf of intellectualists is to appeal to *practical modes of presentation*. The

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<sup>11</sup> Some might think this is too quick: it might be that S is skilled at  $\phi$ -ing even if she does not know the means to  $\phi$ -ing, provided that she can quickly *come to know* such means. We will consider this option in detail in §5, when discussing epistemic dispositionalism.

corresponding move is also available to intellectualists about skills. On this view, not just any old knowledge about the means of performing an action makes for a skill. Rather, this knowledge needs to be entertained in a distinctively practical manner. That is:

**Intellectualism about Skills (First Pass):** S is skilled at  $\varphi$ ing if and only if S knows the means of  $\varphi$ ing, and S knows this under a practical mode of presentation.

This analysis immediately raises the question: ‘What, exactly, are practical modes of presentation?’ Indeed, some have worried that appealing to practical modes of presentation involves resorting to an unanalyzed ‘black box’ [Noë 2005]. However, by now some promising proposals for how to fill in the details have emerged. Consider, for example, the following account [Pavese 2015]. To practically represent a basic action is to represent it in a way that enables the agent to perform that action when they intend to do so (see §3.2); to practically represent a complex action is to represent it through a procedure that is effective *for that agent*. Here an effective procedure for an agent is a way of breaking down the task in terms of the most basic operations that the agent can execute and in terms of basic modes of combination of those operations. In a slogan, *representing a way practically means representing it in terms of the subject’s most basic practical abilities*.<sup>12</sup>

Applied to **Swimming Spectator**: while Mary knows that the action instantiated by Sarah is a way of doing the backstroke, she does not know this under a practical mode of presentation, since she does not represent this task through a procedure that is effective for her. Moreover, if she were to come to know this under a practical mode of presentation, she would thereby acquire the ability to perform the backstroke (since she would have the ability to perform the most basic parts of the task as well as the ability to combine them together).

A second challenge to the sufficiency of propositional knowledge for skills comes from cases where the agent only knows a barely adequate means of performing a task. Meet Mark, the bumbling chef. He is tasked with cooking risotto for tonight’s dinner. Fortunately, he finds a recipe that he can implement. Unfortunately, it is the worst recipe on the Internet, and his execution barely passes muster. So Mark knows a means of cooking risotto, and he knows it under a practical mode of presentation. Still, none of his dissatisfied dinner guests would describe him as *skilled* at making risotto.

However, there is a natural response. Some means of performing a task are better than others: they are more efficient, more reliable, or simply produce a superior end result. Similarly, some ways of practically representing a task are better than others, along much the same dimensions. Mark’s case suggests that in order for an agent to be skilled at a task, it is not

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<sup>12</sup> One option is to understand practical modes of presentation as components of the proposition that one knows (so the proposition is of the form <P-ing is sufficiently likely to result in  $\varphi$ -ing>, where P-ing is a practical mode of representing the action  $\varphi$ -ing [Pavese 2015]. For an alternative construal, see Stanley and Williamson [2001].

enough for there to be some means that the agent knows under a practical mode of presentation. Rather, both the means and the mode of presentation need to be sufficiently good:

**Intellectualism about Skills (Revised):** S is skilled at  $\phi$ ing if and only if S knows a sufficiently good means of  $\phi$ ing, and S knows this under a sufficiently good practical mode of presentation.

**Intellectualism about Skills (Revised)** accounts for all of the considerations that motivate a knowledge requirement; it also overcomes the most obvious challenges to the sufficiency of knowledge for skills. Absent some principled reasons to think this account is inadequate, inference to the best explanation favours **Intellectualism about Skills (Revised)**.

#### *4.3 A Unified Account of Skillful and Intentional Action*

An important motivation for our intellectualist theory of skill is that it can be used to develop a reductive analysis of skillful and intentional action. Start with the following natural thought. Performing a task skillfully requires being sufficiently skilled at a task. By contrast, one can perform a task intentionally without being particularly skilled at it (consider again Mark and his mediocre risotto). Still, performing a task intentionally requires having at least some minimal degree of skill at the task at hand, as the **Skill Requirement** maintains. This motivates the following picture of the relation between intentional action and skillful action:

**Analysis of Intentional Action:** An agent  $\phi$ s intentionally if and only if  $\phi$ ing is guided by certain relevant intentions, together with some degree of skill at  $\phi$ ing.

**Analysis of Skillful Action:** An agent  $\phi$ s skillfully if and only if their  $\phi$ ing is guided by certain relevant intentions, together with their sufficiently high degree of skill at  $\phi$ ing.

This theory has considerable plausibility. However, it is importantly incomplete, for much the same reason as the **Skill Requirement**: it is silent on the nature of skills. By appealing to **Intellectualism about Skills**, we can fill this gap:

**Epistemic Analysis of Intentional Action:** An agent  $\phi$ s intentionally if and only if their  $\phi$ ing is guided by certain relevant intentions, together with their knowledge of the means of  $\phi$ ing — knowledge which is entertained under a practical mode of presentation.

**Epistemic Analysis of Skillful Action:** An agent  $\phi$ s skillfully if and only if their  $\phi$ ing is guided by certain relevant intentions, together with their knowledge of a sufficiently good means of  $\phi$ ing — knowledge which is entertained under a sufficiently good practical mode of presentation.

