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The Pragmatic Intelligence of Habits

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Abstract
Habitual actions unfold without conscious deliberation or reflection, and yet often seem to be intelligently adjusted to situational intricacies. A question arises, then, as to how it is that habitual actions can exhibit this form of intelligence, while falling outside the domain of paradigmatically intentional actions. Call this the *intelligence puzzle of habits*. This puzzle invites three standard replies. Some stipulate that habits lack intelligence and contend that the puzzle is ill-posed. Others hold that habitual actions can exhibit intelligence because they are guided by automatic yet rational, propositional processes. Others still suggest that habits guide intelligent behaviour without involving propositional states by shaping perception in action-soliciting ways. We develop an alternative fourth answer based on John Dewey's pragmatist account of habit. We argue that habits promote intelligent behaviour by shaping perception, by forming an interrelated network among themselves, and by cooperating with the environment.

Keywords Habits · Ryle · Intellectualism · Dreyfus · Dewey · Pragmatism

1 The Intelligence Puzzle

Our practical lives are in large part shaped by our habits. We usually get through our day to day routines of getting on the correct train to work or making a coffee in the morning without engaging in anything like a careful assessment of the world around us, or any laborious process of rational decision-making. Rather, we tend to get through by acting out of habit. Once we try to explain how habits play this vital role in shaping our lives, however, we soon run into a vexing theoretical puzzle.

Said puzzle derives from the observation that habitual behaviours seem to exhibit two features that do not easily cohere with one another. On the one hand, they seem to be uncontrolled, almost automatic responses to environmental cues, which unfold very differently from paradigm intentional actions that unfold under the agent's attentive, voluntary control. When we perform an action out of habit, it is not because we have reflected upon the situation and decided that it's the most appropriate way to act. It is because we have repeatedly performed said action under similar conditions in the past. Precisely because of this, habits can be positively counterproductive or even outright distortive to our personal-level goals and desires, or even our basic biological well-being (Wood and Rünger 2016). The mundane habit of checking Facebook every time you pick up your phone, for example, can make you check Facebook even when doing so is transparently impractical (e.g., when you really need to work on an upcoming presentation) or socially inappropriate (e.g., when you are in the middle of a conversation). Because habitual behaviours unfold in an uncontrolled and non-deliberative manner, they can preclude our pursuance of more intelligent or context-appropriate courses of action.

On the other hand, habitual actions can exhibit genuine intelligence in virtue of how they cohere with and support our larger projects and goals. We do not constantly deliberate over our course of action seemingly because habits are able to shape our behaviours flexibly in response to the intricacies of our situations. Suppose, for example, that you have a habit of driving to the office every morning. Even if you always take the same route, the traffic is not always the same and you need to adjust your driving flexibly to the

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situation-specific intricacies of that particular morning to safely arrive in your destination. Yet you can accomplish this feat while being absorbed in thinking about your current paper project, without drawing on anything but your ordinary driving habits. We might be inclined, then, to characterise habits as capable of sustaining forms of intelligent behaviour, rather than being a kind of anathema to intelligence across the board.

In short, the following claims about habitual actions both appear to have (at least) *prima facie* plausibility: (i) Habitual actions are non-deliberate, uncontrolled, and near-automatic responses to situations; and (ii) Habitual actions sometimes exhibit a form of intelligence by being sensitively adjusted to the intricacies of a given situation. It also seems plausible to affirm: (iii) Uncontrolled responses to environmental cues cannot be intelligently adjusted to specific environments and objectives precisely because they are not controlled by the agent. When taken together, these three claims immediately give rise to the following question: If habitual actions can unfold without attentive or voluntary control, how is it possible that they can be intelligently adjusted to specific situations? Let us call this the *intelligence puzzle of habits*. Any thoroughgoing philosophical theory of habit, we suggest, must be able to provide an adequate solution to this puzzle, and this is the task we undertake in this paper.[1]

