Know-How as the Cognitive Basis of Skill

by
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Abstract

This thesis seeks to develop and defend conceptions of know-how that shed light on the state's theoretical role as the cognitive basis of skilled action. In Chapter 1, I propose an account of know-how based on the idea of information being accessible for a purpose. I argue that an account of this form sheds new light on the explanatory relationship between knowing how to φ and being able to φ. In Chapter 2, I develop the core components of a cognitivist, yet rule-free, conception of know-how. I show how this conception better accommodates the phenomenology of fluent skilled action and provides resources for a new way of thinking about practical modes of presentation. In Chapter 3, I explore the relationship between the know-how/know-that distinction and socioeconomic inequality.

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Contents

1 Know-How and Information Access .......................................................... 8
  1.1 Introduction ......................................................................................... 8
  1.2 Practical Know-How .......................................................................... 10
  1.3 Practical Know-How and Ability ....................................................... 11
  1.4 Intellectualism .................................................................................... 14
  1.5 Know-How as Action-Indexed Information ....................................... 21
  1.6 Two Kinds of Action-Indexing .......................................................... 24
  1.7 A Worry Addressed ............................................................................ 32
  1.8 Know-How and Know-That ............................................................... 33
  1.9 Conclusion .......................................................................................... 37

2 Know-How and Skillful Action: A Rule-Free Account of Guidance .......... 38
  2.1 Cognitivism About Know-How .......................................................... 38
  2.2 Know-How as Grasp of Rules ............................................................ 41
  2.3 Practical Kinds and their Normative Structure .................................. 44
  2.4 Cognitive Upshot ............................................................................... 51
  2.5 How Know-How Guides Skill ............................................................. 53
  2.6 Experienced Mandates and the Phenomenology of Skill ................... 56
  2.7 Practical Modes of Presentation ......................................................... 58
  2.8 Conclusion ......................................................................................... 60

3 The Reformative Character of Intellectualism ....................................... 62
  3.1 Introduction ......................................................................................... 62
  3.2 Preliminaries ....................................................................................... 65
  3.3 Stanley on the Reformative Character of Intellectualism ................... 66
  3.4 Exploring Connection 2 ..................................................................... 68
  3.5 Exploring Connection 1 ..................................................................... 74
  3.6 Upshots for Reformative Accounts of Know-How ............................. 80
  3.7 Conclusion ......................................................................................... 85
Introduction

Human intelligence has multifarious expressions. Some are paradigmatically intellectual: we reason our way to new conclusions, deliberate about our actions, and construct scientific theories. Other expressions of intelligence do not seem similarly intellectual. These include skillful performances such as riding a bicycle, performing a sonata, or painting a portrait. In virtue of what do such performances express intelligence? A natural answer appeals to the subject's know-how, an underlying cognitive state that guides a subject in executing her skill. The unifying project in this thesis is to develop conceptions of know-how that do justice to this aspect of the state's theoretical role.

What sort of cognitive state might know-how be? According to Jason Stanley and Timothy Williamson's influential doctrine of intellectualism, to know how to \( \phi \) is know that one could \( \phi \) in way \( w \). To ensure that this condition is sufficient for knowing how, Stanley and Williamson require that the way be grasped under a practical mode of presentation. But many theorists have found practical modes of presentation to be ad hoc and mysterious.

In Chapter 1, I argue that an important part of the work practical modes of presentation are introduced to do can be accomplished by a condition on the purposes for which a piece of information can be easily accessed. Purpose-relative information access properties are not only independently motivated; they include high-level functional features of human cognitive systems which make the difference between know-how and its absence. Moreover, viewing know-how as involving a kind of purpose-specific access to information casts light on two of the state's distinctive features: gradability and compatibility with absence of belief.

Intellectualists identify knowledge how to \( \phi \) with knowledge of a proposition concerning a way of \( \phi \)ing. But what exactly is a way of \( \phi \)ing, and how does grasp of one enable the guidance
of skillful action? A natural proposal identifies a way of φing with a set of general-purpose rules for φing. Indeed it is hard to imagine what else a way of φing could be such that grasp of it could possibly account for the flexible ability to φ characteristic of knowing how. In Chapter 2, I propose a different model for how know-how guides skillful activity. Instead of internalized rules, I identify know-how with perceptually based grasp of the internal normative standards for performances of the action φ. The resulting account provides insight into several phenomena connected with know-how and skilled action, including practical modes of presentation and the phenomenology of unreflective skill.

In Chapter 3, I shift focus to the social ramifications of intellectualism about know-how. After evaluating Jason Stanley’s suggestion that intellectualism undermines part of the ideological basis for socio-economic stratification, I attempt to identify the features of a theory of know-how that would suit the theory to the kind of critical work that Stanley envisions.
Chapter 1

Know-How and Information Access

Some theorists take know-how to be an ability or disposition. Others take it to be a cognitive state. A virtue of cognitivist accounts of know-how is that they honor the intuitively appealing idea that know-how is not itself an ability but rather something that explains an ability by playing an action-guiding role. A desideratum for such accounts is to explain how know-how explains ability in this way. In this Chapter I argue that intellectualism about know-how, a prominent cognitivist theory, does not satisfy this desideratum. I develop a different cognitivist account of know-how, centered on the idea of information accessible for a purpose, that does.

1.1 Introduction

A rock climber dangling by her left hand scissor kicks her legs to propel herself toward the next nearest handhold. Grabbing the hold with her right hand, she pulls herself beyond the most difficult stretch of the rock face. The climber’s precise execution of the maneuver displays her ability to climb rock faces. It also displays her knowledge how to climb rock faces. What is the relationship between her ability and her know-how? Neo-Ryleans about know-how take the relation to be one of identity or constitution. For them, know-how just is an ability, capacity, or disposition.\(^1\) Cognitivists about know-how, in contrast, take the relation to be one of explanation. For them, know-how is not itself an ability but rather an underlying cognitive state—understanding a method\(^2\) or knowing a proposition\(^3\)—that explains an ability.

\(^1\)Ryle’s own views on know-how are presented in his (1945) and (1949). Recent defenses of neo-Rylean views include Noé (2005), Glick (2012), and Setiya (2009, 2012).
\(^2\)See Bengson and Moffett (2011).
\(^3\)See, e.g., Stanley and Williamson (2001), Snowdon (2003), Stanley (2011a,b), and Brogaard (2011).
Cognitivists have a prima facie advantage over neo-Ryleans. As Ryle himself emphasized, *know-how* is an intelligence concept—one that claims membership in the same family of concepts as *understanding, thought, and propositional knowledge*. Contra Ryle and his behaviorist contemporaries, however, it is now widely agreed that intelligence phenomena bear an explanatory, rather than constitutive, relationship to the abilities or dispositions associated with them. My understanding of your words is not constituted by my ability to do things like utter appropriate responses or carry out your commands. My understanding of your words is, rather, something that explains those abilities. The point applies equally to propositional knowledge and other cognitive states. Why, one wonders, should know-how be exceptional?

By locating know-how in the realm of the cognitive—in the realm of things that explain abilities—cognitivists have the privilege of making know-how unexceptional. But with privilege comes responsibility. Cognitivists and neo-Ryleans alike acknowledge a close connection between at least one distinctively practical kind of knowledge how to φ and the ability to φ. Since cognitivists do not simply identify know-how with ability, they face pressure to explain how it is that the cognitive state with which they identify know-how confers ability.

This explanation, moreover, must take a certain shape. Part of the cognitivist conception of know-how is that knowledge how to φ contributes in a specific way to the ability to φ—viz. by *guiding* the performance of φ. A cognitivist account of know-how, then, should explain the connection between know-how and ability by providing insight into how it is that know-how plays this action-guiding role. Call this the Explanatory Desideratum (ED).

My main project in this paper is to develop a cognitivist theory of know-how that satisfies the ED. Before setting in on this project I will identify the sort of know-how I take to be at stake (§1.2) and spend some time getting clear about its relation to ability (§1.3). I will then go on to examine the doctrine of *intellectualism*, a cognitivist theory influentially propounded by Jason Stanley and Timothy Williamson (2001), and recently elaborated by Stanley (2011a,b). I argue that these versions of intellectualism do not satisfy the ED. I then introduce my positive proposal (§1.5), argue that it satisfies the ED (§§1.6-1.7), and show how it accommodates two important ways in

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4 See Ryle (1949: Ch. 2, §2).
5 Stanley (2011a: 1): "[W]hen we engage in intelligent action, we are guided by our knowledge of how to perform various actions."
6 See Bengson and Moffett (2011: 178) for a formulation of a related but distinct desideratum.
which know-how has been thought to differ from propositional knowledge (§1.8).

1.2 Practical Know-How

The Explanatory Desideratum gets traction with respect to a distinctively practical kind of know-how. Generally speaking, we ascribe this sort of know-how when we say that someone knows how to ride a bicycle, tie her shoes, or fix cars. Practical know-how is the kind of know-how that is intimately connected to skill and competence. It is the kind of know-how that dawns with instruction and practice, with learning to do something. 7

Not all utterances of “S knows how to φ” attribute practical know-how. Stanley and Williamson (2001: 424-5) note that such ascriptions admit of deontic readings on which they attribute straightforward propositional knowledge of a normative fact about the manner in which an action ought to be performed. If someone knows that one ought to ride one’s bicycle carefully in New York City, she in a sense knows how to ride a bicycle in New York City. But such a person may have no competence whatsoever at bicycle riding; in the practical sense she may not know how to ride a bicycle (and a fortiori not know how to ride a bicycle in New York City). 8

Even after restricting attention to non-deontic readings of “S knows how to φ”, further distinctions must be drawn to isolate the phenomenon of interest. Sometimes a subject may be said to know how to φ in virtue of possessing knowledge about how to φ (Fridland, 2013), or mere ‘armchair knowledge’ concerning the activity of φing (Kumar, 2011). It is this sort of knowledge how to ride a bike that can be imparted simply by telling someone that the way to do so is to mount the bike and peddle forward while balancing. But mere armchair knowledge how clearly does not suffice for know-how of the practical sort. 9 Learning how to ride a bicycle in the intended sense is, unfortunately, harder than learning that one could ride by peddling forward while balancing.

In focusing on practical know-how, I take myself to be singling out a theoretically interesting species of the genus characterized by ascriptions of the form S knows how to φ (read non-deontically). In doing so I do not thereby commit myself to ambiguity or polysemy in the nat-

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7 See Glick (2012) on the relation between learning-to and practical know-how.
8 The example is from Stanley and Williamson (2001: 425, fn. 23).
9 Another much discussed kind of case involves instructors of a particular activity who, although never themselves having acquired proficiency at the activity, may be said to know how to perform it. I think it is plausible that such cases fall in either one or the other of the two categories of non-practical know-how just discussed. (Stanley (2011a: 182) suggests that the deontic reading of “S knows how to φ” may be operative in these cases.)
ural language expression ‘knows how’, any more than pointing up a theoretically interesting distinction between long-term and working memory commits one to polysemy in the English word ‘memory’.

I henceforth use ‘know-how’ and cognate expressions to denote practical know-how.

1.3 Practical Know-How and Ability

Having narrowed our focus to practical know-how, let us examine its connection with ability. Doing so will improve our grip on the phenomenon that the Explanatory Desideratum requires an account of know-how to explain.

As many theorists have observed, ability talk is highly context-sensitive. Influential accounts tie ability to success under some contextually determined set of counterfactual conditions. For this reason it is most perspicuous to dispense with ability talk and formulate the ED’s expanandum directly in terms of the conditions under which one would succeed it φing, given that one knows how to φ. My aim in this section, then, is to fill in the blank in the following schema:

If S knows how to φ, then if S were to attempt to φ under _____ conditions, S would succeed.

A good place to start is with Katherine Hawley (2003), who proposes to fill in the schema as follows:

(Hawley’s Principle) If S knows how to φ, then if S were to attempt to φ under normal conditions for performance of φing, S would succeed.

Hawley’s Principle is designed to accommodate the fact that know-how can survive certain forms of bodily damage. For example, an expert pianist who has lost his arms seems to retain his piano

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10 See Glick (2012: §1) for elaboration on this point.
11 It is worth noting that English does contain an expression that at least roughly picks out the phenomenon of practical know-how as I wish to understand it. The expression appears in sentences of the form S has φing know-how. Note that it is not generally true that someone who knows the manner in which an activity ought to be performed thereby has know-how with respect to that activity. Likewise, a subject possessing even extensive armchair knowledge about an activity does not thereby have know-how with respect to it. See Rumfitt (2003) for a discussion of ‘know-how’.
12 The structure of this section is inspired by Bengson and Moffett (2011: §3).
13 See, e.g., Lewis (1976).
14 See Kratzer (1977) for a seminal treatment of this form; see also Glick (2012: §4.2) and references therein.
15 Strictly speaking, the consequent of the conditional should read ‘S would succeed with probability above the contextually relevant threshold.’ This qualification accommodates cases where mere occasional success suffices for knowledge how. For example, a baseball player counts as knowing how to score runs even if his batting average is only .250—that is, if he scores a run only one out of four times at bat. I leave this qualification implicit in what follows.
playing know-how (even if it would be false in ordinary contexts to say that he is able to play
the piano).\textsuperscript{16} Because presence of functioning arms is part of normal conditions for the activity
of piano playing, Hawley’s Principle refrains from disqualifying him as knowing how to play the
piano.

When restricted to practical know-how, Hawley’s Principle seems undeniably correct. But one
might worry that it is not particularly substantive. To bring out the worry, note that possession of
knowing know-how might itself be part of the conditions that are normal with respect to performance
of $\phi$. If so, then just about anyone will count as satisfying Hawley’s Principle for just about any
action $\phi$, and the condition will be too permissive to usefully constrain our theorizing about know-
how.

To give Hawley’s Principle teeth, we must require that certain features of the subject be held
fixed in the ‘normal conditions’ that the principle alludes to. What features should these be?
Presumably they should be the features on which a subject’s know-how supervenes, and of course
we can’t fully characterize these before we have a theory of know-how. But we don’t need a full
characterization to modify Hawley’s Principle in a way that ensures its substantiveness. Since we
are focusing on cognitivist theories of know-how, we can assume that know-how supervenes on
a subject’s cognitive features. And one might think that it is those features that need to stay fixed
in counterfactual scenarios, if success in those scenarios is to be diagnostic of the subject’s actual
know-how. The most straightforward way of incorporating this thought into Hawley’s Principle
is this:

If $S$ knows how to $\phi$, then if $S$ were to attempt to $\phi$ under normal conditions relative to perfor-
mance of $\phi$, in which $S$’s cognitive features are held fixed, then $S$ would succeed.

This modification ensures that our principle will rule out at least some subjects and thus avoid
triviality. But one might worry that it rules out too many. Suppose Tim has acquired great skill
at piano playing through years of practice, but has recently been conditioned in a pavlovian fash-
on to suffer an incapacitating bout of nervousness every time he approaches a piano. Since this
conditioning is supported by structures in Tim’s cognitive system, Tim will fail to play the piano
in normal conditions where all of his cognitive features are held fixed. But it seems unnatural to

\textsuperscript{16}The armless pianist was introduced to the recent literature on know-how by Stanley and Williamson (2001). Stan-
ley and Williamson cite Ziff (1984: 71) in connection with the example.
deny post-conditioning Tim knowledge how to play the piano—to think that the conditioning has somehow destroyed his know-how even though (we can suppose) it has not affected any of the cognitive structures developed over the course of Tim’s years of practice.

The problem in Tim’s case is that some of his cognitive dispositions—the dispositions set in place by the conditioning—are masking other of his cognitive dispositions—presumably the ones underwritten by his knowledge of how to play the piano. The case shows that our counterfactual success condition can’t require that all of a subject’s cognitive features stay fixed in the scenarios in which know-how requires success.

How then should we say which cognitive features need to stay fixed in those scenarios? A natural idea is to distinguish between a mere cognitive feature and cognitive capacity. A cognitive capacity is a feature that has a function in the cognitive system—a job it performs that contributes in some way to the overall operation of the system. (A mere cognitive feature might be a capacity, or it might be something that interferes with the operation of a capacity, like the cognitive mechanisms set in place by Tim’s conditioning.) In using counterfactual success to diagnose absence of know-how, we want to look at scenarios where a subject’s cognitive capacities are neither inhibited nor enhanced. We want to look at scenarios where they are operating normally. Such considerations motivate the following refined version of Hawley’s Principle:

(Success Principle) If S knows how to φ, then if S attempted to φ in φing-normal circumstances, with S’s cognitive capacities held fixed and operating normally, S would succeed.17

I take the Success Principle to be both substantive and true (when restricted to practical know-how).18 It serves to make the Explanatory Desideratum more precise. We can now state the ED thus: an account of know-how should explain the truth of the Success Principle in terms of how know-how guides action. Formulating the ED in this way better positions us to diagnose the shortcomings of intellectualism, the cognitivist view that I will examine in the next section.

17 Here ‘φing-normal circumstances’ abbreviates ‘circumstances normal relative to the task of performing φ’.

18 Two clarificatory notes about the Success Principle. First, the principle specifies a mere necessary condition on knowing how. To see why the condition isn’t sufficient, note that a subject may meet it by accidentally succeeding at φing (succeeding, that is, in some way not to be explained in terms of the subject’s know-how). Counterfactual success of this sort would not, of course, suffice for knowing how.

Second, note that the notion of normality appears twice in the principle, in different ways. In its first appearance, it is normality relativized to the task of φing. If φing is itself a highly abnormal activity, then such conditions will not be normal in an unrelativized sense. In the notion’s second appearance, it qualifies the functioning of the subject’s cognitive system. Here, normality is not to be understood relative to the task, but rather relative to the operation of the subject’s cognitive economy.
1.4 Intellectualism

Intellectualists hold that all know-how is knowledge of a proposition entertained or thought of in a special practical way—under a *practical mode of presentation* (henceforth ‘PMP’). What is the proposition? According to Stanley and Williamson (2001) it is the proposition expressed by sentences of the form \( w \) is a way for me to \( \phi \), and other intellectualists are in broad agreement. The discussion in this section will focus on construals intellectualists have given of practical modes of presentation. I will argue that intellectualists have not provided a characterization of them that permits their view to satisfy the Explanatory Desideratum.

Why do intellectualists invoke PMPs? Notice that a naive version of their view faces a simple problem. Suppose Hannah knows how to ride a bicycle. If intellectualism is correct, her know-how is knowledge of a proposition. Which proposition? Intellectualists answer: the proposition that moving her body thus and so is a way for her to ride a bicycle. But it is perfectly coherent to suppose that Hannah knew this proposition before she came to know how to ride a bicycle. Perhaps she watched detailed instructional videos on bicycle riding that left her with exact knowledge of the required movements. Still, before she practiced, Hannah did not know how to ride a bicycle. So intellectualism must be false: Hannah’s post-practice know-how must involve something more, or other, than knowledge of a certain proposition.

Subjects like unpracticed Hannah threaten intellectualism with the charge of letting too much into the extension of know-how. To fix the problem, intellectualists must strengthen their conditions on knowing how. They propose the following strengthening: know-how requires not just knowledge of a proposition about a way of \( \phi \)ing, but knowledge of it under a *practical mode of presentation*. This stipulation disqualifies unpracticed Hannah from knowing how to ride a bicycle. Although Hannah knows the right proposition about bicycle riding, she doesn’t know it under a PMP and so doesn’t know how.