The resulting account has three primary virtues: (i) It is reductive in that it does not rely on an unanalyzed notion of skills; rather, it explains skills in epistemic terms. (ii) It is well-motivated in that it explains our intuitions about a wide variety of cases — cases that other views struggle to capture. Finally, (iii) it is unified in that it accounts for the close connections between skillful and intentional action. In particular, it explains why every skillful action is intentional, but not every intentional action rises to the level of skillfulness.

## 5. Comparison with Epistemic Dispositionalism

We have defended the view that skills are a species of propositional knowledge. Along the way, we criticised the leading treatments of skills in the literature, which analyse them as dispositional states. However, another form of dispositionalism has been recently put forward by Stanley and Williamson [2017]. While Stanley and Williamson famously endorse the intellectualist claim that knowledge-how is a form of knowledge-that [Stanley and Williamson 2001], they embrace a different view of *skills*. In their view, skills are not standing knowledge states. Rather, they are *dispositions* to know:

**Epistemic Dispositionalism:** S is skilled at  $\phi$ -ing if and only if S is disposed to have knowledge that is appropriate for guiding tokens of  $\phi$ -ing.

This version of dispositionalism about skills is much closer in spirit to the intellectualist account defended here. Still, there are important differences. In what follows, we highlight two reasons for preferring **Intellectualism about Skills** to **Epistemic Dispositionalism**.

The first reason comes from considering cases where an agent is disposed to have knowledge that is appropriate for guiding their activity, but they do not yet possess this knowledge. Consider:

**Math Lesson.** Amanda is a bright student who usually listens carefully to her mathematics teacher. However, on this particular Monday morning Amanda is uncharacteristically distracted when the teacher is explaining how to solve a quadratic equation. If she were to listen, she would quickly catch on and gain the ability to solve quadratic equations.

Intuitively, Amanda is not skilled at solving quadratic equations. But Amanda is disposed to have knowledge that is appropriate for guiding her in solving quadratic equations. (After all, she is disposed to listen to her teacher.) So **Epistemic Dispositionalism** predicts, implausibly, that she is skilled at solving quadratic equations. By contrast, **Intellectualism About Skills** delivers the correct verdict here.



Epistemic dispositionalists might respond by insisting that Amanda is merely disposed to *acquire* knowledge that is appropriate for guiding her in solving quadratic equations; she is not disposed to *have* this knowledge. However, this distinction is difficult to elucidate satisfactorily. To acquire some knowledge is just to come to have this knowledge. On many views of dispositions, dispositions are closed under entailment: if one is disposed to  $\varphi$  and  $\varphi$ -ing entails  $\psi$ -ing, then one is disposed to  $\psi$ . On any such view, if Amanda is disposed to acquire knowledge, she is disposed to have it. Moreover, it is worth noting that some of Stanley and Williamson's paradigm examples of skills are naturally described as dispositions to acquire knowledge — for example, perception.

A second concern for **Epistemic Dispositionalism** is whether it underwrites the connection between skillful action and intentional action. While Stanley and Williamson do not directly address this question, some of their remarks indirectly bear on this issue. They talk about *manifestations* of skills, and distinguish between a *primary* and a *secondary* sense of manifestation. The idea of distinguishing these two senses of manifestation strikes us as well-motivated; indeed, we drew a similar distinction in §2. On the view put forward there, the characteristic manifestation of a skill is an intentional action, and an action counts as skillful in the primary sense as long as it is the characteristic manifestation of a skill. However, epistemic dispositionalists cannot say this. In their view, skills are dispositions to know, so skills primarily manifest not in intentional actions but rather in knowledge states. So they cannot say that the primary manifestation of a skill is always intentional.

Perhaps, then, a better proposal on their behalf is that only the secondary manifestations of skills qualify as skillful. Now, Stanley and Williamson [2017: 717] do argue that skills secondarily manifest in actions guided by knowledge states. While this avoids obvious counterexamples, there is a worry that this definition of secondary manifestation is arbitrary. After all, we would like our definition of secondary manifestation to follow from a more general theory of disposition manifestation — one that is not tailored to skillful actions. A natural generalisation would be that any disposition  $D$  secondarily manifests in whatever states or actions are explained by the primary manifestation of  $D$ . This sense of manifestation of a skill is similar to the evidential sense of manifestation discussed in §2. Note, however, that this generalised definition of secondary manifestation also doesn't predict that only skillful actions are intentional. For example, if an athlete's prowess induces envy in an onlooker, the envy is explained by the primary manifestation of their athletic dispositions. But the envy is neither intentional nor skillful. So regardless of whether we focus on primary or secondary manifestation, epistemic dispositionalists fail to predict that only intentional actions are skillful.

## 6. Conclusion

Recent defences of intellectualism have stopped short of providing an intellectualist treatment of skills. In doing so, they abandon the close connection between skills and know-how which served as a central premise in Ryle's critique of the 'intellectualist legend'.

This paper has sought to bring skillful action into the intellectualist fold. On the view developed here, skills are a species of propositional knowledge — specifically, knowledge of the means of performing the task at hand. Our primary argument for this position was abductive: it features in the best explanation of the close connections between skillful action, intentional action, and control. If we are right, the strongest arguments for intellectualism about practical intelligence lie not in semantics but rather at the intersection of action theory and epistemology.

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