The puzzle can be resolved by rejecting one (or more) of the aforementioned three seemingly plausible claims. The question is which. The first claim regarding the uncontrolled nature of habitual action is widely accepted in the literature, and we will not look to reject it here. This leaves us with two possible solutions to the puzzle. One might reject the second claim regarding the possibility that habitual action exhibit some degree of intelligence. In the next section, we consider this approach, which follows from a very influential, neo-behaviourist conception of habit. Alternatively, one might seek to reject the third claim regarding the link between control and intelligence. As we will see below, this can be substantiated in various ways. Some challenge the claim by positing that habits consist in propositional knowledge states, which can produce intelligent behaviours automatically. Others do so by explaining how habitual actions are intelligently adjusted to the situation based on the relationship between habit and perception. We argue that neither approach presents a satisfying solution to the puzzle (Sects. 3 and 4). Instead, we propose an alternative solution based on John Dewey's pragmatist conception of habits (Sect. 5). The pragmatist approach, we suggest, offers an illuminating perspective from which to understand how habitual actions, while produced by uncontrolled processes, can nevertheless exhibit a substantial degree of intelligence.

Before proceeding, the concept of *intelligence* needs some explanation because it is used in a wide variety of disciplines, including philosophy and psychology, to mean various different things (e.g. Sternberg and Kaufman 2011).[2] By intelligence, we roughly mean the capacity to align normative standards (e.g., personal goals, social norms, biological needs), situations, and actions. By intelligent behaviour, we refer to behaviours that unfold in line with goals, projects, plans, needs, norms and the like within the specific material and sociocultural constraints of the immediate situation. It follows from this that intelligence requires context-sensitivity or context-dependent flexibility: that is, the capacity to adjust actions to the specific requirements of the current situation. We take this to be a fairly common understanding of the basic profile of intelligence. For example, Neil Levy states that the "genuine mark of intelligence […] is the capacity to flexibly adapt in an appropriate manner to environmental perturbations" (Levy 2017, p. 518). What we address below thus is the relationship between the uncontrolled and context-sensitive characters of habits. The question to be explored concerns how it is that habitual behaviours are near-automatic and yet flexibly adjusted to specific demands of the situation.

Note that this concept of intelligence is neutral in regard to the specific means by which we come to pursue an intelligent course of action. It is not uncommon to use the concept in more restrictive ways. In philosophy, many associate intelligence with conceptual reasoning. Ellen Fridland, for example, characterises intelligent processes as "those that need to be cashed out in semantic or psychological terms—prototypically, propositional states that are conceptual, compositional, recombinatorial, generalizable, and that can enter into logical reasoning" (Fridland 2017, p. 4338). In psychology, it is standard to conceive of intelligence as a collection of functions or qualities, such as arithmetic reasoning, short-term memory, and cognitive flexibility, measured in intelligence or IQ tests (Sternberg and Kaufman 2011, p. xv). On our conception, these features are not necessary components of intelligence. We take any behaviour flexibly adjusted to the immediate situation so as to serve some normative standards as *intelligent* behaviour, regardless of whether or not it is mediated by more paradigmatically intelligent human reasoning capacities.

[1] One reviewer indicated that one might dissolve the puzzle by simply acknowledging that while some habits are automatic, others are flexible, suggesting that the puzzle is set up arbitrarily. As we illustrate repeatedly below, however, habitual actions at least sometimes appear both flexible and uncontrolled. In that case, the question of understanding how these two features cohere remains an important issue demanding resolution.

[2] We thank an anonymous reviewer for urging us to clarify what we mean by intelligence.

2 Non-intelligent Conceptions of Habits

In *The Concept of Mind*, Gilbert Ryle developed an extensive criticism of intellectualist conceptions of mind. Intellectualists, for Ryle, either implicitly or explicitly "tend to treat intellectual operations as the core of mental conduct" (Ryle 2009, p. 15). They see intelligent behaviours as always dependent on theoretical knowledge or "merely [as] applications of considered truths" (ibid.). In opposition, Ryle argues that practice can be intelligent independent of any intellectual theorizing: "Intelligent practice," he writes, "is not a step-child of theory" (Ryle 2009, p. 16).

One might think, then, that Ryle would be among the first to acknowledge that habitual actions can be intelligent. Surprisingly, however, he advocates a conception of habit that resolutely denies it. On his view, if an action unmediated by explicit deliberation exhibits intelligence, it is a manifestation of "skill" or "knowing how" rather than a habit. Both habits and skills are, for him, forms of dispositions, but while habit is a "single-track disposition" which invariably produces the same response to the same cue, skill or knowing how is a "multi-track disposition" which can manifest in heterogeneous performances in a wide range of circumstances (Ryle 2009, p. 30). Skills enable us to cope with various situations without engaging in effortful deliberation by flexibly adjusting the parameters of the behaviour according to the specific arrangement of the given situation. In contrast, Ryle writes: "It is of the essence of merely habitual practices that one performance is a replica of its predecessors" (Ryle 2009, p. 30).