By accommodating cases like Hannah’s, intellectualism thus revised may validate the Success Principle. But does it explain it in the way the ED requires? That depends crucially on how practical

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19 For Stanley (2011) the proposition is slightly different: \( w \) is a way in which \( S \) could \( \phi \).
20 This paragraph and the next follow Glick (2013: §1).
21 For expository purposes I assume a broadly Russelian theory of propositions, which is the theory adopted in Stanley and Williamson (2001). Stanley (2011a) and Pavese (2015) operate with a Fregean theory according to which modes of presentation (or ‘ways of thinking’) are components of propositions, rather than features of the relation thinkers bear to them. Nothing in this section’s discussion turns on the correct theory of propositions.
modes of presentation are characterized, since PMPs make the difference between the kind of propositional knowledge that satisfies the Success Principle—the kind that constitutes practical know-how—and the kind that does not. I’ll now consider three proposals intellectualists have given for characterizing PMPs and argue that none of them yields a satisfying explanation of the Success Principle’s truth in terms of how know-how guides action.²²

1.4.1 PMPs as dispositional states

The first intellectualist strategy for characterizing PMPs, suggested in Stanley and Williamson (2001) and further developed in Stanley (2011a), relies on an analogy to indexical modes of presentation, which are implicated in thoughts of the place where one is located as ‘here’, or the person who one is as ‘me’. Indexical modes of presentation, Stanley and Williamson claim, entail distinctive dispositions on the part of the subject.²³ Likewise, they suggest, for thinking of a way of φing under a PMP. So we can get a grip on PMPs via the set of dispositions they bring in their wake—presumably, dispositions to φ successfully in various situations.

Does the analogy to indexical modes of presentation explain the connection between know-how and counterfactual success? In one way yes: a subject who knows how will succeed under appropriate conditions because a constituent of her know-how—viz, the grasping of a practical mode of presentation—disposes her to succeed. The explanation, of course, is not particularly illuminating since the dispositions invoked to characterize PMPs are presumably themselves to be glossed in terms of a principle that looks very much like the Success Principle. But more importantly, the explanation sheds no light whatsoever on what it is about know-how that enables it to play its distinctive action-guiding role. And this is exactly where a cognitivist account must shed light if it is to satisfy the Explanatory Desideratum.

²²Glick (2013) offers a thoroughgoing critique of practical modes of presentation but does not specifically direct his criticisms at the explanatory power of PMPs vis-à-vis the guidance of action as I do here.

²³429:

Thinking of a person as oneself entails being disposed to behave in certain ways, or form certain beliefs, given relevant input from that person. Similarly, thinking of a place as here entails being disposed to behave in certain ways, or form certain beliefs, given relevant input from that place. Analogously, thinking of a way under a practical mode of presentation undoubtedly entails the possession of certain complex dispositions.
1.4.2 PMPs as action-based ways of thinking

The second intellectualist strategy for characterizing PMPs, suggested in Stanley (2011a), draws inspiration from remarks of Christopher Peacocke on ‘action-based ways of thinking’. 24 Peacocke observes that one may think of a particular type of arm movement in a certain way when intending to execute it, and then reasonably react with surprise upon seeing the actual path that one’s arm traces through space when the movement is carried out. The case suggests that a subject may coherently take contrary attitudes toward the same truth-conditional content: the subject believes that he will move his arm like this [thought of in an action-based way], but does not believe he will move his arm like that [thought of in a visual way]. The possibility of coherence in such a case is naturally explained by the supposition that the proposition is thought of in distinct ways. 25

Could PMPs be satisfactorily glossed as action-based ways of thinking? We can grant that Peacocke’s example establishes the existence of such ways of thinking. And we can even grant (pace Koethe (2002) and Glick (2013)) that they are necessary for know-how. The problem with action-based thoughts is that they still leave us in the dark as to how know-how guides action. For we can imagine subjects who meet all the conditions for thinking of a way of φing in an action-based way who nevertheless aren’t in a position to successfully guide a performance of φ, even in conducive circumstances that involve no cognitive funny business.

To see this, suppose that Karla memorizes a lengthy sequence of dance movements (all of which she knows how to perform) and mentally rehearses the movements by imagining her way through them. The way of thinking about the dance embodied in this imaginative exercise plausibly counts as action-based in Peacocke’s sense. But even if Karla performs this mental rehearsal, we can suppose that she is nevertheless disposed to ‘get lost’ after the first or second movement when she actually tries to perform the dance. Karla thus fails to perform the dance under perfectly conducive circumstances. Nothing need be amiss with Karla’s body or physical environment for her to fail. And moreover, nothing need be going wrong with Karla’s cognitive system. She can be perfectly alert, undistracted, unconfused, unaffected by bouts of nervousness or other emotional upheavals. And still she fails to bring the dance off. Karla thus violates the Success Principle with respect to performing the dance. In the practical sense, she does not know how to do the dance.

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1.4.3 PMPs as generalized operational semantic values

Carlotta Pavese (2015) provides the most detailed positive account of PMPs—practical senses, in her terminology—to date. Her strategy is to use a computer’s ‘grasp’ of the operational semantic value of a computer program as a model for a person’s grasp of a practical sense. Pavese advertises new insight into the connection between know-how and abilities as a central payoff of her account. Since that is the kind of insight our Explanatory Desideratum requests, Pavese’s account is well worth our attention.

Pavese identifies several features of a computer’s relation to a piece of software that might be enlisted in the service of characterizing a subject’s relation to a practical sense. Most relevant for our purposes is the connection between the part of a computer called the interpreter being able to understand of the operational semantic value (OSV) of a program text and the abilities displayed by the overall computational system:

By understanding the OSV of each part of a program text, the interpreter understands the primitive rules corresponding to each part, which endows the interpreter with the ability to follow each part. On the other hand, by understanding the primitive combination rules ..., the interpreter acquires the ability to follow each successive combination of those parts and so, finally, the ability to follow the whole program. So whether the command is primitive or derived, by interpreting it the system will acquire the ability to follow a rule to $\phi$. (11)

This passage makes clear that in assessing whether Pavese’s proposal satisfies the ED, we need to consider the degree to which the analogy to an interpreter’s understanding of the operational semantic value of a program text clarifies the manner in which grasping practical senses confers abilities.

We can distinguish two ways of interpreting Pavese’s analogy; I will call them the thin and thick readings. On the thin reading, Pavese is drawing a parallel between a constitutive feature of OSVs and practical senses. It is just part of the nature of OSVs that the understanding of them by an interpreter endows the overall system with certain abilities. Likewise, it is just part of the nature of practical senses that the grasping of them by a human subject endows the subject with certain practical abilities.

Understood in this way, Pavese’s analogy does the same sort of dialectical work as Stanley and Williamson’s analogy between PMPs and indexical modes of presentation. In place of Stan-
ley and Williamson's "grasping a proposition under an indexical mode of presentation", Pavese substitutes "an interpreter's understanding an OSV"; and in place of their "entails distinctive dispositions on the part of the subject", she substitutes "endows the subject with certain practical abilities." Like Stanley and Williamson's, Pavese's analogy may help motivate the idea that there is a distinctive kind of understanding that, by its nature, involves the possession of practical abilities. But this idea by itself does not provide the sort of insight required to meet the ED. For it leaves us completely in the dark as to how that kind of understanding contributes to ability by participating in the guidance of action.

On the thick reading of Pavese's analogy, its point is not just to motivate a constitutive connection between the grasping of practical senses and practical abilities, but to suggest an explanation for this connection in terms of the functional role the grasping of practical senses plays in a subject's cognitive system. An interpreter's grasp of the OSV of a program text plays a well-understood role in guiding the activity of the overall system. And we can understand Pavese as suggesting that the grasping of practical senses plays a functionally analogous role in human cognitive systems. Since this is exactly the kind of explanation we are looking for, it is worth exploring this reading of Pavese's analogy.

To evaluate Pavese's proposal on the thick reading, we need to understand what an interpreter is and what role it plays in a computational system.

A normal computer employs at least two systems of representation: the programming language and the machine language. Roughly speaking, the programming language is the syntactic system a (human) programmer uses to write a program, and the machine language is the syntactic system that contains the representations over which the system's computational operations are defined—the language in which the computer computes. To execute a program, a mechanism inside the computer must translate the commands in the programming language into commands in the machine language. Only then can the computer carry out the program's commands.

As Pavese tells us, this process can occur in two ways. The entire program can be translated into machine language before it is executed, or the translation and execution can occur piecemeal as the program is running. The first way of executing a program involves a compiler—a mechanism

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26 To her credit, Pavese develops this source of motivation much more fully than Stanley and Williamson. See her argument about the part-whole structure of OSVs on p. 11.

27 See Fodor (1978) for a philosophical discussion of the relation between programming and machine languages.
whose job is to generate a complete machine language rendering of the program script. The second way of executing a program involves an interpreter—a mechanism whose job is to translate the program script into machine language *one line at a time* and execute each line as soon as it is translated.

We are now in a position to cash out Pavese's talk of an interpreter’s "understanding of the OSV of a program text to \( \phi \)." The natural interpretation of 'OSV' is the *translation* of the relevant part of the program into machine language.\(^{28}\) And the interpreter’s understanding of the OSV of a program script presumably consists in its ability to carry out such translations (or perhaps in its representing the translational rules it follows to do so—it doesn’t matter for our purposes). Because an interpreter must produce a machine language translation of the relevant line of program script before it can execute it, the translational capacity plays an essential role in the functioning of a computational system that executes programs by interpreting them.

Now this story makes tolerably clear how an interpreter’s grasp of an OSV participates in the production of computational activity, thus endowing the system with certain abilities. But does it take us any way toward understanding the role of grasping practical senses in the cognitive underpinnings of human abilities?

Maybe it does—but that depends on how the human cognitive system happens to be set up. The only sense in which an interpreter can be said to *understand* an OSV is the sense in which the interpreter produces *translations* of high-level programming code into a low-level machine language. Does understanding a practical sense in the case of human subjects have a similar functional significance? That depends entirely on whether the human grasping of a practical sense involves any translational capacities whatsoever. And to think that it does is in effect to commit oneself to the existence of functional analogues of programming and machine languages in the human cognitive system. That empirical commitment may be reasonable, but it is a highly substantive one, and one that Pavese does not defend.\(^ {29}\)

Let us grant for the sake of argument that the functional architecture of the human mind is relevantly similar to a computer’s, in that there is some mechanism in the human cognitive sys-

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\(^{28}\)Or at least this is the notion of OSV familiar from debates about the philosophical significance of operational semantic theories. See Fodor (1978).

\(^{29}\)Fodor (1968: 627-8) provides a picturesque illustration of how the cognitive system would have to be set up for the commitment to be correct.
tem that plays the role of interpreter. Even then, I claim, intellectualism retrofitted with Pavese's account of PMPs fails to capture the full action-guiding character of know-how. It is worth considering what kind of cognitive feature she leaves out, since that is the feature I will emphasize in my positive account.

The relevant cognitive features correspond to what computer scientists call data structures. Data structures are ways of representing and organizing information that permit the information to be efficiently accessed as a given program is running. They are central to the study of computer science. As Shaffer (2011: 3) puts it, "The primary purpose of most computer programs is not to perform calculations, but to store and retrieve information—usually as fast as possible. For this reason, the study of data structures and the algorithms that manipulate them is at the heart of computer science." Importantly, the nature of the data structure involved in a computation is not fully determined by the program script that guides the computer in performing that computation. So if computer programs are practical senses, data structures are something over and above practical senses. And use of appropriate data structures is crucial if a computational system is going to meet the Success Condition for a given action. A more general version of this claim will be argued for throughout the rest of the paper. For now let me illustrate the point using a simple example.

Consider an action \(a\) that consists of ten steps. How might we program a robot to perform \(a\)? A natural approach is this. Store in the robot's memory a lookup table that includes entries identifying a set of commands with each step—entries such as: 'Step 1: Heat oil in a pan.' This lookup table will be the data structure. Then we write a program telling the robot to search the data table for entry 'Step 1', retrieve the set of commands corresponding to that entry and execute them, and then do the same for Step 2, and on through Step 10. Now the observation I want to make is that the speed with which the robot can execute this program depends crucially on how the lookup table is structured. In the best case scenario, the table contains entries for all and only each of the ten steps. So when the robot searches the table for the commands associated with a given step, it will never have to scan more than nine entries. But there are worse scenarios in which the table contains scads of totally irrelevant entries in addition to entries for the ten steps. In such case, the robot will have to scan indefinitely many entries before it finds the one it is looking for. And if \(a\) has (as most tasks do) associated time constraints, such scanning will prevent \(a\) from being successfully brought off.
Let me emphasize that the important difference between the best and worst case scenarios does not concern what program is being executed. The same program is being executed in both cases. Nor does the difference consist in whether the robot's interpreter can produce machine-language translations of the program script. In both cases it can, just at different speeds. So everything that Pavese tells us is relevant to the identity of a practical sense stays fixed. But in the best case scenario the computer has what it takes to satisfy the Success Principle. In the worst case scenario it does not. Assuming we are dealing with a system that may sensibly be assessed for know-how, in the best case it knows how, in the worst case it does not.

What is the important difference between the two scenarios? It is, I suggest, a difference concerning the information access capacities of the system. Capacities of this kind will play a central role in my positive account of know-how, to which I now turn.

1.5 Know-How as Action-Indexed Information

One could imagine a defense of intellectualism that proceeded in two stages. The first stage would involve defending the following minimal cognitivist thesis:

(Minimal Cognitivism) Knowing how to \( \phi \) involves possessing information that specifies a way for one to \( \phi \).

The second stage, then, would involve defending the claim that the information is possessed in the way characteristic of propositional knowledge.

My account of know-how begins with Minimal Cognitivism. I won't have much to say in defense of it here, other than that I take it to find motivation in the considerations that favor cognitivism generally, which I mentioned in Section 3.1. The account of know-how I will defend throughout the rest of the paper supplements Minimal Cognitivism as follows:

To know how to \( \phi \) is to possess information that specifies a way for one to \( \phi \), and for that information to be accessible for the purpose of performing \( \phi \).

In this section I want to introduce and explain the idea of information being accessible for a purpose. In the next section I will explore in some detail what it can be for information to be accessible

\(^{30}\)See Evans (1982: Ch. 5) for a classic discussion of human cognitive functioning in informational terms. Like Evans, I take informational states to be the genus of which knowledge, belief, perceptual states, and Sitch's (1978) 'subdoxastic states' are species.
for the purpose of *performing particular actions*, and the relevance of that phenomenon to practical
know-how.\textsuperscript{31}

Information is represented in many ways—in books, maps, tables, lists, photographs, audio
recordings, perceptual experiences, memories, and beliefs. In many cases, a particular means of
representing information will enable that information to be easily accessed for some purposes but
not others.\textsuperscript{32} To begin to get a grip on this idea, consider Elga and Rayo’s (2015) example of the
‘reverse phone book’:

In ... the early days of hacking[,] ‘reverse phone books’ were prized by hackers. A re-
verse phone book is just a phone book whose entries are sorted by telephone number
instead of by name. Such books were valuable because they enabled one to easily fig-
ure out the name associated with any given phone number. A hacker would sometimes
need to swindle information from the person at a given phone number. He would use
the reverse phone book to get the name of that person, and then call the number and
use his knowledge of the name to gain the person’s confidence. (2)

Why were reverse phone books so much more valuable than ordinary ones? As Elga and Rayo
point out, the distinctive value of the reverse phone book lies not in its informational content. The
reverse phone book, after all, contains exactly same information as the standard version. Rather,
the reverse phone book is valuable because of the *purposes* for which it makes that information easy
to access. The ordinary phone book makes information accessible for the purpose of *identifying a
phone number given a name*. The reverse phone book makes the same information accessible for
a different purpose: *identifying a name given a phone number*. For pre-digital hackers, the latter
purpose was the important one.

Let’s consider a less exotic example. One of the key skills imparted in a well-taught elementary
science class is the skill of presenting data graphically—through bar graphs, pie charts, line plots,
and the like. Although a graphical representation contains exactly the same information as the	abulated data from which it was generated, there is clearly a point in producing such representa-
tions. Quite often the epistemic significance of the information encoded in a set of data cannot be
appreciated until it is represented graphically.

Suppose we have a list of measurements of a projectile’s velocity at different times. We want to

\textsuperscript{31}The ensuing discussion draws on unpublished joint work by Adam Elga and Agustín Rayo. Elga and Rayo’s
work, in turn, develops ideas proposed in Stalnaker (1991: esp. §3).

\textsuperscript{32}I use the term ‘purpose’ as a rough synonym for ‘task’, ‘task type’, or ‘application’; as I use it, the term has no
psychological or special teleological significance.

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know whether the projectile was subject to a constant force over the course of its trajectory. It will be very difficult to answer this question merely by inspecting the tabulated values. However, if we plot each measurement as a point in a velocity vs. time plane, we will be able to see immediately whether the projectile was under the influence of a constant force: if the points lie along a straight line, the force was constant; if not, the force was changing. In this example, a graphical means of representing information makes that information accessible for a new purpose: the purpose of determining the nature of the force that acted on the projectile.

The point of these examples is to show that the way in which information is encoded often determines the purposes for which that information can easily be used. Sometimes these purposes are practical, as in the case of the reverse phone book; sometimes they are epistemic, as in the case of graphical representations of tabulated data. Upon reflection, it is not hard to see that such relativity to purpose in manner of encoding is the rule rather than the exception. For almost any way of encoding information, one can readily imagine a different way of encoding the same information that makes it accessible for different purposes, or for no purpose at all. In what follows, I will sometimes talk of purpose-indexed information. To say that information is indexed to a purpose is simply to say that the information is encoded in a way that makes it easy to access for that purpose.

The examples so far have focused on structures in the environment—linguistic and pictorial inscriptions—that encode purpose-indexed information. But the notion is also useful in characterizing features of human cognitive systems. To see this, consider the following riddle. Is there a word of English containing the string of letters ADAC? Think about this for a moment before reading on.33

Before you read this sentence (or solved the puzzle on your own!) did you have the information that ‘headache’ was a word of English containing the string ADAC? You did, but the information was only accessible for certain purposes. Answering the question, “Does the word ‘headache’ contain the string ADAC?” was among them; answering the question posed in the riddle was (probably) not.

The property of representing purpose-indexed information is a functional property of information—

33 A similar example is given in Powers (1978), who uses it to make a similar point. My use of the example follows Elga and Rayo (2015: 9).
using systems. To say that a system possesses purpose-indexed information is to say something about the functional organization of the system. Systems that possess purpose-indexed information exhibit, at an appropriate level of causal description, a difference between mechanisms that store, encode, or represent information and mechanisms that utilize or implement information. (A computer hard drive is a mechanism of the first kind; the CPU is a mechanism of the second kind.) A property in virtue of which a system is able to achieve transfer of information from storage mechanisms to use mechanisms is an access property. A property that enables such transfer of information in conformity with the demands of a particular purpose is a purpose-indexed access property—in the reverse phone-book case, the property of listing entries by phone number. So the property of representing purpose indexed information is the conjunctive property of (1) representing information, and (2) instantiating a purpose-indexed access property with respect to that information.

My main task in this section was to provide an understanding of purpose-indexed information. The next section will make the case for identifying knowledge how to $\phi$ with a particular kind of purpose-indexed information, which I will call action-indexed information—information specifying a way of performing some action which is indexed to the purpose of actually performing it.

### 1.6 Two Kinds of Action-Indexing

In this section I will discuss two prominent ways in which information represented in the cognitive system can be accessible for the purpose of performing particular actions. This discussion will help discharge two argumentative burdens, one metaphysical and the other explanatory.

The metaphysical burden is to defend the *necessity* of action-indexing for a cognitivist account of know-how—an account of know-how that starts from Minimal Cognitivism in the previous section. To do so I will argue that the difference between accessibility and lack thereof makes the difference between the Success Condition’s being met and its not being met, and so makes the difference between the presence of practical know-how and its absence.

The explanatory burden I face is to convince you that my advertised necessary condition on know-how provides the right sort of insight into why subjects who know how meet the Success Condition. As I suggested earlier, this right sort of insight should explain the Success Condition in
terms of the action-guiding role of know-how. I will argue that instances of the functional property *representing action-indexed information* do exactly this kind of explanatory work.

### 1.6.1 Organization

Sometimes a body of information's being action-indexed is a matter of *how that information is organized* in the cognitive system.

Imagine a master chef who can cook risotto fluidly and effortlessly—someone in full possession of risotto cooking know-how. In what does his know-how consist? Presumably, it consists partly in his knowledge of how to do other things like heating a pan and grating cheese. Let's set these components of the master chef's know-how aside for the moment. What else is involved in his knowledge of how to cook risotto? What, in particular, differentiates the master risotto chef from the *risotto ignoramus* with general kitchen competence?

One obvious difference is that the master chef *knows what to do*. He not only knows how to execute all the steps involved in cooking risotto, but he knows that *those* are the steps he has to execute, and that he has to execute them in a particular order. This knowledge constitutes possession of information that specifies a way of cooking risotto. The risotto ignoramus possesses no such information.

But possession of relevant information only partially accounts for the master chef's know-how. To see this, imagine that Laurie, a competent cook, memorizes a recipe for risotto. Laurie can recite the recipe on command, but when she tries to cook risotto, she must pause at every step to mentally recite the recipe up to the relevant instruction. As she does this, things go wrong: the cheese burns and the rice overcooks. Laurie utterly fails at cooking a passable risotto.³⁴

Laurie is disposed to fail at cooking risotto in favorable circumstances in which all of her cognitive capacities are functioning normally. She thus violates the Success Condition and so lacks risotto-cooking know-how.

Notice that Laurie's lack of know-how is not for want of relevant information; she is able, after all, to recite the recipe on command. Laurie's shortcoming, rather, is one of *information access*: the information contained in her memorized recipe is not accessible for the purpose of cooking risotto. It is inaccessible for this purpose because the relevant piece of the total information is not easily

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³⁴Laurie's case closely parallels Karla's from Section 1.4.2.
retrievable at the time it is needed.

How might the master risotto chef’s cognitive system solve Laurie’s access problem? Here is a possibility. Inside the risotto chef’s head there is a sequence of boxes, each housing an index card inscribed with a single instruction drawn from the risotto recipe. The boxes are wired up such that the execution of the instruction written on a given flash card unlocks the box containing the flash card with the subsequent instruction. This mechanism ensures that, throughout the process of cooking risotto, all and only the information pertaining to the subtask at hand is available. A time-consuming scan through the total risotto information is thus obviated, and the master can execute the needed step as soon as the time has come to do so.

Of course we won’t find any actual boxes wired together in human cognitive systems. The purpose of the sequence-of-boxes image is just to caricature a kind of cognitive feature that does figure ubiquitously in explanations in cognitive and computer science—the feature of organizing information in a certain way. Why are structures for the organization of information ubiquitous in enabling agents to use that information in action? A central reason is that many actions have associated time constraints: for the action to be brought off, the simpler actions that constitute it must be executed in a timely manner. Timely execution of sub-actions requires that information specifying what sub-action to execute be retrievable when it is needed. A straightforward way of ensuring that this condition is met is to organize the total information into subtask-relevant bits in a structure that enables their quick retrieval when they are needed.

Attending to this point allows us to see quite generally how it is that meeting access conditions enables the information involved in know-how to play an action-guiding role. David Hunter (2012: 65) points out that “[g]uiding what one is doing is [in part] a matter of being ready to... move on to the next phase or part of the action when the time is right.” As the contrast between the Laurie and the master risotto chef illustrates, it is an information access property—the property of representing information that is appropriately organized—that explains how it is that

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35 So great is the importance of schemes for the organization of information that there is an entire branch of computer science devoted to their study. This branch comprises the study of data structures—in Shaffer’s words, “an organization or structuring for a collection of data items.” (2011: 4). See Humphreys et al. (1994) and Minsky (1974: §3) for discussions of the relevance of data structures, and other schemes for the organization of information, to models of human cognitive functioning. See Cherniak (1983) for a philosophical discussion of the significance of information organization in human memory.

36 As Shaffer (2011: 5) says about data structures in this connection: “[U]sing the proper data structure can make the difference between a program running in a few seconds and one requiring many days.”
subjects’ cognitive systems can meet this condition on guidance. In this way, thinking of know-how as information accessible for performing action casts light on how knowing how enables the guidance of successful action.

1.6.2 Accessibility to cognitive subsystem

Sometimes a piece of information is action-indexed in virtue of being accessible to a certain cognitive subsystem. This accessibility can be direct or indirect.

Moving under artificial force

A nice example of direct accessibility is provided by a study conducted by Shadmehr and Mussa-Ivaldi (1994) on the learned skill of moving an object in the presence of an artificial force. In SMI’s study, subjects grasped a vertical bar mechanically constrained to move only in the horizontal plane. The bar was connected to an apparatus that applied a horizontal force to the bar orthogonal to the bar’s direction of motion, with magnitude proportional to the bar’s speed. During the experiment subjects were asked to move a bar to visible targets. Subjects initially found the task extremely difficult, missing the targets by wide margins. But with practice the subjects learned to compensate for the artificial force and move the bar to the targets along straight-line paths.

SMI explain the learned ability to move the bar in the artificial force environment in terms of the motor system’s construction of a model of the forces to which the movement is subject. When the subjects have mastered movement in the force field, this model encodes information about the functional relationship between the speed of the bar and required compensatory force. Using this model, the motor system selects an appropriate ‘movement plan’—one that compensates for the artificial force—and subsequently implements it in the reaching process. Using this theory, SMI were able to account for the subjects’ skill at smoothly reaching targets in a wide range of locations in the bar’s plane of motion.

According to SMI’s theory, the subjects’ reaching behavior in the artificial force environment is explained by their possession of the information that the way to move in the force field is to apply a compensatory force with such-and-such functional dependence on the speed of movement. This

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37 Actually the subjects moved a cursor controlled by the bar to visible targets on a screen, rather than moving the bar itself to visible targets. For ease of exposition, I will describe the experiment in terms of the motion of the bar.
is information that specifies a way of moving (along straight-line paths) in the artificial force environment. What makes this information indexed to the action of moving in the force environment? SMI note that during the experiment,

[the] subjects did not seem to be aware of the process of adaptation and of the change in their performance. The only subjective indication that some adaptive change had occurred was given by a reduction in the sense of effort associated with the task: during the first batch of 250 movements within the force field, some subjects reported an intense sense of effort. ... At the end of the training period many commented that they were “not feeling” the field anymore. (3215)

Given these observations, it seems plausible that the subjects would not be able to tell you that they were moving in the force field by applying a compensatory force proportional to the square of movement speed.\(^{38}\) A natural explanation is this. Although the information specifying the required compensatory force is encoded in the subjects’ cognitive system, it is not accessible to that part of the cognitive system responsible for conceptual thought and verbal report. Rather, the information is accessible to a cognitive subsystem responsible for executing reaching behaviors—in this case, the motor system.\(^{39}\)

The information’s being accessible to the motor system plays a crucial role in making possible the subjects’ success at reaching. If the subjects were merely able to tell you the functional form of the required compensatory force, without the motor system’s having appropriate access to this information, the subjects would fail at moving the bar even under ordinary and conducive conditions. They would not know how to move it.

SMI’s subjects’ knowledge how to move in the artificial force environment thus consists not just in possession of relevant information but also in the accessibility of that information for the purpose of moving. This accessibility consists in the information’s being accessible to a particular cognitive subsystem (the motor system). Like the property of information organization discussed in the risotto case above, this property is genuinely explanatory with respect to the subject’s ability to guide successful reaching in the force environment.

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\(^{38}\) For more recent observation and discussion of after-effects during adaptation to artificial force environments, see Berniker and Kording (2008), Cothros et al. (2006), and Kluzik et al. (2008).

\(^{39}\) My notion of a cognitive subsystem is more or less the same as Fodor’s (1983) notion of a cognitive module.
Karate belt

In the case of SMI's subjects, information was directly accessible to a behavior-executing subsystem. But know-how does not in general require direct accessibility. As the following example illustrates, indirect accessibility will also do.

Suppose you want to know how to tie a karate belt to Worldwide Karate Federation standards. Here are two descriptions of how to do it:

*Description 1:* Arrange the ends of the belt according to the figure below and pull the loops tight.

![Karate belt diagram]

*Description 2:* Tie the belt around your waist in just the same way that you tie your shoelaces.

Both descriptions specify the same way of tying a karate belt (modulo your exact shoelace tying method). Did one of the descriptions impart knowledge how to tie the karate belt more readily? Unless you are practiced in interpreting knot-tying diagrams, my suspicion is that the second description was more helpful. Why is this? Here is a rough explanation.

In your cognitive system you have (among others) two sets of representations. One set of representations is used in conversation and thought about shoe tying. This set of representations is stored in a 'central system' responsible for high-level language processing and conceptual thought. The other set of representations is involved in executing shoe tying. It encodes the movements made over the course of tying one's shoes (grabbing the laces, looping one around the other, etc). This set of representations is stored in the motor system—the cognitive subsystem responsible for interpreting and executing motor-behavioral commands from the central system.

These two sets of representations are functionally integrated in the following sense. The tokening of shoe-tying representations in the central system tends to cause tying behavior representations to be tokened in the motor system. This functional integration explains why you are able to act immediately on commands to tie your shoelaces, or to tie them straightaway upon thinking, “Now I will tie my shoes.”

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40 For a discussion of the notion of a central system, see Fodor (1983: 101-119).
41 See Mussa-Ivaldi et al. (1994), Thoroughman and Shadmehr (2000), and Flash and Hochner (2005) for evidence that the motor system employs such representations ('motor primitives').
When you read Description 2, you token a representation in your central system that encodes information about how to tie the karate belt. When you do so, you also token shoe-tying representations (corresponding to the second Description's phrase “the same way that you tie your shoelaces”). And since you are already skilled at shoe tying, these latter representations are already functionally integrated with tying behavior representations in the motor system. For this reason, the representation of how to tie the karate belt also becomes so integrated; its integration rides piggyback on the integration of the shoe-tying representations, which are one of its constituents. And since shoe tying behaviors are highly similar to karate belt tying behaviors, the end result is that the representation encoding karate-belt-tying information becomes functionally integrated with representations involved in executing karate belt tying behavior. This functional integration makes the karate-belt-tying information accessible (albeit indirectly) to the motor system, and so accessible for the purpose of tying the belt.

Contrast this story about Description 2 with Description 1. Inspecting the knot diagram in Description 1 causes a certain visual representation to be tokened. But unlike the linguistic representations deployed when one hears (or reads) the phrase “how to tie your shoelaces”, that visual representation has no privileged functional connections to the parts of the motor system implicated in the relevant tying behavior. This is not to deny the existence of any such functional connections. It is, presumably, possible to tie the karate belt by following the diagram in Description 1. But a task of translation is required. One must think carefully through the steps needed to get the karate belt to look as it does in Description 1, and then execute them. In doing so, one is forging functional connections between the visual knot representation and the relevant motor representations. Probably after undertaking this exercise repeatedly, one will be able to tie the knot immediately upon being presented with the diagram. But before one has undertaken this translational task, the information encoded in the visually represented knot diagram is relatively inaccessible for the purpose of karate belt tying.

I claim that the difference in accessibility between information imparted by Description 1 and Description 2 makes for a difference in know-how. Consider a normal subject (knows how to tie shoes in a standard way, not especially fluent with knot diagrams) immediately after encountering Description 1 but not 2. I claim that this subject does not yet know how to tie the karate belt. He will only come to know how upon translating the knot tying diagram into the series of actions
required to tie the belt. Contrast this subject with an identical subject who encounters Description 2. This subject, I claim, comes to know how to tie karate belts straightaway. The explanation is that the second subject possesses information that is accessible for the purpose of tying karate belts, and this accessibility is part of what makes for know-how.

In general, know-how is much more readily imparted by describing a way of doing something in terms of actions that a subject already knows how to perform. The discussion in this section helps us see why. What it is to know how to do something is for information about how to do it to be accessible for the purpose of doing it. We have seen that this accessibility is sometimes matter of information being accessible to low-level cognitive subsystems responsible for execution of simple behaviors. A description of a way of doing something in terms of actions that the subject already knows how to execute will tend to induce in the subject a representation that makes information thus accessible. This is because the constituents of the representation so induced (representations encoding information corresponding to pre-existing know-how) already make much of the relevant information accessible to these subsystems (via functional integration of representational states). In this way, a description of how to $\phi$ in terms of action $\psi$ that one already knows how to perform often enables information indexed to the purpose of $\psi$ing to be easily repurposed for use in $\phi$ing.\footnote{Exceptions to this generalization include actions that involve not only executing sub-actions that one already knows how to perform, but executing them in a non-trivially coordinated way. It is common, for example, for novice guitarists to know how to sing a melody and also know how to play the accompanying guitar riff while falling short of knowing how to perform the part of the song in which the two are combined.}

To summarize: information can be accessible for the purpose of executing action by being indirectly accessible to cognitive subsystems (e.g. the motor system) responsible for executing behaviors that constitute the action. This indirect accessibility is achieved through functional integration between representations employed by the relevant subsystems. At least sometimes, information being accessible in this way makes the difference between knowing how and not knowing how.

1.6.3 Explaining Success

In this section I have described two ways in which information that specifies a way of $\phi$ing can be accessible for the purpose of performing $\phi$: (1) the information can be organized to make the right part of it accessible at the right time (the risotto case); and (2) the information can be accessible
(directly or indirectly) to cognitive subsystems involved in action-execution (the force field case and karate belt cases). In assessing what has been accomplished, let us return to our Explanatory Desideratum:

(ED) An account of know-how should explain the truth of the Success Principle in terms of how it is that know-how guides action.

I have suggested that access features are needed to ensure that the Success Principle is satisfied, since removing those features (even while holding fixed the facts about what information is possessed) destroys know-how. I conclude that an access condition is necessary for know-how.

I have also argued that instances of access properties account for how the sorts of informational states involved in know-how can play an action-guiding role. The master chef’s ability to cook risotto is explained by his having parts of the total recipe information organized so that the right part is accessible at the right time. SMI’s subjects’ ability to move the bar in the artificial force field is explained by their motor systems having access to information specifying the way to compensate for the artificial force. And your ability to tie a karate belt to WWKF standards upon encountering Description 2 is explained by the karate belt tying information being accessible (via functional integration of representational states implicated in shoelace tying) to the part of your cognitive system responsible for executing tying behaviors. The property that unifies these cognitive features and captures the way in which they are explanatory is the property of being accessible for the purpose of performing particular actions. By locating this explanatory property in the nature of know-how, my account provides the desired insight into the truth of the Success Principle, and thereby into the connection between know-how and ability.

1.7 A Worry Addressed

As is clear from Section 1.5, my account draws substantially on insights from Elga and Rayo’s recent work on belief fragmentation. The central claim of that work is that a subject’s total doxastic state should be modeled using a table that identifies the subject’s beliefs not only with certain contents, but also with a purpose, or range of purposes, for which the belief can guide action. The picture that emerges is one in which a subject’s cognitive system is fragmented or compartmentalized into distinct bodies of information, each of which has an associated set of purposes or
contexts of application.

Elga and Rayo (2015) are not completely explicit about how much psychological reality to invest in cognitive fragments, and one might worry (as Norby (2014) does) that this question has no answer that preserves simultaneously the empirical plausibility and the explanatory power of the fragments. I want to make clear that this worry doesn’t apply to the picture of know-how I have sketched here. That picture does not depend on the existence or explanatory power of cognitive fragments. It depends only on the instantiation by human cognitive systems of purpose-relative information access properties. And I hope it is clear by now that human cognitive systems do instantiate such properties, and moreover, that they do real explanatory work in accounting for how human action is successfully carried out.

It is crucial to stress that ‘φ-indexed information’ is not to be understood simply as ‘whatever internal state causes successful performance of φ’. If my notion of action-indexing were that thin, then my view really would lack an explanatory advantage over the versions of intellectualism discussed in Section 2.7. But my notion is more robust than that. To possess φ-indexed information is to be in an internal state with a certain informational content, and to instantiate an access property—viz, a cognitive property that mediates the transfer of that information from mechanisms that encode it to mechanisms that utilize it. Such a view embodies a substantive commitment to the types of cognitive-architectural features that know-how requires. That is the commitment that gives the view its explanatory power. And I have argued above that the commitment is sound with respect to human cognitive systems.

1.8 Know-How and Know-That

It is natural at this point to wonder where my view leaves us with respect to intellectualism. In particular, it might seem that my view is not only compatible with intellectualism but in fact vindicates that thesis by providing a more perspicuous characterization of practical modes of presentation.

This thought arises from the observation that the notion of action-indexing does the work that practical modes of presentation were designed to do. It disqualifies unpracticed Hannah (§2.7) from knowing how to ride a bicycle, because the information imparted to her through watching

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43 Elga and Rayo do briefly address the matter in §6.
bicycle riding videos is not indexed to the purpose of executing bicycle riding (perhaps it is indexed to other purposes, such as assessing the quality of others’ riding). I am happy to leave open the possibility of interpreting my view (or perhaps a variant of it) as an explication of PMPs. But I myself am not inclined to see things this way. The reason is that my view respects two prima facie differences between know-how and propositional knowledge or know-that: know-that requires belief whereas know-how does not, and know-how comes in grades or degrees whereas know-that does not.

Let’s start with the first difference. Kieran Setiya (2012: 295) invites us to consider the action of clenching one’s fist. This is a good example of a basic action—an action that is not performed by performing other actions. Setiya argues that if we accept that basic intentional action requires know-how, then we should not think that belief that for some way of φing, one could φ in that way is necessary for knowledge how to φ. First premise: “I need no more than the intention to clench my fist, and the disposition to do so under the guidance of that intention, in order to clench my fist intentionally as a basic action.” Second premise: being disposed to φ under the guidance of an intention to φ does not suffice for believing that one could φ in a certain way. Belief, at any rate on a broadly functionalist account, “involve[s] complicated, multi-track dispositions, dispositions to act in different ways in different circumstances, to form and revise other mental states.” The mere disposition to φ under the guidance of an intention to do so does not suffice for the possession of such complicated dispositions. Conclusion: knowledge how to clench one’s fist, and, presumably, knowledge how to execute other basic actions, does not require a belief that one could execute them in a particular way. So some actions are such that knowledge how to execute them does not require belief. But it is at least very common to hold that propositional knowledge does require belief.

The second difference is that know-how seems to come in grades where know-that does not. The point goes back to Ryle’s discussion of knowing how and knowing that in Chapter 2 of The Concept of Mind:

We never speak of a person having partial knowledge of a fact or truth, save in the special sense of his having knowledge of a part of a body of facts or truths. A boy can

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44 For an early discussion of this notion of basic action, see Goldman (1970: Ch 3, §4). See also Danto (1965, 1973).
45 For recent dissent, see Myers-Schulz and Schwitzgebel (2013).
be said to have partial knowledge of the counties of England, if he knows some of them
and does not know others. But he could not be said to have incomplete knowledge of
Sussex being an English county. Either he knows this fact or he does not know it. On
the other hand, it is proper and normal to speak of a person knowing in part how to
do something... (Ryle, 1949: 46)

It makes sense to say that someone knows in part how to φ, or only somewhat knows how to φ, or
that A knows how to φ better than B. But corresponding constructions for knowledge-that sound
false or ill-formed.46 A simple explanation is that know-how comes in degrees whereas know-that
does not.47

How does my account accommodate these two apparent differences between know-how and
know-that? Let’s start with belief. It is common to think that a cognitive state counts as a belief
only if it is capable of interacting inferentially with a sufficiently wide range of other cognitive
states.48 But the kind of purpose indexing involved in know-how fails to ensure, and may even
foreclose, the sort of inferential integration that is essential to belief.