Similarly, psychologists and cognitive scientists tend to characterise habits as mindless and automatic reactions to environmental cues.[3] According to this view, habits unfold without involving awareness and serve our everyday activity primarily in terms of its speed and efficiency (Verplanken and Aarts 1999). They form our default mode of engagement with the world, but when intelligent or flexible adaption to the situation is required, we tend to rely more on slow and deliberative processes (Wood et al. 2014). There is a growing consensus that habit and deliberate control more often than not work in tandem to shape complex everyday activities (Graybiel 2008; Wood and Rünger 2016; Wood 2017). Some further propose to conceptualise habit as something "cognitively richer than a mere motor program that controls response execution" (Wood and Rünger 2016, p. 292). Even if habits contribute to the shaping of intelligent behaviour, however, it is widely assumed that they lack intelligent flexibility in themselves, only able to rigidly produce specific responses implicitly associated with contextual cues. Despite the increasing interest in the intersection between habits and goal-oriented behaviour, thus, some argue that the prevalent view is still that "habits are […] rigid patterns of behaviour that are automatically activated by context cues" (Ramírez-Vizcaya and Froese 2019, p. 2; see also Egbert and Barandiaran 2014).

A similar tendency is also found in the philosophical literature. In the past two decades, there has been a revival of intellectualism of the kind Ryle sought to reject. While Ryle contends that skilful knowing-how amounts to nothing more than an intricate complex of behavioural dispositions, modern intellectualists argue that knowledge-how is a species of knowledge-that (or propositional knowledge), a species of the kind of knowledge we utilise in intellectual operations. Knowing how to perform or execute some action amounts to knowing facts about how to successfully carry out said action (Stanley and Williamson 2001; Stanley 2011; Stanley and Krakauer 2013). Modern intellectualists, however, sometimes (though not always, as we will see in the next section) agree with Ryle in distinguishing skilful and habitual forms of action on the basis that the former and not the latter are intelligent. Comparing the two categories, for instance, Jason Stanley and John Krakauer suggest that "certain motor activities can become habitual or automatic over time" and hence acted out without any flexibility, contrasting it with what happens "when a motor skill such as tennis or piano is being enacted" (Stanley and Krakauer 2013, p. 10).

Based on this agreement that habits invariably lack intelligence, Ryle and intellectualists might jointly condemn the intelligence puzzle by saying that it is premised on a failure to grasp the clear difference between habit and skill. Strictly speaking, they might say, habitual behaviours are always unintelligent. What we described above as cases of intelligent habitual behaviour are in fact cases of skilled performances. My morning commute is not so much a manifestation of my habit of driving to the office as it is a case of my skilfully acting on my knowledge about how to do so. Once the distinction between habit and skill is properly acknowledged, there is no longer a puzzle to be resolved. Habits do not sustain intelligent action.

We do not think, however, that the puzzle is so easily dissolved. This is because the premise that habits and skills can be distinguished in terms of the absence or presence of intelligence is highly questionable. To see how, we can consider Ryle's claim that smoking is a habit in virtue of its being a single-track disposition (Ryle 2009, p. 31). What he means by this is that the habit of smoking manifests itself only in a single, routine form of action: namely, smoking. In reality, however, habitual smoking manifests itself in a vast plurality of other forms, such as in desire, in thoughts, and in

[3] We do not mean to suggest that this tendency is universal. Recently, indeed, many challenges have been raised against the neo-behaviorist view of habits as the enemy of goal-directed projects and pursuance of rational ends (e.g. Bernacer and Murillo 2014; Egbert and Barandiaran 2014; Jan De Houwer 2019; Robbins and Costa 2017).

other behaviours than smoking itself. Habitual smokers are disposed to want to smoke, to think about smoking, and to take whatever measure needed to smoke (Ramírez-Vizcaya and Froese 2019). Depending on the situation, habitual practices are able to take place just as heterogeneously as skilful practices.