Knowing how requires only that information be accessible for a quite narrow purpose: per-
forming a particular (type of) action. For many actions, such accessibility requires only that the
relevant information-encoding states be capable of interacting with a relatively small number of
other states. A prime example is the information encoded in the motor systems of SMI’s subjects
(§1.6.2). Here, all action-indexing requires is that the informational states be capable of interacting
with other states in the motor system. And such limited inferential integration seems in this case
incompatible with belief. For notice that the subjects do not seem to believe that the way to move
the bar in the force field is to apply a compensatory force proportional to the square of move-
ment velocity and orthogonal to its direction. So although inferential isolation forecloses belief, it
is perfectly compatible with, and (as the case of Laurie from Section 1.6.1 shows) is in fact often
conducive to, the sort of indexing involved in know-how.

Let’s now turn to the other difference between know-how and know-that: know-how comes in
degrees whereas know-that is an all or nothing affair. On the hypothesis that know-how is action-
indexed information we can explain this feature of know-how by observing that it often takes a

46Dretske (1981: 363): “In this respect factual knowledge is absolute. It is like being pregnant: an all or nothing affair.”
47Whether know-how is in fact gradable is a vexed issue; Pavese (2017) argues that it is not. I will not try to settle the
matter here. My claim will just be that my account can accommodate the gradability of know-how in a straightforward
way. That is not to say that my account entails the gradability of know-how.
48Stich (1978) provides the classic defense of this idea.
lot of work to get information indexed to executing a particular action. Recall Laurie from Section 1.6.1. To count as knowing how to cook risotto, she needs to reorganize her total information so that just the right bit of it is accessible at the time it is needed. This will require practice at cooking the dish. Or take the case of tying the karate belt by following the knot diagram (§1.6.2). Getting the information presented by the diagram functionally integrated with motor representations will take practice arranging the karate belt according to the diagram.

Because practice works its way gradually, there will generally be a period of time over which the information is only partially or somewhat accessible for the purpose of executing the relevant action. Perhaps Laurie starts by breaking the risotto recipe down into sets of instructions relevant to a phase of the cooking process (e.g. cooking the rice), so she doesn’t have just the instruction she needs at the time she needs it, but neither does she have to mentally scan through the entire recipe to get it. At this stage of mastery, Laurie will still need to pause and think where the risotto master can simply execute, but such pausing may no longer profoundly compromise the quality of her risotto. In such a case, I think we would rightly say that Laurie partly (perhaps mostly) knows how to cook risotto. That is because her risotto-cooking information is only partly (mostly) accessible for the purpose of cooking the dish.

Thus my account accommodates two important differences between know-how and know-that. For this reason I do not see my account as straightforwardly vindicating the intellectualist idea that know-how is a subspecies of know-that. But neither do I see it as revealing a deep disunity between these states. They are, after all, both cognitive states—states that enable a subject to get on successfully in the world by encoding information that plays an action-guiding role. I won’t argue it here, but I take that to be the mark of the kind knowledge. On my account, then, it is best to view know-how and know-that as belonging to the same cognitive taxon: species of the genus knowledge.

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49 See Stalnaker (2012) for a similar claim.
50 This construal of the taxonomic relation between know-how and know-that leaves open that the kinds know-how and know-that may overlap, in the sense that a single cognitive state may simultaneously instantiate both kinds.
1.9 Conclusion

The account of know-how I have recommended says, to a first approximation, that S knows how to φ iff S possesses information that specifies a way in which S could φ, and that information is accessible to S for the purpose of performing φ.

Filling out the account would require saying more about what exactly is meant by a ‘way of φing’, and what it is for information to ‘specify’ one. I leave these as questions for future work.

A full treatment would also require engagement with the epistemology of know-how, which I have passed over here. My main aim has been make progress in the philosophy of mind of know-how by illuminating the explanatory relationship between know-how and ability using the torch of action-indexed information. The resulting picture advances our understanding of the way in which human action is informed by intelligence.

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51 Recent work on this topic includes Gibbons (2001), Stanley (2011a: Ch. 8), Cath (2011, 2014), and Carter and Pritchard (2013, 2014).
Chapter 2

Know-How and Skillful Action: A Rule-Free Account of Guidance

One can view know-how as a kind of ability; one can also view it as an underlying cognitive state that explains ability. A virtue of this latter approach is that it honors the now widely accepted anti-behaviorist idea that folk psychological concepts like knowledge and belief pick out entities that explain abilities and dispositions rather than reducing to them. A tempting way to develop a cognitivist account of know-how treats knowledge how to $\phi$ as grasp of a general purpose rule for $\phi$ing; indeed one might think that there is no other option. In this Chapter propose a cognitivist account of know-how that eschews rules, and show how it casts new light on the phenomenology of skillful action as well as practical modes of presentation.

2.1 Cognitivism About Know-How

A woodworker braces the handle of her cutting tool firmly against the base of her left thumb. By carefully guiding the tool through a pivot around her left index finger, she carves away the last bit of wood separating her project from completion. The woodworker’s precise execution of the cut displays her ability to use the tool. It also displays her knowledge how to use the tool. What is the relationship between her ability and her know-how?

Neo-Ryleans about know-how take the relationship to be one of identity or constitution. For them, knowledge how to $\phi$ just is the ability, capacity, or disposition to $\phi$.\(^1\) In effect, neo-Ryleans subscribe to a form of behaviorism about know-how. And one can see how such a view might

\(^1\)Ryle’s own views on know-how are presented in his (1945) and (1949). Recent defenses of neo-Rylean views include Noë (2005), Glick (2012), and Setiya (2009, 2012).
survive the otherwise wholesale repudiation of behaviorism in the philosophy of mind. An in-
fluential objection to behaviorist analyses of mental states like knowing that it's raining was the
observation that such states lack a fund of behavioral dispositions to call their own (see, e.g., Grice
1974: §1). Replace a subject's desire to stay dry with a desire to be wet and the behavioral upshot of
her knowledge that it's raining undergoes a reversal. But the dispositions characteristic of know-
how do not seem to display such sensitivity to background psychology. Twiddle a subject's beliefs
and desires all you like; the paradigmatic manifestation of her knowledge how to φ will remain
the more or less successful performance of φ.²

Opposed to the neo-Rylean conception of know-how is the cognitivist conception. Cognitivists
can grant that knowing how to φ, unlike knowing that it's raining, typically comes along with a
proprietary fund of behavioral dispositions. But they insist that our concept of know-how is a
concept of an underlying cognitive state that explains these dispositions, rather than something
constituted by them. Although our folk psychology of this explanatory relation is perhaps not as
rich and explicit as belief-desire psychology, we do speak of a subject drawing on her know-how
in performing an action, or an action's being guided by the subject's knowledge how to perform
it. Such ways of speaking suggest a conception of know-how as a standing mental state poised to
make a distinctive functional contribution to the etiology of intelligent action.

In this paper I am interested in the prospects for developing a robustly cognitivist account of
know-how. Such an account would respect three anti-behaviorist conditions on cognitive states
generally. First, a cognitive state explains the abilities associated with it by guiding the behavior that
manifests those abilities. Second, a cognitive state consists in an intentional or semantic
relation between a subject and an appropriate entity. And third, a cognitive state is such that the first and
second conditions stand in the right sort of explanatory relation: that a cognitive state involves an
intentional relation to an appropriate entity explains how that state guides action.³ To encapsulate
these three ideas in a slogan: A cognitive state explains action in virtue of content.

²I assume throughout that we are dealing with a distinctively practical kind of knowledge how to φ. As Jonathan
Schaffer (2007: 396) notes, one in some sense comes to know how to play the flute upon hearing the Monty Python ex-
planation, "Well, you blow in one end and move your fingers up and down the outside." But in another perfectly good
sense such an explanation does not by itself transmit flute-playing know-how. The kind of know-how not transmitted
is the kind I am interested in. See Pavese (2015: fn. 2). See also Glick (2012) and Fridland (2015).

³To motivate this third condition note that belief, cognitive state par excellence, isn't just a state that guides action
and, as it happens, also consists in a relation to a proposition. The fact that belief guides action in the way it does—via
interaction with desires, intentions, other beliefs etc.—is only intelligible on the assumption that belief involves a relation
to a certain proposition. See Stich (1983: Ch. 2), Dretske (1988, 1989) for helpful discussions of this point.
To apply these tenets of cognitivism to know-how, we need a sense for the sort of thing that states of know-how take as their contents. The syntactic structure of sentences of the form ‘S knows how to φ’ suggests a cognitive relation between a subject and whatever is denoted by the phrase ‘how to φ’.

So-called intellectualists take ‘how to φ’ to denote a proposition about a way of φ-ing, thus making know-how a form of propositional knowledge. Objectualists, in contrast, take the phrase simply to denote a way of φ-ing—making know-how a kind of objectual knowledge, like knowing Jane or knowing Paris.

Intellectualists and objectualists agree that know-how involves some sort of cognitive relation to a way of φ-ing. So a neutral way of applying the three cognitivist ideas above to knowing-how generates the three tenets of what I will call cognitivism about know-how: First, knowledge how to φ consists in a cognitive relation between a subject and a way of φ-ing. Second, knowledge how to φ explains the ability to φ by guiding performances of φ. And third, the fact that know-how consists in a cognitive relation to a way explains how know-how guides action in the way that it does.

These three ideas set the target of for a cognitivist account of know-how. In particular, they suggest that such an account should answer the following questions, to which we will be returning throughout the paper:

(Q1) What is a way of φ-ing?
(Q2) What is the psychological upshot of being cognitively related to a way of φ-ing?
(Q3) How does that upshot explain how know-how guides action?

A natural strategy for answering these questions, which we will lay out in the next section, treats knowledge how to φ as involving grasp of a general-purpose rule (or set of rules) for φ-ing. As several philosophers have observed, such an approach fails to capture what it’s like to draw on our know-how during spontaneous and unreflective skillful activity. But since positing rule-

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4 See Stanley (2011a: Ch. 2) for linguistic details.
6 Intellectualists take knowledge how to φ to involve, in the first instance, a relation to a proposition. However, existing intellectualist views treat the relevant proposition as a structured entity, of which a way of φ-ing is a part. Moreover, they require that the way be grasped under a ‘practical mode of presentation’, a condition which plays a crucial role in accounting for the action-guiding power of the relevant propositional knowledge. Since I am interested in this action-guiding power, treating ways of φ-ing (rather than propositions) as the theoretically important object of knowing how will not lead us astray.
following can look like the only way of vindicating cognitivism about know-how, one might think that we must either abandon cognitivism or give up hope for an account of know-how that illuminates our pre-theoretic experience of the phenomenon.

In this essay I hope to show that this dilemma is a false one. There is a hitherto overlooked strategy for answering Questions 1-3 while avoiding a view which identifies knowing how to $\phi$ with knowledge of rules for $\phi$ing. After developing this approach in Sections 2.3-2.5, I will explain how it sheds light on the phenomenology of skillful action (§2.6). Before closing, I show how the account opens up a new strategy for explaining the notion of a ‘practical mode of presentation’, a controversial but crucial component of intellectualist theories of know-how (§2.7).

Before setting in on these tasks, a few remarks about the broad nature of my project in this paper are in order. My project here is not to propose a novel account of what it is to know how to $\phi$—or, at any rate, it is not to propose a full account of this kind. I take the framework laid out here to admit of elaboration along either intellectualist or objectualist lines. The main idea I wish to vindicate is neither intellectualism or objectualism, but cognitivism—a more general doctrine that subsumes these two views. In this section I have suggested that a vindication of cognitivism about know-how requires, at minimum, plausible answers to Questions (1)-(3) above. The project here is to offer answers to these questions within rule-free framework, in this way demonstrating the compatibility of a fairly robust form of cognitivism with the absence of rules.

### 2.2 Know-How as Grasp of Rules

What kind of cognitive achievement is involved in coming to know how to $\phi$? According to one tempting thought, a subject who knows how to $\phi$ grasps a means to $\phi$ing—a sequence of actions such that the subject could $\phi$ by performing those actions in that order. The cognitive upshot of grasping a means thus construed is the ability to determine what to do next as one is $\phi$ing, an ability which contributes in an obvious way to the successful performance of $\phi$.

This account is simple and intuitive, but it will not do. A person who genuinely knows how to $\phi$ is capable of flexibly adapting her $\phi$ing to a wide variety of circumstances, and such adaptation will require variation in the means taken. While cycling to school Tuesday morning I swerve

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$^7$See Bengson and Moffett (2011: 191) for this characterization of a way of $\phi$ing. Setiya (2008) also glosses intellectualism as positing knowledge of means.
around a pothole that wasn’t there the day before. So I perform at least one action that I didn’t perform on Monday. Yet intuitively I am guided by the very same state of knowledge how to ride a bicycle on both days. So no single sequence of actions can fully capture the content of that know-how.8,9

The problem suggests that we should identify know-how not with a single means but with something that generates means as required in different contexts of performance. What we seem to be after is some sort of general purpose rule that, when applied to one’s moment-to-moment situation, determines a way to go on. Just as following the arithmetical rule for converting feet to meters will lead one to perform different computations depending on the particular measurement being converted, following a rule for an activity can guide one in performing different actions depending on relevant features of the situation.10

We have on the table an account of know-how that answers Q1-Q3 from Section 3.1 as follows:

(A1) A way of φing is a rule (or set of rules) for φing.

(A2) The cognitive upshot of grasping a rule is the ability to apply that rule.

(A3) Applying the rule guides the subject’s φing by enabling her to determine what action to execute a given moment during her performance.

Let us call these three ideas taken together the rule-based account of know-how.

Now, Gilbert Ryle (1949) famously observed that many skillful activities don’t seem to involve the consultation of rules (‘regulative propositions’, in his terminology). Although I may mentally rehearse instructions while performing activities in which I am not yet fluent, when I engage in activities I know well how to perform—walking across the room or lifting a glass to my lips—I don’t need to think at all about what to do. Instead I just do it.

The friend of the rule-based account will react predictably to this observation. Although it may not seem to us like we are consulting rules as we spontaneously adjust our balance on a bicycle or

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8Hornsby (2011: 93) makes a similar point.
9One might suggest that, described in terms of ‘higher-level’ actions like pedaling and balancing, the means I took to riding to school were the same on both days. But notice that these higher level actions themselves require substantive know-how to perform: part of what I learn when I learn how to ride a bike is how to pedal and how to balance. So a means couched in terms of such actions cannot exhaustively characterize my know-how. Within the means-based framework, an exhaustive characterization will have to invoke means that include only actions which themselves require no further means—viz. basic actions.
10Pavese (2015) develops an account of this kind, on which knowledge how to φ involves grasp of an inferential rule which implements an algorithm for φing.
step over an obstacle while walking, this is just another case where naïve introspection misleads. As fluency increases, the once conscious consultation of rules gets outsourced to some subpersonal widget. Internalized rules remain the intelligent basis of skillful action.

Hubert Dreyfus has long been arguing that there is something deeply unattractive about the maneuver of trying to save rule-following by relegating it to the unconscious. Here is a representative passage:

While infants acquire skills by imitation and trial and error, in our formal instruction we start with rules. The rules, however, seem to give way to more flexible responses as we become skilled. We should therefore be suspicious of the cognitivist assumption that, as we become experts, our rules become unconscious. Indeed, our experience suggests that rules are like training wheels. We may need such aids when learning to ride a bicycle, but we must eventually set them aside if we are to become skilled cyclists. To assume that the rules we once consciously followed become unconscious is like assuming that, when we finally learn to ride a bike, the training wheels that were required for us to be able to ride in the first place must have become invisible. The actual phenomenon suggests that to become experts we must switch from detached rule-following to a more involved and situation-specific way of coping. (2005: 7)

Now one can imagine the following sort of response to Dreyfus’ complaint. Cognitivism about know-how is plausible for the same sorts of anti-behaviorist reasons that recommend cognitivism about uncontroversially cognitive mental states like belief. But if knowledge how to $\phi$ consists in grasp of a way of $\phi$ing, the only idea of a way of $\phi$ing we have such that grasp of it stands a chance at explaining the flexible and versatile ability to $\phi$ is something like a rule for $\phi$ing. If we want to be cognitivists, the rule-based account can seem to be the only game in town.11

On the assumption that the rule-based account really is the only game in town, cognitivism must conflict with the person-level phenomena associated with skillful fluency. But, as I hope to show, this assumption is false: the region of logical space carved out by the doctrine of cognitivism leaves room for a philosophically motivated account of know-how and its action-guiding role that involves no appeal to rules.

I will lay out this account in three stages, each addressing one of the questions identified in Section 3.1. My answer to Question 1 (What is a way of $\phi$ing?) grows out of H. H. Price’s thought that intelligent action flows from grasp of a practical universal:12

11 Compare Fodor (1975).
12 Part of the following quotation appears in Bengson and Moffett (2011: Ch. 1, p. 28).
Sometimes...familiarity with a universal enables...an actual real-life instance. If you are up in an aeroplane and ask the pilot what a stall is, he may answer by pulling back the control stick and actually doing one. His familiarity with that universal has enabled him to produce an actual instance of it.13 (1946: 36)

Instead of practical universals I will speak of practical kinds. I will propose to identify ways of φing with natural parts of the practical kind φ. Since practical kinds (I will argue) determine normative standards for performances, grasping a way of φing involves grasp of the features of performances that determine how well they meet those standards (§2.3). To answer Question 2 (What is the upshot of being cognitive related to a way of φing?), I suggest that grasp of these normative features endows a subject with the capacity to perceptually recognize them as instantiated by her own φing activity (§2.4). In response to Question 3 (How do these perceptual capacities enable the guidance of skilled action?) I say: by interacting in a certain way with the subject’s guiding intention as she carries out her activity (§2.5).

As this brief survey makes clear, the account to come combines several quite substantive ideas. Rather than attempting a thoroughgoing defense of each of them independently, I have instead chosen to keep my exposition as brief and simple as possible. I hope that this approach will allow the organic unity of the account to emerge more clearly, as well as to make its applications in Sections 2.6 and 2.7 easier to understand.

2.3 Practical Kinds and their Normative Structure

A cognitivist account of know-how needs a conception of a way of φing. Ordinary language countenances many different fillings of the blank in the sentence, ‘____ was the way S φed’—as it might be, ‘quickly’, ‘with a gun’, or ‘by cutting the yellow wire’. Not all these fillings denote entities such that grasp of them could reasonably constitute a subject’s knowledge how to φ. Surely the way of doing things denoted by the adverb ‘quickly’ is not the sort of thing grasp of which could form the cognitive core of, for example, the ability to ride a bicycle quickly.

We need a notion of a way of φing that bears a tighter relation to the action φ than quickly does to the action of riding a bike. To obtain such a notion, treat the characterizing phrase ‘of φing’ in the expression ‘way of φing’ as specifying the essence of the way. Bicycle-riding is merely

13Price’s own answer to Questions (2) and (3) was less informative than we might hope for: “Our familiarity with the universal, a cognitive state, overflows of itself into an activity which is practical.”
incidental to the way of doing things denoted by ‘quickly’; if *quickly* is a way of riding a bike, it is so non-essentially. In contrast, the way of making a fist which consists in moving my fingers thus and so is *essentially* a way of making a fist: I could not realize that way without realizing an act of fist-making.

Following Stanley and Williamson (2001: 427), think of ways of φing as properties of token events: some events instantiate the property of realizing a particular kind of performance of φ. Similarly, think of the action-kind φ as the property borne by all and only (metaphysically possible) events that realize a performance of φ. Then the present notion of way of φing is the notion of a *determinate* of the property corresponding to action φ.

Call this latter property the *practical kind* for action φ. If ways of φing are determinates of practical kinds, we might expect ways of φing to inherit certain structural features from their practical kinds. These features will play a key role in my answers to Questions (2) and (3). First I’ll explain those features in the case of practical kinds (§§2.3.1-2.3.3), then I’ll explain how ways of φing inherit them (§2.3.4).

### 2.3.1 Practical kinds as goodness-fixing kinds

The account to come rests on the idea that practical kinds have an *intrinsic normative structure*, which can be characterized in terms of certain *dynamical properties* exhibited by the members of the kind.

Let’s begin with the idea that practical kinds have an intrinsic normative structure. Judith Jarvis Thomson (2008: Ch. 1) observes that many kinds are *goodness-fixing kinds*. A goodness-fixing kind is a kind K such that “what being a K *is* itself sets the standards that a K has to meet if it is to be good *qua* K.” (21) The kind *house* is a goodness-fixing kind. Part of what it is to be a house is to provide shelter from the elements. And to be good *qua* house is, inter alia, to provide good shelter from the elements.¹⁴

Thomson goes on to claim that “there is a property of being good *qua* K only if K is a goodness-fixing kind.” If she is right about this, then practical kinds—kinds that subsume performances of actions—are goodness-fixing kinds. Consider a token performance of φ. We might evaluate

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¹⁴Thomson mentions *seeing eye dog*, *tennis player*, *beefsteak tomato*, *tiger*, and *human being* as further examples of goodness-fixing kinds.
that performance along different dimensions: the amount of happiness it caused, whether the performance was the upshot of a rational decision, etc. But we can also evaluate the performance simply as a performance of \( \phi \). It is after all commonplace to evaluate an activity for how well it was done. This dimension of evaluation can be invoked even if the action was deficient in other ways (by being non-optimific or irrational). To ask whether an action was done well or badly is to invoke a standard of evaluation that is internal to the action itself. It is to evaluate the action qua performance of \( \phi \).\(^{15}\)

In contrast with more enigmatic notions of goodness such as Moorean non-natural goodness, the goodness associated with a goodness-fixing kind is relatively unmysterious.\(^{16}\) That is because it is usually pretty clear how to begin to characterize the standards of goodness for a goodness-fixing kind \( K \) in terms that don’t refer to the goodness of \( K \)s qua \( K \)s.\(^{17}\)

Take Thomson’s example of the kind toaster. We know that toaster is a goodness-fixing kind because it makes perfect sense to ask how good a toaster is qua toaster. But what are we evaluating the toaster for when we evaluate its goodness qua toaster? There is no deep mystery here. We are evaluating the toaster for something like the degree to which it is disposed to transform untoasted bread into toasted bread in conformity with the user-specified degree of toasting. If the toaster produces moderately toasted bread when the dial is set to medium and darkly toasted bread when the dial is set to dark, the toaster is doing well with respect to the standards of goodness fixed by the kind toaster. In this way, those standards can be explained in terms of certain properties of the toaster—in this case toasting-dispositional properties—that can be characterized without reference to the goodness of toasters.

What goes for toasters goes for performances of actions. When we evaluate a bicycle ride for its goodness qua bicycle ride—for how well the bicycle was ridden on that occasion—we attend to certain properties of the ride. If the bicycle was wobbling all over the place, or if the rider was trying futilely to accelerate by pedaling furiously on the lowest gear, we will view the ride as deficient, as carried out poorly. And as with toasters, when we evaluate performances of actions, we

\(^{15}\)The notion of a goodness-fixing kind is in effect Christine Korsgaard’s (1996; 2008) notion of a kind with constitutive standards—"standards that apply to a thing simply in virtue of its being the kind of thing that it is." (Korsgaard, 2008: 28).

\(^{16}\)Or at any rate no more mysterious than the goodness-fixing kind itself.

\(^{17}\)I hereafter drop the qualification ‘qua \( K \)s’; all references to goodness should be understood as references to the goodness qua \( K \) for the relevant \( K \). Similarly references to any kind of normativity are references to the normativity associated with the goodness of a (contextually relevant) goodness-fixing kind.
are not glomming on to some mysterious further facts about the performance that float free of, or bear an obscure relation to, the ordinary constitutive properties of the activity; rather, it is those very properties we have in mind.\textsuperscript{18} So if we want to characterize the normative structure of a practical kind, we will need a characterization the properties targeted by evaluations of performances of the action. The task of the next subsection is to propose such a characterization.

2.3.2 Normatively privileged trajectory properties

Performances of actions are temporally extended events. The goodness of a given performance will consist in certain aspects of the world being changed in certain ways over time. A good performance of the front crawl, for example, involves certain patterns of ongoing change in the position of the swimmer’s arms and legs.

To construct a scheme for representing these patterns of change, let us begin with the idea of a \textit{dynamical variable}. A dynamical variable describes a single respect in which the state of a system may change over time. In the case of bicycle riding, a dynamical variable might describe the orientation of the bicycle, or its speed, or the amount of pressure applied to one of the pedals. In the case of swimming the front crawl, a dynamical variable might describe the angle of the swimmer’s right elbow.

Now notice that some dynamical variables matter to how well the activity is performed in a way that others don’t. Contrast the dynamical variable that describes the vertical orientation of a bicycle and the variable that describes the configuration of the cyclist’s hair. Both variables evolve over the course of a bicycle ride. But the evolution of the first variable matters to assessment of how well the activity is performed in a way that the second doesn’t. Some dynamical variables, then, are \textit{normatively privileged}, where a dynamical variable is normatively privileged if it is such that evolution of the feature of the activity it describes matters for how well the activity is performed.

With the notion of a normatively privileged dynamical variable in hand, we can construct an abstract representation of the sorts of properties that normative assessment of a performance

\textsuperscript{18}There might of course be metaphysical mysteries about how those properties got to be the ones that mattered for the goodness of the kind. But this observation need not suggest that the properties themselves are metaphysically problematic.
targets. Take the collection of all the normatively privileged dynamical variables, and set up a mathematical space with an axis corresponding to each of them and an axis for time. We can then represent the properties we are interested in as trajectories through this space. Let us call such a space an activity space, or a $\phi$-space when we are talking about the performance of action $\phi$.

Each activity space trajectory can be viewed as specifying an equivalence class within the modal extension of the practical kind in question, under the equivalence relation identical in respect of temporal evolution of the normatively privileged dynamical variables. More intuitively, an activity space trajectory captures a certain diachronic structural property that is shared by all and only performances of the action in question that are normatively equivalent, in the sense that those performances unfold identically with respect to features that matter for normative evaluation of performances of the activity. Since these properties are represented by trajectories through activity space, let us call them trajectory-properties.

Trajectory-properties are the performance-of-$\phi$ analogues of the toasting-dispositional properties that we target when we subject a toaster to normative evaluation qua toaster. Just as we attend to the degree to which a toaster is disposed to toast bread in conformity with the way it is set, we attend to the patterns of evolution of certain features of an activity when we assess it for how well it was brought off. In modeling these patterns of evolution, then, we are (partly) modeling the internal normative structure of the activity in question.

2.3.3 Normative rankings

Our goal in this section has been to represent the normative structure of a practical kind. We started out with the practical kind $\phi$, which we can think of (in a Lewisian fashion) as the set of metaphysically possible performances of $\phi$. The first piece of structure we added was a carving of that set into trajectory-properties, which we represented by trajectories through $\phi$-space.

The need for a second piece of structure becomes clear when we remind ourselves that normative equivalence is a stronger kind of normative equivalence than the equivalence relation denoted by the phrase 'just as good as'. Bicycle ride $A$ can be just as good as bicycle ride $B$, but the two rides can be good in different ways—i.e. with respect to evolution of distinct normatively privileged dynamical variables.

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19 The variables should be non-redundant, though not necessarily orthogonal in the mathematical sense.

20 An equivalence relation $R$ is a binary relation that is reflexive (everything bears $R$ to itself), symmetric (if $x$ bears $R$ to $y$, then $y$ bears $R$ to $x$), and transitive (if $x$ bears $R$ to $y$ and $y$ bears it to $z$, then $x$ bears $R$ to $z$). An equivalence class relative to relation $R$ is a maximal set each member of which bears $R$ to every other member.

21 Note that this is a stronger kind of normative equivalence than the equivalence relation denoted by the phrase 'just as good as'. Bicycle ride $A$ can be just as good as bicycle ride $B$, but the two rides can be good in different ways—i.e. with respect to evolution of distinct normatively privileged dynamical variables.

22 Lewis (1986: Ch. 1, §5).
mative distinctions in general don't just carve the world into categories; they also rank those categories along a normative dimension. To capture the full normative structure of a practical kind, then, a mere partitioning of the kind's members is insufficient; the cells of that partition must be ranked so as to reflect differences between the cells in respect of how well the performances subsumed by each meet the standards of goodness for the practical kind.

The most conservative way to represent this ranking is by means of a pre-ordering. A pre-ordering ranks members of a set with respect to some other members of that set—but not necessarily with respect to all of them, and in a way that allows for ties between distinct members.23 This allows for the possibility that certain members of the set cannot be evaluatively compared to certain other members of the set. We cannot rule out this possibility for the trajectory-properties subsumed by a practical kind. Consider a trajectory through bicycle-riding space that represents performances of bicycle riding that wobble in a certain way. Now consider a trajectory through that same space that represents performances of bicycle riding that involve a certain slight misuse of the gears. Perhaps there is no single evaluative scale along which wobbling can be compared to gear misuse. In that case, we will want a representation of evaluative structure that doesn't require these two trajectories to be ranked relative to one another.

We are now in a position to represent a practical kind in a way that makes explicit its normative structure in terms of the trajectory-properties borne by its members. The trajectory-properties are represented by trajectories through activity space, and the normative relationships between those properties are represented by a pre-ordering on the trajectories. We can thus represent a practical kind visually in the figure below.

2.3.4 Back to ways

This section so far has developed a scheme for representing the normative structure of practical kinds. But what we are ultimately after is the notion of a way of φing. We can characterize ways in terms of practical kinds.

To proceed, let us again adopt our Lewisian idiom in which properties are identified with their modal extensions. The proposal, then, is to think of a way of φing as a subclass of the modal

23 A pre-ordering is a relation \( R \) that is reflexive (everything bears \( R \) to itself) and transitive (if \( x \) bears \( R \) to \( y \) and \( y \) bears it to \( z \), then \( x \) bears \( R \) to \( z \)).
Individual trajectories, ranked by quality relative to the standards of goodness for relevant action kind.

Time

The thick curve represents a bundle of trajectories through activity space. The vertical axis describes one of the normatively privileged dynamical variables (e.g., vertical bicycle orientation). The horizontal axis represents time. The shading represents normative ordering facts about the trajectories: the darker the trajectory, the higher it ranks relative to the normative standards for the relevant activity.

extension of the practical kind $\phi$ that is relatively natural in at least two respects. First, the class should cut along the joints determined by the trajectory-properties. That is, it should not be such that it includes some performances of $\phi$ but excludes other performances that are identical with respect to evolution of the normatively privileged dynamical variables. And second, the class should not be too disjunctive. The idea here is that the class should be representable by a roughly contiguous bundle of trajectories through activity space, not a bunch of trajectories that crisscross the space in a chaotic fashion. The figure below illustrates this contrast.

In these two respects, the notion of a way of $\phi$ing I am after is analogous to the notion of a way of being red. If a way of being red is thought of as a subset of the modal extension of the kind red, it should not distinguish between objects that have the same fully determinate color properties. And
a way of being red should not include a gerrymandered set of instances, some scarlet, some pink, some purplish. A way of being red should coincide with some continuous range of determinate color properties within the region of chromatic similarity space encompassed by the color kind red.

2.4 Cognitive Upshot

The last section proposed an answer to Question (1): What is a way of ping? This section will address Question (2): What is the psychological upshot of grasping a way of ping? In light of the conception of ways outlined in the previous section we can rephrase the question thus: What is the psychological upshot of grasping (a part of) the normative structure of the practical kind φ?

There are two aspects to the normative structure of a practical kind. First, there are the trajectory-properties, which carve up the kind into subclasses of normatively equivalent performances. And second, there are the normative relations between these subclasses, which determine how they rank against one another relative to the standards of goodness fixed by the practical kind. Fully grasping a way of ping involves grasp of both aspects. In this section I want to suggest that grasp of each can endow a subject with a certain kind of perceptual capacity. The exercise of these capacities will play a crucial role in my account of how know-how guides skilled activity, which is the business of the next section.

2.4.1 Grasp of trajectory-properties

To grasp a way of ping is in part to grasp the trajectory-properties that it subsumes. With what capacities does grasp of a property endow a subject? The account of guidance that I will go on to develop depends on the thought that the grasp of a property can manifest itself in the capacity to perceptually recognize instances of the property. In virtue of such recognitional capacities, a

\[\text{24}\] In this section and the next I am going to characterize a full grasp of a way of ping, which involves a grasp of all trajectory-properties subsumed by that way. This represents an idealization, since subjects will in general lack the discriminatory capacities to distinguish between highly similar trajectory-properties. The idealized model can be applied to ordinary subjects by positing partial grasp of a way, which entails the ability to distinguish between some but not all trajectory-properties.

\[\text{25}\] This idea is closely related to the notion of a recognitional concept, introduced to the contemporary philosophical literature by Evans (1982: Ch. 8) and Peacocke (1992: 109-11). Jerry Fodor (1998: 35) glosses a recognitional concept as a concept whose possession requires “the ability to recognize at least some things that fall under the concept as things that fall under the concept.” Fodor rejects recognitional concepts on the grounds that they do not meet a compositionality
monkey can be said to grasp the property of being a banana, or an infant the property of being his mother—even if these creatures lack concepts corresponding to those properties.

Recognitional capacities can operate even when the property being recognized is, in an intuitive sense, not in full view. For example, your grasp of certain shape properties manifests itself when you recognize the partially occluded figures below.

![Partially occluded figures](image)

The kind of recognition involved in this example—identifying properties based on impoverished or partial perceptual access to those properties—will play a crucial role in my account of guidance, so let us give it a name. The name I propose is extrapolative recognition, 'extrapolative' because identification of properties under these conditions involves extrapolating beyond the perceptually available part of the property.

Extrapolative recognition essentially involves the formation of predictions about how the property-bearer continues into the perceptually inaccessible region. In identifying the partially occluded objects in the figure above as shapes of different kinds, one forms expectations about how, approximately, the objects would look if fully, or more fully, revealed. In the shape example, these expectations were fairly univocal. But that is not always the case. Sometimes the expectations countenance different possibilities. Consider, for example, the partially occluded word below.

![Partially occluded word](image)

ACTI

How would you expect the whole object to look when uncovered? I assume that your expectation is not univocal. You probably acknowledge several possibilities: ACTION, ACTIVATE, ACTIVITY, etc. In this case, extrapolative recognition occurs with respect to several (lexical-syntactic) properties. This is the way in which extrapolative recognition will work in my account of how know-how guides skill.

condition that he takes to be necessary for genuine concepthood. The recognitional capacities sometimes associated with grasp of a property do not consist in, or rest upon, the possession of a concept in any sense.
2.4.2 Grasp of Normative Rankings

I want to give a similarly perception-based account of the cognitive upshot of grasping normative ranking relations between trajectory-properties. Where grasping trajectory-properties allows a subject to recognize their instances, grasping normative relations between these properties allows a subject to make perceptually based judgments as to their normative status. An apt analogy here is a wine-taster who grasps various normative facts about the quality of wines. Such grasp guides her in identifying the best of several wines on the basis of their flavors. Likewise, grasp of normative ranking relations between trajectory-properties enables a subject to identify which trajectory-properties rank higher relative to the standards of goodness for the practical kind.

The ability to make such comparative normative judgments between trajectory-properties which are extrapolatively recognized on the basis of perceptual feedback from one’s skillful activity will figure centrally in my account of guidance, to which I now turn.

2.5 How Know-How Guides Skill

Any account of guidance should begin with the observation that know-how does not guide action all on its own; it does so through interaction with other mental states. What states are those? I will assume that they include at minimum the subject’s intention to perform the action, and the subject’s perception of what is currently happening regarding the unfolding of her activity. When we ask for an account of guidance, we are asking for an account of how these states interact to enable appropriate modulation of a performance as it unfolds.

In developing this account I will operate with a few substantive, but I think reasonable, assumptions about perception and intention during skillful performance. Concerning perception, I will assume that perceptual experiences contribute to the guidance of action at least in part by informing the subject about what is going on with the features of the subject’s current situation that are relevant to the assessment of how well the activity is going. To couch the point in terminology from Section 2.3, perceptual experiences inform the subject as to how things stand with the

26 What about mental activities, such as computing a sum in one’s head? Aren’t they guided by know-how, but not in a way that involves perception? In these cases, I want to suggest that introspection plays a role analogous to perception in the case of embodied activities. See Armstrong (1968: 162-9) for a defense of the indispensability of introspection in intentional mental activity.
normatively privileged dynamical variables. According to this idea, the role of perception in the
guidance of skill is to monitor the features of the activity that matter for how well it is going.

Now for intention. I will assume that there is a kind of intention that is functionally implicated
in the moment-to-moment guidance of action, which I will call a guiding intention. The ques-
tion whether intentions are beliefs, or are belief-like, has received much recent attention. My
account will assume that guiding intentions are belief-like only in two respects: First, they have
contents, which concern what is currently happening, as well as how the activity will continue into
the future. And second, their functional role reflects conformity to a norm of accuracy: guiding
intentions behave so as to keep their contents true. One manifestation of conformity to this norm
is evidence-sensitivity: the content of an intention will tend to undergo update under the impact of
perceptual feedback from the activity. Another way in which intentions can work to ensure their
own truth is to influence the subject’s unfolding activity so as to promote its conformity with the
future-directed part of the intention’s content.

Both of these aspects of a guiding intention’s functional role have a place in my account. To
begin to see how, let’s attend to the first aspect at an arbitrary time, t, during the performance of an
action. At t the subject’s intention will encode information about what the subject is doing at that
time. Let’s not worry about exactly what information that is. The important observation is that
whatever information is encoded in the intention from previous moments of the performance will
be updated under the impact of perceptual input at t. If the subject enters t with some general sense
of what she is doing, that sense will become more specific when perceptual input is registered and
assimilated.

It would be a mistake to interpret this claim as suggesting that perceptual information enables the subject to
assign a numerical value to the relevant dynamical variables. Adrian Cussins’ description of knowing his speed on a
motorcycle makes the point nicely:

The speed was given to me not as a truth-maker [i.e., a numerical value] ... but as an element in a skilled
interaction with the world, as a felt rotational pressure in my right hand as it held the throttle grip, a
felt vibration of the road and a rush of wind, a visual rush of surfaces, a sense of how the immediate
environment would afford certain motions and resist others. (Cussins, 2002: 150)

Clarke (2010) and Setiya (2012) also endorse the idea that skilled activity, or activity which expresses know-how,
is guided by the subject’s intention to perform it. I will remain neutral as to the relation between guiding intentions
and other forms of intention distinguished in the literature; for all I say here, guiding intentions could turn out to be
identical to Searle’s (1983: Ch. 3) intentions-in-action—which could in turn reduce to “intentions for the future” (as
argued in McDowell, 2011).

See, for example, the exchange between Setiya (2008, 2009) and Paul (2009).

Velleman (1989) and Bratman (1987), among others, emphasize this aspect of the functional role of intentions.
It is in this process of update that the subject’s know-how first comes into play. I suggested above that knowing how involves grasp of a set of diachronic properties corresponding to activity space trajectories, and that this grasp has as its (partial) cognitive upshot the ability to perceptually recognize instances of those properties. That capacity, I suggest, manifests itself when a guiding intention gets updated under the impact of perceptual information. Suppose that perception informs the subject about the current evolution of the normatively privileged dynamical variables. The key move is to view this information as partially disclosing the trajectory-property that will characterize the completed performance currently underway. On the basis of this partial disclosure, the subject recognizes what is happening as compatible with a range of trajectory-properties compatible with the disclosure. In this way, the subject’s guiding intention, know-how, and perception interact to generate awareness of the possible continuations of the activity.

What is going on here is an instance of the phenomenon of extrapolative recognition illustrated in Section 2.4.1 by means of the ‘ACTI_____’ example. Just as grasp of various lexical-syntactic properties guides you in forming expectations about how the partially occluded word might continue into the perceptually inaccessible region, grasp of the relevant trajectory-properties guides you in forming expectations about how the partially completed performance will continue to unfold in the next moments.