One might respond that this only shows that smoking is an inappropriate example of a habit. Ryle introduces the idea that habits never produce intelligent behaviour by indicating the mindless automaticity of habitual action: "When we describe someone as doing something by pure or blind habit, we mean that he does it *automatically* and *without having to mind what he is doing*. He does not exercise care, vigilance, or criticism" (Ryle 2009, p. 30, emphasis added). Based on this, one might insist that, being automatic and mindless, genuine habitual behaviours can never exhibit any form of intelligence.

This response, however, is implausible in two respects. Firstly, even if habits unfold independently of deliberative control, this does not straightforwardly imply that habitual behaviours always exhibit mindless automaticity. People with the habit of providing favourable treatments to insiders, for example, do not do this as a matter of unconscious automatic routine. They can be favouring insiders while being fully aware of it, but this does not always make the act less a matter of habit (Owens 2017, p. 96). Furthermore, some studies indicate that we can effectively inhibit habitual responses by vigilantly monitoring them as they are triggered by environmental cues (Quinn et al. 2010). This should hardly be the case if habitual actions unfolded completely automatically or beyond the scope of mindful awareness.

Secondly, the assumption that automaticity implies the lack of intelligence is questionable.[4] It arguably contradicts, for example, with widely accepted conceptions of animal intelligence. Once we assume that intelligence requires "care, vigilance, or criticism", many would take us to be denying most non-human creatures any form of intelligence despite their amazing capacity to adapt flexibly to their environment. Furthermore, some argue that the most skilful forms of human behaviour typically exhibit a mindless form of intelligence (Dreyfus 2002, 2007, 2013). Even if Ryle was right in saying that habitual behaviours are automatic in nature, it does not follow that they are also unintelligent in nature.

For these reasons, we doubt that the distinction between habit and skill is best understood in terms of the absence or presence of intelligence. Habits cannot just be stipulated as incapable of shaping intelligent behaviour lest we construct an account that radically diverges from our pre-theoretical observations about the topic.[5] If we are correct on this score, the observation that habits seem to base both intelligent and unintelligent behaviours must be taken seriously. Theories of habits, after all, must be able to account both for their ability to sustain intelligent behaviours and their disposition to propagate unintelligent routine behaviours.

3 An Intellectualist Solution to the Puzzle

Modern intellectualists sometimes insist that habits are incapable of guiding any form of intelligent behaviour (Sect. 2). On this view, the execution of intelligent action requires both rational, knowledge-based processes and automatic motor processes (Stanley and Krakauer 2013, p. 8; see also Papineau 2013). The former component is concerned with rationally determining an intelligent course of action; the latter implements the selected action by producing the relevant bodily movement. Habitual behaviour, in contrast, occurs completely automatically without involving knowledge-based processes, and hence is devoid of any mark of intelligence.

Sometimes, however, prominent advocates of intellectualism admit that certain habitual practices do constitute intelligent behaviours and have proposed distinctively intellectualist accounts of this effect. Krakauer (2019) argues that habitual behaviours are guided by propositional knowledge, and that, in this respect, "reflexes and habits retain evidence of a past intelligence that is "baked into them" so that this intelligence does not need to be reassembled every time they are used" (2019, p. 825). Likewise, Stanley (2016) argues defiantly against the idea that "habits are outside the realm of rationality" (2016, p. 1; see also Pavese 2019). He proposes to conceptualise habit as a form of belief about ways to do certain things. For example, drivers from the United States typically have the habit of entering the right lane when pulling out of the driveway. For Stanley, this amounts to the driver having a belief that entering the right lane is a way to safely pull out of the driveway. US drivers enter the right lane when they pull out of the driveway because they want to safely pull out of the driveway and "believe" that this is a reliable way to bring out such outcome. Habitual behaviour is thus no different from any other intentional action based

[4] For similar discussions, see Fridland (2017) and Levy (2017).

[5] If habit is not distinguished from skill in terms of intelligence, how should we understand their difference? We are inclined to say that the distinction is much blurrier than one might think. In fact, some habitual actions like pen-twirling are seemingly skilful in themselves (Silver 2019; see Hutto and Robertson 2020 for discussion). Elaborating the relation between habit and skill, however, is a challenge that lies well beyond the scope of this paper. For more discussion on this issue, see Douskos (2017) and Cappuccio et al. (2020).

on beliefs about ways to execute certain activities in terms of its dependence on intellectual rationality.