It may be helpful here to note that we are using novel theoretical apparatus to describe a recognizable, if somewhat subtle, aspect of the phenomenology of skilled action. While engaged in an activity that one knows how to perform, one will generally have an ongoing sense for the possibilities in that activity. As I swim the front crawl, I am aware of the possibility of slowing down, or the possibility of kicking harder, or (most likely) possibility of simply continuing to go on more or less as I already am. These possibilities correspond to different continuations of my performance through front-crawl-space.

Let us resume our story of guidance. At this point in the story, the subject has recognized what is currently happening as compatible with several possible continuations of the activity and updated the content of her intention accordingly. The next step in the story invokes the action-guiding role of intention: the subject’s intention will guide her in modulating relevant aspects of her environment so as to actualize one of those possibilities. But how does the subject know which one to actualize?
The answer here invokes the idea from Section 2.4.2 that one of the cognitive upshots of grasping a way of doing is the ability to make perceptual judgments that track the normative ranking relations between trajectory-properties. Through the exercise of this capacity, one of the continuations of the activity—that is, one of the trajectory-properties that the performance could continue to instantiate—will strike the subject as best. And she will modulate her activity in conformity with that continuation.31

Thus finishes my cognitivist (yet rule-free) account of how know-how qua grasp of a way guides skillful activity. In the next two sections I will apply the account to two issues connected with know-how and skill: the phenomenology of skillful action, and the notion of a practical mode of presentation.

2.6 Experienced Mandates and the Phenomenology of Skill

As we saw in Section 2.2, Dreyfus' criticism of rule-based explanations of skillful action begins from certain phenomenological observations concerning skillful engagement in activities. While Dreyfus emphasizes the negative observation that skillful action often does not involve the consultation of rules, he also provides several noteworthy positive characterizations of the phenomenology of skill. Here is one of them:

[Consider] a tennis swing. If one is a beginner or is off one's form one might find oneself making an effort to keep one's eye on the ball, keep the racket perpendicular to the court, hit the ball squarely, etc. But if one is expert at the game, things are going well, and one is absorbed in the game, what one experiences is more like one's arm going up and its being drawn to the appropriate position, the racket forming the optimal angle with the court—an angle one need not even be aware of—all this so as to complete the gestalt made up of the court, one's running opponent, and the oncoming ball. (Dreyfus, 2002: 378-9)

Dreyfus' description of one's body being drawn in a certain way "so as to complete the gestalt" of the activity is somewhat obscure, but the same basic observation can be developed more sys-

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31 This of course assumes that the subject's activity is governed by a standing intention to produce a good performance. If the subject intends to produce a merely mediocre performance, she will modulate her activity in conformity with one of the lower-ranked continuations. In this way a subject's know-how can guide her in making voluntary errors while performing an activity.

Aristotle thought that the capacity to intentionally err was a distinctive mark of skill (see Stanley and Krakauer (2013) and citations of Aristotle therein). The discussion in this section shows how that feature of skill can be explained in terms of a subject's know-how.
tematically in connection with recent work by Susanna Siegel (2014) on ‘experienced mandates’—
“experiences of the environment as compelling you to act in a way that is solicited or afforded by the environment.” (2) Siegel observes that the experience of seeing a “perfectly moist, frosted piece of chocolate cake resting on a plate with a fork on a napkin next to it” might involve a feeling of being drawn to eat the cake” (4) In this case, one experiences the cake as compelling you to eat it.

The relevance of experienced mandates to skillful action emerges in Siegel’s observation that “[experienced mandates] are generally structured by how you are already acting in a situation—not only by how you can act or are disposed to act in it.” (2) Suppose I am riding a bicycle and feel myself leaning too far to the right. In this case I experience my current orientation as calling for a certain shift of weight or tweak to the handlebars, or whatever action is needed to correct my balance. Similarly, Dreyfus’ tennis player experiences the gestalt of the tennis game as calling for a certain sort of swing.

Experienced mandates have two aspects: (1) an appreciation of a possibility for action at a given moment in an activity, and (2) a feeling of being drawn by the environment to act in that way. My account can explain these aspects respectively in terms of (1) extrapolative recognition of trajectory-properties, and (2) awareness of the normative relationships between trajectory-properties. Let’s unpack these two explanations in turn.

Starting with the first, recall that on my account of guidance a subject’s know-how enables her to recognize a stretch of perceptual input as compatible with several trajectory-properties the activity partially instantiates. And as explained by means of the ‘ACTI_____’ example, this recognition constitutes a set of predictions about how the activity will continue to unfold. Now these predictions concern the evolution of particular aspects of an activity—those aspects described by the normatively privileged dynamical variables. And normatively privileged dynamical variables describe those features of a subject’s environment whose patterns of change determine how well the relevant action was performed. But now note that a good performance of an action is the sort of thing we attribute to a subject; the subject is responsible for the goodness of a well carried out activity. And this responsibility would be mysterious unless the subject could exercise control over the evolution of those variables.

If we suppose that the normatively privileged dynamical variables describe features of an
activity under the subject’s control, then the specification of how an activity will continue to unfold in terms of those variables amounts to a specification of a pattern of control that the subject might exert over her environment. In other words, the subject’s sense for the possible continuations of the activity corresponding to the different trajectory-properties a perceptual episode partially discloses just is an appreciation for the possibilities of action at that moment. And so we derive the first aspect of experienced mandates.

The second aspect of experienced mandates is the feeling of being drawn to perform a particular action. From the perspective of my account, this feeling of being drawn is naturally identified with awareness of the normative relations between the trajectory-properties attributed on the basis of perceptual feedback from the activity. Grasp of these normative relations, on my account, guides the subject in selecting the best trajectory-property to continue instantiating once she has recognized the current unfolding of her activity as compatible with several such properties. It is entirely natural, I suggest, that this moment in guidance should manifest itself in the subject’s experience as a feeling of being drawn to modulate the activity in conformity with the pattern of modulation specified by the best trajectory-property. The feeling of being drawn to act in a certain way is the subject’s registration of the normative superiority of the trajectory-property which that way of acting would continue to instantiate.

2.7 Practical Modes of Presentation

One of the two main cognitivist accounts mentioned in Section 3.1 was intellectualism. Intellectualists take knowledge how to $\phi$ to consist in knowledge of a proposition—viz., the proposition that some way is a way in which one could $\phi$.

Formulated thus, intellectualism confronts obvious counterexamples: cases in which a subject knows the relevant fact about a way of $\phi$ing but doesn’t seem to know how to $\phi$. Suppose Hannah witnesses Peter riding his bike and comes to know that that (ostending Peter’s way of riding) is a way in which she could ride a bike.\(^{32}\) But assuming Hannah did not know how to ride a bike before encountering Peter, it does not seem that the new knowledge she derives from that encounter must, or even could, endow her with bicycle-riding know-how.

\(^{32}\)See Stanley and Williamson (2001) and Stanley (2011a) for discussion of this kind of case.
To avoid such counterexamples, intellectualists add a further condition to their analysis of know-how. Not only must a subject know the right proposition concerning a way of φing, but she must grasp that way of φing in a special way—under a *practical mode of presentation* (henceforth, ‘PMP’). Although Hannah might grasp the appropriate way of φing by encountering Peter, she doesn’t grasp it under a practical mode of presentation and so doesn’t know how.

PMPs make the difference between the kind of propositional knowledge that amounts to genuinely practical know-how and the kind that does not. Thus the notion of a PMP is the linchpin of the intellectualist conception of know-how. But intellectualists have been relatively reticent about PMPs, and many have found them mysterious. Stanley and Williamson (2001) and Stanley (2011a) suggest that they can be understood in terms of the practical dispositions that come in their wake. But this suggestion violates the core cognitivist thought that know-how is something that *explains* practical dispositions, not something constituted by them. If PMPs are glossed dispositionally, then intellectualism can no longer stand as a candidate for a cognitivist account of know-how.

To avoid the complaint that PMPs are ad hoc posits that secure the connection between propositional knowledge and practical abilities essentially by stipulation, intellectualists must find a way of assimilating PMPs to familiar examples of modes of presentation. But this assimilation cannot rest upon the connection between modes of presentation and practical dispositions; instead it must somehow illuminate the explanatory connection between know-how and those dispositions.

The account of guidance sketched in Section 2.5 suggests a novel strategy for meeting these conditions. To see how, note that that account contained an important elision. A central part of it, recall, was the idea that the guidance of action involves the subject’s recognizing instances of trajectory-properties on the basis of perceptual feedback from the activity. Part of her ability to do this is explained in terms of her grasp of these properties, which is what her grasp of the relevant way partly consists in.

But in general, the ability to recognize a property on the basis of a certain kind of informational input requires more than just grasp of the property. The cases are familiar. The property of

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34 See Pavese (2015: §1) for related criticism.
35 Pavese (2015) develops in detail an alternative approach—one which is at home in the kind of rule-based framework she adopts.
being Superman is one and the same as the property of being Clark Kent. But the ability to rec-
ognize that property on the basis of Clark-Kent-stereotypical perceptual input (glasses and tweed
coat) is distinct from the ability to recognize that property on the basis of Superman-stereotypical
perceptual input (red cape and tights).

This is exactly the kind of phenomenon that modes of presentation are typically invoked to
explain. The reason Lois Lane fails to recognize Superman as the person identical to Clark Kent
is that Superman-stereotypical perceptual input does not appropriately match the Clark-Kentish
mode of presentation under which she grasps that individual. For perceptual recognition of a
property to get going, the perceptual information on the basis of which the recognition occurs
must line up with the mode of presentation which characterizes the subject's grasp of that prop-
erty.

The point holds for the trajectory-properties, perceptual recognition of which I claimed is es-
sential to guidance. What my account elided, then, was the need for a manner of acquaintance
with these properties that accounts for the subject’s ability to attribute them on the basis of the sorts
of perceptual input characteristic of a given activity. It is this need, I suggest, that a practical mode
of presentation can fulfill. In order to recognize the current unfolding of my bicycle riding as one
that will lead to a crash unless a certain adjustment is made to the handlebars, I need to entertain
my way of riding a bicycle in a way that lines up with the sorts of kinesthetic and proprioceptive
perceptual input characteristic of riding a bike.

In effect, then, practical modes of presentation allow a subject’s grasp of a way of φing to
interface with perceptual feedback from the activity in the manner needed for the guidance of
action. In this way we see how practical modes of presentation can do genuine explanatory work,
qua modes of presentation as traditionally understood, with respect to the action-guiding role of
know-how, and so find a place in a robustly cognitivist account of know-how.

2.8 Conclusion

I sketched a picture of know-how on which knowing how to φ involves grasping part of the
internal normative structure of the action kind φ. I proposed a way of modeling this normative

\[36\text{See Soames (2015: Ch. 5) for a discussion of the role of modes of presentation in perceptual identification.}\]
structure, and explained how grasp of it contributes to the capacity for skilled action.

One of the central payoffs of my account is the smoother way in which it handles unreflective skillful activity—activity that relies on perceptual registration of how to go on, rather than consultation of rules or regulative principles. But not all activity guided by our know-how is unreflective in this way. Suppose I memorize a recipe and recite it to myself sotto voce as I am cooking. Is this not a paradigm case of consulting rules as I act? And is it not also a paradigm case of being guided by my knowledge how? Here the rule-based account looks entirely appropriate.

How does my account handle such cases? According to the answer I want to give, following rules is itself something that one can know how to do. When a subject consciously follows rules for φing, she is exercising her knowledge how to follow those rules. But is she not also exercising her knowledge how to φ? A affirmative answer can be accommodated by observing that we can know things by knowing other things—as when I come to know David Foster Wallace by coming to know his essays, or come to know that Jones is a bachelor by coming to know that Jones is an unmarried male. Similarly, I want to suggest, a subject can come to know how to φ by coming to know how to follow a set of rules for φing. Is it this sort of mediated knowledge how to φ that the rule-following novice draws on as she practices φing for the first time.

But not all knowledge how must be mediated in this way. Indeed a mark of a highly developed skill is that the know-how that guides it is not thus mediated. In this paper I have attempted to vindicate the idea that even such expert performance is expressive of an underlying cognitive achievement.
Chapter 3

The Reformative Character of Intellectualism

At the beginning of his 2011 book *Know How*, Jason Stanley suggests that a presumed distinction between knowing a fact and knowing how to perform an action plays a role in perpetuating socio-economic inequality. He frames his preferred view of knowing how, according to which knowledge how to \( \phi \) consists in knowledge of a fact about a way of \( \phi \)ing, as a corrective to this presumed distinction and its socio-political ramifications. The aim of this Chapter is to evaluate Stanley's line of reasoning, and in doing so to clarify the features of an account of know-how that could play the socially reformative role that Stanley envisions for his own account.

3.1 Introduction

Philosophical arguments and positions can sometimes play a role in disrupting beliefs that help perpetuate unjust social arrangements. In some cases it is clear when a philosophical view is poised to play such a role. Take, for example, social constructivist metaphysical analyses of gender and race—analyses on which the properties of being a woman or being white are possessed in virtue of a person's position in a network of social relations, rather than in virtue of their heritable biological characteristics. Such analyses challenge attempts to identify gender and race properties with socio-politically important biologically influenced characteristics such as intelligence. In doing so they disrupt biological explanations for the marginalized statuses of particular gender or race groups—explanations that help preserve these statuses by masking, and thus rendering
In contrast to constructivist analyses of social kind concepts that are invulnerable to change, their true causes.¹ Let's call a philosophical position that is poised to play a role in undermining an invidious social arrangement a reformative position.²

Some philosophical defenses of reformative positions are self-conscious and indeed may invoke the reformative character of the position as a reason for holding it.³ Other philosophical projects may be carried out with an eye to the reformative nature of the view being defended but argued for on independent grounds. Good instances of this second kind are standpoint theories, which seek “to claim epistemic privilege over socially and politically contested topics on behalf of the perspectives of systematically disadvantaged social groups, relative to the perspectives of the groups that dominate them.” (Anderson, 2017: 16) The idea that members of oppressed social groups enjoy epistemic privileges vis-à-vis socially and politically contested topics may be defended on value-neutral grounds by appeal to facts about the kinds of experiences available to (or imposed upon) these subjects. However, one might care about defending a particular standpoint theory not just because it seems epistemologically plausible, but also because taking it on board will help “empower the oppressed to improve their situation.” (22)

A less obvious example of a project that doesn’t wear its reformative significance on its sleeve is Jason Stanley’s (2011a) book Know How. Stanley’s aim in this work is to defend intellectualism about knowledge how—the view that every instance of knowledge-how is an instance of propositional knowledge. Early in the book, Stanley points to a connection between the know-how/know-that distinction and the distinction between “those who are chiefly skilled in action” and “those who are chiefly skilled at theoretical reasoning.” (1) He then suggests that belief in the latter distinction contributes to or exacerbates socio-economic inequality. His defense of intellectualism, however, proceeds entirely independently of these points, invoking primarily considerations about the linguistic analysis of sentences of the form S knows how to φ.

Presumably due to lack of relevance to the main argumentative strategy in Know How, Stanley does not attempt to establish the reformative character of intellectualism beyond a few passing

¹The claim here isn’t that constructivist analyses of social kind concepts are the most effective theoretical tool for disrupting these assumptions. A view that simply denies the correlation of intelligence properties with race properties may be equally effective at disrupting justifications for marginalization along racial lines.
²Note that I use ‘reformative’ as a success term. Reformative positions stand in inferential relations to (the contents of) systems belief that underwrite unjust social arrangements, whether or not anyone happens to recognize it.
³Examples of such positions are those that articulate “ameliorative” analyses of particular concepts, such as the work on gender and race collected in Haslanger (2012). I reserve the term “ameliorative” for projects that explicitly seek to improve upon our concepts. The term “reformative” as I use it covers positions that emerge not only from projects aimed at engineering concepts, but also from more traditional analytic projects in philosophy.
remarks. And to my knowledge the issue has not been taken up in any depth in the literature on intellectualism or knowing how. But there are several reasons to seek clarity about whether intellectualism is in fact a reformative position. First and most straightforwardly, if the truth of intellectualism would be socially or politically beneficial, then we have additional reason to be interested in that position and the arguments for and against it. Our reasons to devote time and attention to evaluating the position include moral reasons and not merely epistemic ones. Second, as mentioned above in relation to Haslanger’s work, the reformative character of a position can arguably be a reason for adopting it—or rather, for revising the concept(s) in question so that the reformative position is true of it. The validity of this sort of basis for adopting a view, of course, depends on the viability of what Haslanger calls “ameliorative” projects in philosophy, a debate that I will not enter into here.⁴

Finally, and most relevant for my purposes, attending to the reformative character of a thesis about phenomenon x can help orient us to a new dimension of evaluation for analyses of x that conform to the thesis. Often when we evaluate a philosophical account we want to know whether it has done justice to the spirit of its initial motivations. If the spirit of a particular account is to encourage a shift in perspective about a matter of relevance to social justice, it is fair to assess the success of the project based partly on whether it in fact does have this relevance, and moreover, whether the shift is really for the better. Getting clear about the reformative significance of a claim thus improves our understanding of what we might want from a theory of the phenomenon that the claim concerns.

My main aim in this paper is to explore the prospects for working Stanley’s brief remarks in *Know How* into a convincing case for the reformative character of intellectualism about know-how. The plan for the paper is as follows. After covering some preliminaries in the next section, I will attempt in Section 3.3 to reconstruct from Stanley’s remarks in *Know How* what I take to be his argument for the reformative character of intellectualism. Sections 3.4 and 3.5 explore the two central premises of the argument. In Section 3.6, I attempt to draw some lessons for the conditions a full intellectualist account of know-how must meet if it is to fulfill its reformative aspirations, and assess several versions of intellectualism with respect to these conditions.

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3.2 Preliminaries

Before attempting to assess the reformative character of intellectualism, we need a precise statement of that doctrine. For purposes of this paper, a minimal formulation will suffice:

( Minimal Intellectualism) Knowing how to $\phi$ consists, at least in part, in knowing $p$, for some proposition $p$.

The formulation is minimal because it does not involve any commitments about the nature of the propositional knowledge that knowledge-how consists in—for example, whether it is a kind of knowledge which concerns ways of acting or involves special modes of presentation. It does not even attempt to specify what proposition is known when one knows how to $\phi$. Although all versions of intellectualism take stands on these questions, those details are not directly relevant to the main argument for the reformative character of intellectualism to be explored here. For that reason, they are best excluded from our working formulation of the thesis.

It is common in the literature to specify what type of knowledge-how intellectualism is supposed to target. For example, Carlotta Pavese (2015) asserts that she is interested in knowing how “in the relevant sense,” which excludes the sense in which one might be said to know how to play the flute upon hearing the Monty Python explanation, “Well, you blow in one end and move your fingers up and down the outside.” (1, fn. 2) The intention here is to set aside types of knowledge-how that lack a special connection to skill or ability. It is important for intellectualists like Pavese to restrict their subject matter in this way because they are often interested in capturing that special connection. Such a theory will appear to suffer an important class counterexamples if the type of know-how involved in the Monty Python case is not excluded at the outset from the target of the account.

The truth of Minimal Intellectualism does not depend on restricting the subject matter in this way, because all ways of attempting to so restrict it rule out cases of knowledge-how that seem clearly also to be cases of propositional knowledge (as in the Monty Python case). It is worth noting—

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5 Kumar (2011) calls these types of knowledge-how mere “armchair knowledge”. See Chapter 1, §3 for a discussion of the special connection between the relevant sort of know-how and ability.

6 For example, by building into the account a requirement that the relevant sort of knowledge involve a “practical mode of presentation”.

7 Other examples include cases where the proposition known is normative. For example, to attribute to Jack knowledge how to address the queen of England is to attribute to him knowledge of a proposition to the effect that one should address the queen in such and such a way. See Stanley and Williamson (2001: 424-5) for a discussion of such cases.
ing, however, that only practical types of knowledge how pose a threat to Minimal Intellectualism, since those are the instances of know-how that appear to differ most clearly from paradigmatic cases of propositional knowledge. Henceforth I use of the term “intellectualism” to refer to the thesis of Minimal Intellectualism.

3.3 Stanley on the Reformatory Character of Intellectualism

Jason Stanley’s articulation of the reformatory character of intellectualism occurs in a short passage at the beginning of *Know How* (and is not directly taken up elsewhere in his work):

Humans are thinkers and humans are agents. There is a natural temptation to view these as distinct capacities, governed by distinct cognitive states. When we engage in reflection, we are guided by our knowledge of propositions. By contrast, when we engage in intelligent action, we are guided by our knowledge of how to perform various actions. If these are distinct cognitive capacities, then knowing how to perform an action is not a species of propositional knowledge.

There is an intuitive basis for the view that those who are chiefly skilled in action have fundamentally different cognitive virtues than those who are chiefly skilled at theoretical reasoning. There are different professions to which they are best suited, as well as different positions in the socio-economic hierarchy. For those inclined to dichotomies popular in turn-of-the-century Vienna, they may correlate with differences in gender and religion. (1)

The passage begins by positing an inclination to view the capacities to think and to act as distinct, and connecting this inclination to the view that knowledge-how is not a type of propositional knowledge. The passage continues in the next paragraph to connect the distinction between the cognitive virtues of skilled thinkers and those of skilled actors to a distinction between locations in the socioeconomic hierarchy. Thus the distinction between knowing how and propositional knowledge is connected indirectly to an invidious socio-economic distinction—one that separates prestigious and financially rewarding professions from professions that lack these attributes. Laying out this line of reasoning more explicitly requires that we examine the way in which Stanley seems to be thinking about these two connections.

\[^8\text{In } \textit{How Propaganda Works}, \text{ Stanley says a lot that could be relevant to making a case for the reformatory character of intellectualism, but he never specifically explicitly mentions intellectualism anywhere in the book. We will have occasion to engage with some of these remarks in the next section.}\]

66
Let's begin with the first connection: the association of the contrast between the capacity for thinking and the capacity for action with the contrast between “knowing how to perform and action” and “propositional knowledge”. The basis for this association, Stanley suggests, is the guidance relation: reflective thought processes are guided by propositional knowledge whereas processes of intelligent action are guided by knowledge-how. Stated succinctly:

(Connection 1) Knowledge-that guides theoretical reasoning; knowledge-how guides action.

The second step in Stanley’s argument is to connect the putative distinction—the distinction for which there is an “intuitive basis”—between the cognitive virtues of theoretical reasoners and the cognitive virtues of skilled doers to the distinction between different sorts of positions in the socio-economic hierarchy. For simplicity, let’s speak as though there are two types of position in the socio-economic hierarchy: higher and lower. Now Stanley does not specify here, or anywhere else in *Know How*, which type of position corresponds to which cognitive virtue. But his discussion in Chapter 7 of *How Propaganda Works* makes clear that he takes skill at theoretical reasoning to go along with higher socio-economic position and skill at action with lower.9

In addition to this correspondence between the reasoning/action distinction and the distinction between high and low socio-economic position, we can take Stanley to be identifying in the passage above the notion of “chief cognitive virtue” and the notion of the state that guides a certain kind of action.10 With these equivalences in hand, we can formulate the second connection as follows:

(Connection 2) A putative distinction between the state that guides reflection and the state that guides action plays a role in perpetuating the assignment of those skilled at theoretical reasoning to high socioeconomic positions and those skilled at action to low socioeconomic positions.

Taken together, Connections 1 and 2 have the following consequence:

9 Here is one passage that makes this clear.

The ideology of class elitism rests upon a belief, already clearly articulated in Plato and Aristotle, that at least one group in society is not capable of theoretical activity, but only of manual labor. The form in which the ideology of elites is transmitted to the negatively privileged group is as a focus on the teaching of manual and vocational skills in the school system to negatively privileged groups, together with indoctrination into the ideology of elites. (271)

10 This assumption is not innocent and will come under scrutiny later in the paper.
A putative distinction between knowledge how and knowledge that plays a role in perpetuating the assignment of skilled reasoners to high socioeconomic positions and skilled actors to low socioeconomic positions.

From Consequence emerges the reformative significance of intellectualism about know-how. Intellectualism directly refutes the distinction between knowledge-how and knowledge-that, thus (in view of Consequence) undermining an assumption that plays a role in maintaining socioeconomic stratification.

As we will see in the next two sections, Connections 1 and 2 raise rather different sorts of issues. Connection 1 raises issues in the philosophy of mind and action. Connection 2 raises issues concerning the way in which the philosophical distinction between know-how and know-that relates to the socioeconomic structure of society. I will begin in the next section with an examination of Connection 2. Exploring Connection 2 will help bring more clearly into view what is at stake concerning the reformative dimension of the debate over intellectualism. This clarity will inform our subsequent exploration of Connection 1 in Section 3.5.

### 3.4 Exploring Connection 2

Connection 2 is a complex claim, and the first step in thinking about it is to clarify its anatomy. The claim has two parts. The first is a psycho-sociological claim to the effect that there exists, at least in American society, a collective belief in a distinction between skill at theoretical reasoning and skill at action.\(^{11}\) The second part asserts a causal relation between this psycho-sociological fact and a social fact: that people believe in this distinction causally contributes to the perpetuation of socioeconomic stratification. The claim also has a presupposition, *viz.*, that there is in fact a distinction between theoretical reflection and action, and that this distinction corresponds at least approximately to distinctions between different locations in the socioeconomic hierarchy. I will begin in this section by considering the presupposition, and then move to an examination of the two claims whose conjunction forms the content of Connection 2.

An initial worry about the presupposition concerns its first clause. One might deny that there is a distinction between theoretical reasoning and action, because theoretical reasoning *just is* a cer-

\(^{11}\)I remain neutral here on what counts as a collective belief. Beliefs that figure into social ideology are paradigm examples of collective beliefs. For a helpful discussion of social ideology, see Shelby (2003).
tain type of action. Theoretical reasoning does seem in many cases to be carried out intentionally; at minimum, it certainly seems intentional when undertaken as part of a profession associated with a high socio-economic position.

Before exploring how the defender of Connection 2 might reply, it is worth taking a moment to discharge a worry about why a reply should be needed at all. The part of Connection 2 in question, after all, concerns a mere belief in the distinction between skill at theoretical reasoning and skill at action. A claim that asserts the existence of a belief obviously needn’t commit itself to the truth of that belief. So why does Connection 2 need to presuppose the existence of a distinction between theoretical reasoning and action?

The answer emerges when we remind ourselves of the role that Connection 2 plays in the overall endeavor to establish the reformative significance of intellectualism. Connection 2 is important because it links to an invidious social distinction the distinction between knowing how and knowing that, which is the distinction that intellectualism concerns itself with. The reformative significance of intellectualism, at least according to Stanley’s line of thought, depends on the link between the know-how/know-that distinction and the distinction between low and high socioeconomic position. If the claim failed to achieve this linking, it would fail to be of service in establishing the reformative significance of intellectualism.

But now suppose, contra the presupposition we are considering, that there did not exist a distinction between theoretical reasoning and action. If that were the case, the belief posited by Connection 2 could be discredited simply by pointing this fact out. No mention of the relationship between knowing how and knowing that would be implicated in this critique of the belief, so the linking mentioned in the previous paragraph would fail. In this way, the falsehood of the presupposition shifts the argumentative focus to the action/reasoning distinction, thereby displacing the know-how/know-that distinction as the one of political importance.\(^{12}\) If one wants the denial of the distinction between knowing how and knowing that to be a reformative position, the diagnosis of the socially invidious belief mentioned in Connection 2 had better trace to a mistakenly assumed distinction between knowing how and knowing that. Ensuring that it does (at least in

\(^{12}\)But, one might wonder, even if the main problem with the belief mentioned in Connection 2 concerned the reasoning/action distinction, couldn’t the know-how/know-that distinction still be important in virtue of its role in underwriting the reasoning/action distinction? Perhaps. But this would require that the distinction between reasoning and action be shown to depend upon the distinction between knowing how and knowing that. For reasons that will emerge in the next section, I doubt that this can be done.
the context of Stanley's argument) requires the distinction between reasoning and action to be on good footing.

How, then, might the defender of Connection 2 reply to the observation that theoretical reasoning seems itself to be a certain kind of action? The observation needn't be contested, for Connection 2 can be easily revised to accommodate it. The revision simply involves qualifying the type of action that appears in the claim as embodied. With this revision, Connection 2 reads as follows.

(Connection 2) A putative distinction between the state that guides reflection and the state that guides embodied action plays a role in perpetuating the assignment of those skilled at theoretical reasoning to high socioeconomic positions and those skilled at embodied action to low socioeconomic positions.

This reformulation, however, raises a new concern. Much theoretical reflective activity seems to involve a bodily component. It is very difficult, if not impossible, to work highly sophisticated ideas out fully in one's own mind. For any project that involves extended systematic thinking, one needs a notebook or blackboard or computer to aid in the process of formulating, refining, and reformulating one's thoughts. But engaging with these media is an embodied process, whether one is moving the tip of a pen across a sheet of paper or depressing the keys of a keyboard. Even with the revision of 'action' to 'embodied action', the contrast between theoretical reflection and embodied action comes out looking suspect.

This worry can be avoided by taking some care in how we understand embodied action. Embodied action should be understood not just as any type of activity that happens to involve bodily movement, but rather as that class of activity that essentially involves bodily movement. Activity that essentially involves bodily movement is activity that could not count as succeeding unless certain patterns of bodily movement have occurred. For example, no being could count as successfully riding a bicycle unless it made certain movements with its body. In contrast, if human reflective activity requires bodily movement, it does so contingently: a more intelligent or cognitively sophisticated being could do in her mind what a mere human does with the aid of a notebook or computer.\(^\text{13}\)

\(^\text{13}\)This point holds even if, as theorists within the 'embodied cognition' camp have argued, human cognition implicates parts of the body beyond the central nervous system—as, for example, when gesture is functionally implicated in the process by which a thought is formulated (see Wilson and Foglia's (2017) Embodiment Thesis). The claim that human cognition involves bodily movement is compatible with the idea that the success conditions of thinking as such make no reference to particular patterns of activity outside the central nervous system.
The main presupposition of Connection 2 has another part: that the distinction between theoretical reasoning and (embodied) action maps onto the distinction between professions with high socio-economic status and professions with low socio-economic status. But, one might worry, this correspondence seems to have obvious counterexamples. A surgeon does embodied work but occupies a very high socioeconomic position. Likewise for fine artists and classical musicians. And conversely, many thought workers occupy low positions in the socioeconomic hierarchy. There is such a thing, after all, as menial intellectual labor. Examples include low level data entry work or certain types of customer service positions.

A partial reply to this worry could contest some of these examples. Although the qualifications of the surgeon and artist undoubtedly consist substantially in embodied skills, they also involve a great deal of theoretical knowledge. Good surgeons possess vast stores of medical knowledge that guide them as they perform surgery. Likewise for many artists, whose work is valuable not merely for the technical skill it demonstrates, but for the role it plays in an often quite abstract cultural conversation.

A more general reply points out that the correspondence of reasoning with high socioeconomic position and embodied work with low does not need to be exceptionless for it to figure in an explanation for the perpetuation of socioeconomic stratification. The correspondence, after all, is not invoked as a part of any philosophical analysis, but rather as a way to establish the potential significance of a certain kind of philosophical project. To evaluate whether the correspondence (even if imperfect) can play this role, we need a better understanding of the role that the correspondence is being asked to play. This brings us to a direct examination of the content of Connection 2.

In evaluating Connection 2 we need to ask, have relevant people held a belief in a distinction between the two types of cognitive virtue, and if so how has this belief helped perpetuate or exacerbate socio-economic stratification? Nothing Stanley says in Know How answers these questions, but there is a highly relevant discussion in How Propaganda Works. In Chapter 7 of that work, Stanley discusses the role of “a presumed natural distinction between the exercise of intelligence and the exercise of mere practical skill” in justifying what he calls “ideology of elites.” (279) According to this ideology, certain select members of the population are naturally endowed with capacities that suit them to the role of designing and leading society, while most members of society lack these capacities. Instead they have capacities that suit them to the performance the manual tasks.
involved in the execution of the plan conceived by the elites.

How does the ideology of elites perpetuate socioeconomic stratification? Stanley’s discussion of the role of the ideology in the design of American public education in the early twentieth century points to one answer to this question. If the population is naturally divided into those who are cognitively suited to the work of architecting society and those who are cognitively suited to manual work, justification emerges for an educational system designed to identify at the earliest possible age those unsuited to intellectual work and provide them instead with ‘vocational’ training. For social resources are poorly spent attempting to provide intellectual training to those incapable of benefiting from it. Stanley demonstrates the influence of this line of thought on early twentieth century architects of American public education, including Woodrow Wilson and the Stanford sociologist Edward Alsworth Ross.¹⁴

It is not difficult to see how such an educational scheme creates the conditions for dramatically reduced social mobility. Once tracked into a course of training for manual work, a child is deprived of the type of intellectual training that would enable him or her to someday take on a more economically rewarding occupation. Even if a certain amount of socio-economic stratification is acceptable and indeed inevitable in a capitalist society with a highly structured division of labor, this stratification constitutes a structure of oppression to the extent that contingent social practices deprive individuals of opportunities for movement between strata.

Another type of pernicious effect of the ideology of elites is perhaps more subtle. It operates in the minds of individuals who are indoctrinated by the ideology to see themselves as unintelligent. Joanna Kadi (1996) provides a stark characterization of this process:

> For the capitalist system to continue ruthlessly grinding on (or for the capitalist system to “succeed,” as you would say) those of us bred for stupid and/or dangerous work must believe we’re not as smart as the people who boss us around. It’s critical. Capitalism needs simple explanations about why poor people with lousy jobs take orders from men in suits. Lack of brains fits the bill. (44)

To be made to think of yourself as ‘stupid’ is to be harmed. Individuals who internalize such a self-conception will be less likely to attempt to pursue activities seen as intellectual, whether for professional or personal reward. Inculcation with a self-conception as stupid, moreover, constitutes a form of political disempowerment. A person who doesn’t think herself intelligent enough

to contribute to collective decision making may be less likely to participate actively in civic life by taking on a local leadership position, voting, or simply following the news. Such a person will be more likely to outsource decision making to others—as Kadi puts it, “to take orders from men in suits.”

The type of harm visited by the ideology stupidity (as we might call it) is worth comparing to Miranda Fricker’s (2007) notion of hermeneutic injustice. In circumstances of hermeneutic injustice, collective resources for the articulation and interpretation of experience are biased in their availability and sophistication toward those that are useful to dominant groups. Fricker’s main example of hermeneutic injustice is the absence of concepts adequate to describe the phenomenon and experience of sexual harassment, before the introduction of that concept by feminists in the 1970s.

The ideology of stupidity traffics not in conceptual resources to make sense of one’s experience but in resources to construct a conception of oneself—a conception that includes a representation of one’s natural strengths and weaknesses and a resulting conception of one’s distinctive contribution to society. In his essay “From Self Psychology to Moral Philosophy”, David Velleman discusses “the pathology of being defeated by a negative self-conception”—a phenomenon whereby a subject refrains from performing an action because “he cannot assimilate [performing that action] into his self-conception”. If Velleman is right about the power of self-conceptions to effect psychological disempowerment, the association between embodied work and stupidity enacts a much more intimate type of harm than the harm it produces through its role in helping to justify anti-democratic social practices.

The discussion in this section vindicates the central thought in Connection 2 that an assumed distinction between individuals qualified to do so-called “thought work” and individuals qualified to do embodied work exacerbates socio-economic stratification—both through education policy decisions and through the ideology of stupidity. The crux of this assumed distinction, we have seen, is the notion of intelligence. The distinction between reflective activity and embodied work is turned into a socially invidious ideology through the association of intelligence with reflection and

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16 Ideology of stupidity also plausibly undercuts the type of epistemically respectful dialogue that socializes a young person into formative epistemic groups such as classroom or school communities. Haslanger (2014) discusses the importance of such dialogue, and the harm done when racial prejudice interferes with it.
stupidity with embodied action. This insight will prove useful in our exploration of Connection 1, to which we now turn.

### 3.5 Exploring Connection 1

Connection 1 ties the distinction between skill at action and skill at theoretical reasoning to the distinction between knowledge-how and knowledge-that. Taking on board the emendation of "action" to "embodied action" discussed in the previous section, the principle reads as follows:

(\text{Connection 1}) \text{ Knowledge-that guides theoretical reasoning; knowledge-how guides embodied action.}

The role of Connection 1 in the overall argument for the reformative character of intellectualism, recall, is to link the distinction between knowing how and knowing that to the socially important distinction between skill at reflection and skill at embodied action. Connection 1 seeks to accomplish this by linking knowledge-that to skill at theoretical reflection and knowledge-how to skill at embodied action.

Is Connection 1 credible? If understood as an attempt to identify a deep difference between reasoning and embodied action, Connection 1 appears unpromising. For knowledge-how seems obviously to play a role in guiding theoretical reasoning; and conversely, knowledge-that seems to play a role in guiding embodied action. While reasoning, one draws upon one's knowledge how to think clearly, creatively, quantitatively, etc. While performing embodied actions like riding a bicycle or fixing a sink, one brings to bear quite a bit of factual knowledge about bicycles and sinks.

To see how Connection 1 might be restated to accommodate these observations, recall that the point of the claim is to identify an asymmetry between theoretical reflection and embodied action that depends on a distinction between knowledge how and knowledge that. This task can be accomplished either by identifying a special connection between knowledge-how and embodied action or between knowledge-that and theoretical reflection. A revised version of Connection 1, then, should make one of the two following claims:

1. (la) Embodied action is guided by knowledge-how in a way that theoretical reflection is not.
2. (1b) Theoretical reflection is guided by knowledge-that in a way that embodied action is not.
What are the prospects for defending these claims? Let’s start with (1a). Does knowledge-how play a special action-guiding role in the case of embodied action that it does not play in the case of mental actions like reasoning? Whatever answer we give, one might think, should obey the following plausible principle connecting know-how to intentional action:

If S is doing φ intentionally, then S knows how to φ.\textsuperscript{17}

If this principle is correct, then the only avenue for denying that rational activity is guided by know-how is to deny that rational activity constitutes intentional activity. How might one motivate such a denial? A passage from P. F. Strawson, quoted in Mele (2009), suggests one possible line of thought:

The central point is this: the role of genuine action in thought is at best indirect. It is entirely prefatory, it is essentially—merely—catalytic. ... There may well be a distinct, and distinctive, phenomenon of setting one’s mind at the problem, and this phenomenon, I think, may well be a matter of action. It may involve rapidly and silently imaging key words or sentences to oneself, rehearsing inferential transitions, refreshing images of a scene, and these acts of priming, which may be regularly repeated once things are under way, are likely to be fully fledged actions. [Also] sometimes one has to shepherd or dragoon one’s wandering mind back to the previous thought-content in order for the train of thought to be restarted or continued, and this too may be a matter of action. ... No doubt there are other such preparatory, ground-setting, tuning, retuning, shepherding, active moves or intentional initiations. But action, in thinking, really goes no further than this. (231-2)

Strawson’s passage begins with the insight that an episode of what we might be tempted to describe as intentional reasoning involves different sorts of actions: shifts of attention, priming one’s intellect in certain ways by calling to mind certain contents, etc. We can distinguish these “prefatory” actions from the inferential transition itself—the event consisting in the representation of and assent to a new proposition. Overlooking this distinction, Strawson suggests, encourages the mistaken view that inferential transitions are directly orchestrated by the subject, when in fact they are merely causal consequences of other non-inferential mental actions.