An immediate question that can be raised against this view concerns the stubborn and recalcitrant nature of habits. Many empirical researches have demonstrated that reason-based interventions that can affect our thoughtful attitudes, such as explicit beliefs and knowledge, tend to have little effect over habitual behaviours (Wood and Rünger 2016; Wood 2017). One might take this as evidence that habits belong to a fundamentally different kind of category from beliefs. However, Stanley readily admits that habits are often irrationally stubborn, noting that they "cannot be confronted or challenged by the acquisition of knowledge of true propositions" (2016, p. 316). This is why, he suggests, the view "that skills and habits are prior to or at least independent of states like knowledge and belief, which have propositions as their objects" (Stanley 2016, p. 315) is widespread across fields as diverse as social anthropology, cognitive science, and philosophy of mind.

For Stanley, however, these features present no threat to intellectualism. On his view, habits are recalcitrant against counterevidence not because they are non-doxastic states, but because they consist in *settled* or *full beliefs*: that is, beliefs "the contents of which we treat as having probability 1" (2016, p. 319). Since their subjective probability is fixed at 1, they are closed off to the possibility of being revised in light of counterevidence, and we invoke them "automatically and immediately in action, without considering the possibility that they are false" (2016, p. 319). A US driver, for example, cannot simply break with her driving habits after moving into the UK by acknowledging that one is supposed to drive on the left lane in this country. On the intellectualist view, this means that, at one level, US drivers are firm believers of the proposition that entering the right lane is the way to safely navigate traffics.

The intellectualist account of habit is revisionist against the pre-theoretical linguistic practice of distinguishing habits from beliefs, yet it probably involves no internal inconsistency. Its problem rather consists in the fact that there is no strong reason to endorse it in the first place. One might argue that it offers the most "natural" explanation of habitual actions. For example, Stanley writes as follows about cases whereupon our habitual actions and practices collide with our explicit beliefs:

> The right conclusion to draw is […] not that practices are outside the realm of the cognitive. A much more natural description of someone engaged in a practice that is constituted by settled beliefs, and who later learns and accepts counter veiling evidence in a classroom, is that they have contradictory beliefs. *This is vastly more natural a description* than one that posits a non-cognitive or pre-cognitive practice and an unrelated set of theoretical beliefs. (Stanley 2016, p. 320, emphasis added).

However, Stanley does not establish a clear case for his contention that considering skilled habitual behaviours as implicating propositional attitudes is "vastly more natural" than the alternative view.[6] It would certainly be natural to consider habit as a form of belief if habits behaved just like paradigm beliefs in being rationally revisable on the basis of counterevidence. But Stanley himself denies this. Habits are precisely unlike beliefs in that they are typically resistant to change, even when they are recognized by the agent as conflicting with her explicit goals. One does not revise so much as break a habit.

In response, one might admit that the analogy between habits and beliefs is not perfect, but still emphasise that it is *more* natural to conceptualize habit as an exceptional form of belief than to consider it to be some form of non-cognitive structure able to sustain some degree of intelligence. This intuition of naturalness, however, largely depends on one's prior theoretical commitment regarding the nature of mind and intelligence. For someone like Stanley, who is strongly married to an intellectualist conception of the mind, it would surely strike as natural to account for every source of intelligence, including habit, in terms of intellectual or rational operations involving doxastic states. However, many would object that positing sub-personal, unconscious propositional representations is not as natural or intuitive as much as it is deeply theoretically troublesome. Hutto and Myin (2013), for instance, have influentially argued that any account of the mind that posits such cognitive states will need to overcome what they have recently termed "the Hard Problem of Content" (2013, Ch. 4). They claim that there is no clear naturalistic way to explain how basic action-guiding processes can have representational contents at all, and that there is no clear explanatory purchase in positing contentful states to explain certain forms of cognition.