Against this line of reasoning, one might insist that inferential transitions are agentive at least in their status as things we do rather than things that happens to us. If this weren’t true it would be hard to explain why subjects who are engaged in inference are subject to epistemic norms, for

\textsuperscript{17}Setiya (2012) defends a refined version of this principle. Because the refinement is not relevant for our purposes here, the simple formulation will suffice.
only things that a subject does and not things that merely happen to her can render her answerable
to normative evaluation.

Perhaps the correct view of inference is that it is an action—something we do rather than
something that happens us—but not an intentional action. As Chislenko (2016) points out,

The category of non-intentional action is familiar. We doodle, we pace while thinking,
we hum, and we dodge oncoming objects. When asked why we are doing these things,
we would often answer that we do not intend to be doing them. Like the movements
of some animals, these actions are performed without intention. (295)

But does the non-intentional character of inferential transitions suggest the absence of guidance
by know-how? If the case of inference is treated by analogy to Chislenko's examples of non-
intentional action, the answer appears to be negative. For when I hum or pace unintentionally,
surely I am still exercising my knowledge how to perform these actions. If I did not know how—and
indeed, know well how—to hum or pace, I could not do these things non-intentionally.

Thus, even if inferential activity differs from most embodied activity in virtue of being non-
intentional, we find no reason to deny the guiding role of know-how in inference. Absent a better
strategy for defending (1a), the proponent of Connection 1 should turn her attention to (1b). Is
there, then, a type of guiding role that propositional knowledge plays in reflective processes that
it does not play in embodied action?

There is at least one kind of role that propositional knowledge plays in reflection that it doesn't
seem to play in embodied action. Theoretical reflection by its nature operates on propositional
contents: to reflect just is to manipulate propositional contents in a certain sort of epistemically
sensitive way. An episode of mental activity would not count as reflection unless it operated on
propositional mental states. And in epistemically ordinary circumstances, many of those proposi-
tional mental states will be states of knowledge-that.

Embodied actions do not seem to display a parallel constitutive connection to propositional
mental states. To count as bringing off an embodied action, one just needs to move things in the
world around in a certain way (whether parts of one's body or parts of one's physical environ-
ment). It may be true that for a given embodied action to be rationally motivated, it must arise
from a process that involves manipulation of propositional contents. But an embodied action
needn't be rational for it to be successful; the standards of evaluation of action performance are

76
not the standards of practical rationality. To see this, note that I can go out and idly ride my bicycle around a parking lot for no reason whatsoever, or even in spite of overwhelming reasons not to take this course of action. The quality of my bicycle riding performance depends not at all on my reasons for undertaking the ride in the first place.¹⁸

But does the role of propositional knowledge in reflective processes license the claim that reflection is guided by knowledge-that? A subject’s state of propositional knowledge at the start of a reflective process certainly plays a role in determining where that process ends up—what knowledge state it eventuates in. Undoubtedly there is a relationship of influence here. If the presence of entity e makes a difference as to how process P unfolds (or where P terminates), then e influences P. But not all forms of influence are forms of guidance. Heavenly bodies move under the influence of gravity. Only in a metaphorical sense do they move under the guidance of gravity.

Guidance is a teleological notion: to guide is to guide toward something or in conformity with something. A subject’s antecedent state of propositional knowledge does not seem to guide her reflective processes in this sense. If reflective processes are guided in the robustly teleological sense, they are guided by states of knowledge how—knowledge how to reflect, knowledge how to infer, etc. But this observation is obviously not helpful in establishing, as per (1b), a distinctive sort of guiding relation between knowledge-that and theoretical reflection.

At this point we do well to remind ourselves why the existence of a distinctive sort of guiding relation between knowledge-that and reflection matters. In the previous section it emerged that the concept of most direct relevance to the socio-political issues at stake in Connection 2 is the concept of intelligence. And to tell whether a type of activity is an expression of intelligence, one might think that you need to look at the type of state that guides it. It is this general line of thought that seems to lead Stanley to use the language of guidance in adumbrating the reformative significance of his project at the beginning of Know How. He supports the claim that “[t]here is an intuitive basis for the view that those who are chiefly skilled in action have fundamentally different cognitive virtues than those who are chiefly skilled at theoretical reasoning” by citing

¹⁸Of course, one might think that something like a failure of rationality explains my failure to turn the gear-shifter in the right direction when I want to shift up a gear. Perhaps it is true that some performance errors are to be explained in terms of failures of rationality. My claim is merely that the type of normative standard invoked in evaluations of action performances is distinct from the type of normative standard invoked in the evaluation of whether an action was rational. See Kumar (2011: 141-2) for a related discussion of the distinction between performance errors and unsatisfied ends.
the naturalness of the idea that "[w]hen we engage in reflection, we are guided by our knowledge of propositions... [and] when we engage in intelligent action, we are guided by our knowledge of how to perform various actions." (1) Stanley seems to be assuming here that the state which guides a certain type of activity is indicative of the primary cognitive virtue—or, as we might also put it, the form of intelligence—expressed through that activity.

But I want to suggest that focus on the state that guides a certain kind of activity is not the only way of connecting knowledge-that to intelligence in a way that generates a asymmetry with know-how. To begin to see the possibility I have in mind, notice that one characteristic function of intelligence is the manipulation of information. An intelligent creature is one that is able to form a conception of the world by taking in information, to rely on that conception in navigating the world, and to update it through the assimilation of novel information. These processes display, at a sufficiently high level of description, a particular sort of causal structure: they involve interactions between information-carrying mental states that mirror the epistemic (logical and evidential) relationships between the contents the states encode. Let’s say that a process like this is one that displays cognitive structure.

Several theorists have developed the notion of what I am calling cognitive structure by analogy to the measurement of physical quantities such as weights. Stalnaker (1984) explains measurement as a practice of indexing physical properties by real numbers:

> What is it about such physical properties as having a certain height or weight that makes it correct to represent them as relations between the thing to which the property is ascribed and a number? The reason we can understand such properties—physical quantities—in this way is that they belong to families of properties which have a structure in common with the real numbers. (9)

Just as indexing physical quantity properties by real numbers aids in explaining and predicting the behavior of entities that instantiate these properties, Stalnaker goes on to point out, indexing mental states by propositions greatly enhances our ability to predict and explain the behavior of humans and higher animals. A simple explanation of this fact is that the causal structure of interactions between the internal states of such creatures mirrors the logical relations between informational contents. For example, a state encoding the information if \( p \) then \( q \) will tend to interact with a state encoding the information \( p \) so as to produce a state that encodes the information \( q \).
Our proposal, then, is to use the condition of cognitive structure, rather than the state which guides, as the main criterion of intelligence. How does this proposal help vindicate claim (1b)? Suppose we reformulate (1b) as follows:

(1b') The involvement of knowledge-that in theoretical reflection reveals reflection to be cognitively structured in a way that it does not for embodied action.

As discussed above, because knowledge-that is a propositional state and because reflection operates on states of propositional knowledge, reflection must be a cognitively structured process. And with the condition of cognitive structure as a criterion for intelligence, reflection comes out looking intelligent. But, as we have seen, knowledge-that does not play an analogous role for embodied action. So the propositionality of knowledge-that provides no support for the cognitive structure of embodied activity.

Shifting focus from guidance to cognitive structure allows us to secure a connection between knowledge-that and reflection that is relevant to the question of intelligence. But does this strategy for securing that connection vindicate the capacity of intellectualism to reveal the cognitive structure of embodied action? One kind of concern may make us think not: Once we shift emphasis away from the guidance relation, the relation between knowledge-that and reflection no longer looks analogous to the relation between knowledge-how and embodied action. Although we have seen that the role knowledge-that plays in reflection is not a guiding role, the role knowledge-how plays in embodied action (and in reflection for that matter) certainly is one of guiding the activity. Given this asymmetry, what guarantee do we have that a thesis claiming knowledge-how to be an instance of knowledge-that would support the cognitive structure of embodied activity in the same way that the role of knowledge-that in reflection supports the cognitive structure of reflection?

One may respond to this worry by taking on board the asymmetry between the role of knowledge-that in reflection and knowledge-how in embodied action, but pointing out that these two relations, though distinct, can nevertheless play a similar role in establishing the cognitive structure of the relevant activities. An activity that operates on cognitive states is cognitive. But so is an activity guided by cognitive states. For how could cognitive states play a guiding role if the process in which they have a guiding role were not cognitively structured? The fact that knowledge-how is a case of knowledge-that, and therefore a propositional state, indicates that the process by which embodied activity is generated displays cognitive structure.
Of course, one doesn’t get all the way to the thesis that embodied activity is cognitively structured just from Minimal Intellectualism (the thesis that knowing how to φ is knowing p, for some proposition p). The claim, rather, is that Minimal Intellectualism plays a key role in an overall conception of know-how on which embodied activity comes out exhibiting cognitive structure. Such a conception of know-how meets what I will call the Reformative Condition:

(Reformative Condition) A theory of know-how meets the Reformative Condition iff it characterizes know-how as a state poised to play a functional role in an action-generating process with cognitive structure.

In the next section, I want to explore what must be added to Minimal Intellectualism to arrive at an account that meets this condition.

3.6 Upshots for Reformative Accounts of Know-How

At the beginning of the paper I suggested that one reason for wanting to know whether a thesis concerning phenomenon x has reformative significance is that understanding this significance can attune us to new dimensions of evaluation for accounts of x that conform to the thesis. Does an account fulfill its reformative potential given that it conforms to the original thesis? In this section I want to address this question as it arises for three intellectualist accounts of know-how—Imogen Dickie’s, Jason Stanley’s, and Carlotta Pavese’s. I will close the section with some general observations about the type of account of know-how—intellectualist or not—that will satisfy the Reformative Condition.

Before proceeding with this discussion, let’s briefly take stock of where we have come. We saw in Section 3.4 that the notion of intelligence emerged as the concept with most direct socio-political significance in the context of Stanley’s argument for the reformative significance of intellectualism—in particular, in relation to the question, Do embodied workers count as exercising intelligence through their work in just as robust a sense as thought workers? In the previous section, we saw that one way to determine whether a particular type of activity is intelligent is to determine whether it exhibits cognitive structure. And intellectualism about know-how is relevant to the question of cognitive structure because the fact that a process is guided by a propositional mental state is good evidence that the process exhibits cognitive structure.
I say “good evidence” here because it is possible to embrace Minimal Intellectualism without vindicating the cognitive structure of embodied action. To be a Minimal Intellectualist is in effect to accept the practice of indexing states of know-how by propositions discussed in the previous section. But as Glick (2011) points out, merely accepting this practice of indexing tells us relatively little about the nature of knowing how, or the nature of the processes in which the state might be causally implicated:

What constraints does this practice [of indexing states by propositions] put on the natures of the states being indexed by propositions? If our use of the ‘knows how’ locution is an instance of using propositions to index mental states, what does that tell us about know-how? ... It does not tell us whether know-how requires belief or justification, it does not tell us whether know-how can play a role in inference, whether it requires possession of certain concepts, and so on. (414)

Glick is correct to point out that mere acceptance of the practice of indexing states of know-how with propositions falls short of establishing that know-how figures into cognitively structured etiologies of embodied activity. The further condition that must be argued for is that the indexing does important work vis-à-vis the prediction and explanation of behavior. Only given that condition do we have strong grounds for an abductive inference to the cognitive structure of the process in which know-how is implicated.

The form of intellectualism suggested by Imogen Dickie (2012) provides a nice illustration of a view that fails to vindicate the cognitive structure of skillful action in virtue of failing to meet this further condition. Dickie follows Stanley in identifying states of know-how with propositional contents, but her view places skill before propositionality in the order of explanation: according to her, a state of know-how has the content it does in virtue of informational contents attaching to the skills associated with that piece of know-how. For Dickie, a subject’s being related to a proposition through possessing knowledge how to $\phi$ traces to the subject’s having the reliable disposition to succeed at $\phi$ing, since (as Dickie argues) reliable dispositions to $\phi$ themselves encode information about a way of $\phi$ing. On Dickie’s view, knowledge-how is a kind of propositional knowledge. But unlike standard cases of knowledge-that, it is a kind of propositional knowledge that one has in virtue of being skilled.

An intellectualist account along Dickie’s lines cannot help to make a case for the cognitive structure of embodied action. Although Dickie provides a strong argument for a certain kind of
practice of indexing states of know-how with informational contents, this practice is not aimed at explaining and predicting action as it is produced by internal states. For this reason, Dickie's recommended practice of indexing fails to bear upon the structure of the interactions between those states and therefore remains neutral on the issue at the heart of the Reformative Condition.

Jason Stanley's full intellectualist theory in *Know How*, I want to suggest, similarly fails to satisfy Reformative Condition. Stanley's account is as follows:

(Stanley's Intellectualism) Knowing how to \( \phi \) is knowing, of some way of doing \( \phi \) with which you are acquainted under a practical way of thinking, that it is a way in which you could \( \phi \).\(^{19}\)

Stanley's Intellectualism supplements Minimal Intellectualism in two ways. First, it specifies the proposition knowledge of which constitutes know-how: it is a proposition to the effect that way \( w \) is a way for one to \( \phi \). Second, it requires that the subject be acquainted with this way under a *practical mode of presentation*.

The specification of the proposition known is motivated primarily by linguistic considerations.\(^{20}\) What motivates the condition regarding practical modes of presentation? To answer this question, suppose the condition were absent. Suppose, that is, that Stanley took knowledge how to \( \phi \) simply to consist in knowledge that some way is a way in which one could \( \phi \). Such a view would confront obvious counterexamples: cases in which a subject knows the relevant fact about a way of \( \phi \)ing but doesn't seem to know how to \( \phi \). Suppose Hannah witnesses Peter riding his bicycle and comes to know that *that* (ostending Peter's way of riding) is a way in which she could ride a bicycle.\(^{21}\) Assuming Hannah did not know how to ride a bicycle before encountering Peter, it does not seem that the new knowledge she derives from that encounter must, or even could, endow her with bicycle-riding know-how.

To avoid such counterexamples, Stanley requires not only that subject know the right proposition concerning a way of \( \phi \)ing, but also that she grasp that way of \( \phi \)ing in a special way---*viz.* under a practical mode of presentation. Although Hannah might grasp the appropriate way of \( \phi \)ing by encountering Peter, she doesn't grasp it under a practical mode of presentation and so

\(^{19}\)This formulation of Stanley's view follows Setiya (2012: 290). For Stanley's own formulation, see Stanley (2011a: 122-3).

\(^{20}\)See Stanley (2011a: Ch. 5).

\(^{21}\)See Stanley and Williamson (2001) and Stanley (2011a) for discussion of this kind of case.
doesn't know how.

But what is a practical mode of presentation? The way in which this notion is explained crucially determines whether Stanley’s Intellectualism meets the Reformative Condition. Because the presence of a practical mode of presentation determines whether a knowledge-that state can play the action-guiding functional role characteristic of know-how, the nature of practical modes of presentation should capture the feature of the knowledge-that state that enables it to play such a role. If that feature is related to the capacity of the state to participate in cognitively structured processes the Reformative Condition will be satisfied; if not, it won’t.

In *Know How*, Stanley does not attempt to give a direct account of practical modes of presentation. His brief discussion of them in that work (on pp. 123-6) aims merely to establish independent motivation for their existence. The closest thing to a direct account we are given appears in Stanley and Williamson (2001):

Thinking of a person as oneself entails being disposed to behave in certain ways, or form certain beliefs, given relevant input from that person. Similarly, thinking of a place as here entails being disposed to behave in certain ways, or form certain beliefs, given relevant input from that place. Analogously, thinking of a way under a practical mode of presentation undoubtedly entails the possession of certain complex dispositions. (429)

Stanley and Williamson’s strategy here is to explain practical modes of presentation by connecting them to “certain complex dispositions”. What dispositions are these? Presumably they are the practical dispositions associated with the sorts of skillful performance underwritten by know-how. But if that is right, the resulting intellectualist account is poorly poised to meet the Reformative Condition. By invoking practical dispositions, the account avoids taking a stand on the structure of embodied action, thus leaving open a Dickie-style way of explaining the connection between know-how and embodied action.

Carlotta Pavese (2015) develops a rather different strategy for explaining the notion of a practical mode of presentation. On her view, a practical mode of presentation is a certain type of inferential rule, whose character is spelled out on the analogy to the meanings assigned to computer program texts by operational semantics. Pavese argues that an inferential rule understood on the basis of this analogy shares sufficiently many features with Fregean senses so as to warrant treatment as one.
Does Pavese’s account meet the Reformative Condition? On her view, know-how is a state that involves grasp of an inferential rule, and it is in virtue of involving grasp of this rule that know-how exhibits its distinctive action-guiding role. Inferential rules are of course functionally implicated in inferential processes, which are cognitively structured processes *par excellence*. Pavese’s view thus entails that the process by which skilled action is generated is cognitively structured. For this reason, her account meets the Reformative Condition.

Can non-intellectualist theories of know-how also satisfy the Reformative Condition? Our formulation of the condition above clearly allows for this, for it isn’t only propositional mental states that play a functional role in processes with cognitive structure. Another prominent example of such a state is *grasp of a concept*. At least on one understanding of concept mastery, grasp of a concept enables a subject to represent propositions that she couldn’t previously grasp. The capacity to represent new propositions enables a subject’s cognitive economy to token cognitively structured processes that it previously could not.

Bengson and Moffett (2007, 2011) have defended a theory on which knowing how to φ consists in a cognitive relation (a relation of objectual knowledge in their 2011) to a way of φing. Although Bengson and Moffett claim that their account captures the intimate connection between knowledge-how and action, they do not provide a detailed functional story about how grasp of a way or method contributes to the production of action.

Chapter 2 develops a framework for explaining skillful action that illustrates how a view like Bengson and Moffett’s could fit into the sort of theory of know-how that would satisfy the Reformative Condition. On the account developed in Chapter 2, cognitive grasp of a way of performing an action enables a subject to apply a certain kind of practical concept to perceptual input received during the performance of embodied action. Applying this concept generates a set of predictions

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22 For Peacocke (1992), this criterion of concept mastery is explained by the fact that concepts are constituents of propositional contents. But one may think of concepts as items of cognitive apparatus while holding a view of propositions on which they lack conceptual structure.

23 Bengson and Moffett (2011) defend the condition that a subject have a “correct and complete” conception of a way of φing as necessary for knowledge how to φ, and go on to tie correct and complete conceptions to action by means of the following principle:

(R) A conception ζ of a way w of φing is correct and complete only if it is possible for ζ to be some individual’s guiding conception in φing in way w. (192)

They do not, however, explain the truth of principle R by reference to the functional role that a guiding conception of a way plays in generating skillful action.
about how the activity will unfold. These predictions then interact with a subject's intention-in-action so as to generate appropriately adapted moment-by-moment responses to the situation. Because the state generated by applying the practical perceptual concept, as well as the intention-in-action, are cognitive states, the Chapter 2 framework entails that the production of embodied action is cognitively structured.

We have seen in this section that some versions of intellectualism satisfy the Reformative Condition and some do not. And moreover, there can be intellectualist and non-intellectualist views that satisfy the Reformative Condition. The Reformative Condition, then, does not favor intellectualism over other theories of know-how that yield an appropriately cognitive conception of the state and its action-guiding functional role.

3.7 Conclusion

The reformative character of intellectualism is vindicated, provided that intellectualist accounts are fleshed out in a manner compatible with the Reformative Condition. The Reformative Condition derives from a shift in focus from the nature of the state guiding a certain type of activity to the cognitive structure of the etiology of activity as a criterion of intelligence. An intellectualist theory that satisfies the Reformative Condition not only indexes states of know-how with propositions, but supplies a framework within which that indexing does real explanatory work in accounting for a subject's capacity for embodied skill.

An important project from the perspective of accounts of know-how with reformative aspirations is to limn the cognitive structure of embodied action. Only if an account of know-how is formulated in the context of this kind of project will it truly shed light on the way in which all human action—not just reflective human action—is informed by intelligence, and thus promote the reclamation of the designation 'intelligent' by groups to whom it has been denied.
Bibliography