Instead of appealing to the intuition of naturalness, one might develop a case for intellectualism based on a broadly speaking Anscombean consideration. Habits can function as reasons for actions. If someone asks as the US driver trying to enter the right lane in the UK why she is doing that, she can felicitously respond that she is acting out of habit. Drawing on the premise that only propositional contents can function as reasons and thus answers to why-questions, one might take this as evidence that habits implicitly involve some propositional content. Saying she acted out of habit, thus, is only a shorthand for saying that she entered the right lane because she firmly believed that this is a way to safely

[6] For more discussion, see Robertson (ms) "Flowing without knowing? Where and when intellectualism about know-how fails".

pull out of the driveway. Even if answers to why-questions referring to habits can always be reframed in propositional terms, however, we cannot straightforwardly infer from here that the action at issue was guided by implicit doxastic states with the self-same discursive content. As William Hasselberger (2017) makes clear, an "agent's propositional explication of her action may amount, instead, to simply a paraphrase or short-hand explanation: i.e. some discursive synopsis that abstracts from the internal richness of the concrete action and her perspective in so acting" (2017, p. 460). In short, the intellectualist account is probably consistent with the Anscombean consideration presented here, but once again, there is no reason to think that such considerations should favour intellectualism over other alternatives.

In addition, even accepting for the sake of argument that habits are settled beliefs and are therefore rational in virtue of being guided by propositional attitudes, this would not aid us in solving our intelligence puzzle. A solution to the puzzle would need to demonstrate how habitual actions can be flexible and attuned to the intricate nuances of the specific context. But beliefs and propositional contents are far too abstract to determine such specifics. A driving habit to keep a safe following distance, for example, will make the driver control her vehicle in such a way that she can maintain a safe driving distance between her and the car in front. Armed only with a settled belief that keeping a certain kind of distance (e.g. "two seconds behind the vehicle in front") is a way to safely navigate the traffic, however, she would not have sufficient resources to determine how exactly she needs to control her car to keep that distance. Something more than settled beliefs are needed to explain why she is able to control her car in context-sensitive ways to reliably maintain a safe following distance across a diverse range of traffic situations.

This suggests that the first step towards providing an adequate solution to the intelligence puzzle will be to abandon the premise of intellectualism: that is, the identification of intelligence with intellectual rationality. Accordingly, we will seek to resolve the puzzle by tapping into the insights of anti-intellectualist philosophers from two very different philosophical traditions: Hubert Dreyfus and John Dewey.[7]

4 Dreyfus on Intelligent Habits: A Perceptual Account

How can habitual behaviour exhibit intelligence without relying on paradigmatically intellectual operations? Dreyfus outlines an answer by grouping everyday habitual action together with expert skilful performance under the category of *absorbed coping* (Dreyfus 2002, 2007, 2013). Absorbed copings are intelligently organised around their goal, but not because the agent represents it or the means by which to achieve it in her mind. Rather, Drefyus contends that what guides actions of this category is an intuitive sense of "equilibrium" (Dreyfus 2002, p. 378) that accompanies one's perception.

One of his examples is social distancing, that is, the socially and culturally sensitive act of maintaining a conventionally appropriate distance from other people (Dreyfus 2013, p. 23). One might think that this requires us to take note of the relevant factors of the situation, including one's relation with the other person (gender difference, history of relationship, etc.) and the specific arrangement of the situation (confined in an elevator, etc.), evaluate the sociocultural appropriateness of the status quo by comparing it with our existing knowledge about sociocultural norms concerning interpersonal distances, determine what one must do to rectify or improve it, and then shape our action accordingly. Dreyfus claims, however, that we usually manage to navigate the social dynamics of our day to day lives, without accidentally violating social norms, based on perception alone. This is possible because perception is not merely descriptive but is imbued with a kind of normative force. We do not just perceive others as standing in a certain spatial distance from us, but see them, for instance, as standing too close, and this immediately disposes us to step back: that is, to move in ways that would reduce the intuitive feeling of deviation from the norm. Habit sustains intelligent action by shaping perception in action-soliciting ways. Through repeated engagement with a certain form of practice, such as social distancing, our perceptual capacities gradually develop in such a way as to reliably induce appropriate responses across a range of similar situations. This is why, habitual behaviours "can be *purposive* without the agent entertaining a *purpose*" (Dreyfus 2002, p. 380). Call this the *perceptual account* of habitual intelligence.

This account has a strength and a weakness. Its strength is that it can explain how habits make us do unintelligent things under the same single principle. On this account, habitual actions can fail to cohere with or preclude the fulfilment of a personal goal and/or social norms, but even then, habits guide action by shaping perception. When your habit of checking your phone is deeply entrenched, for instance, you see the phone as something to be picked up whenever

[7] Some accounts of habit and intention may imply anti-intellectualist accounts of intelligent habits (see e.g. Kalis and Ometto 2019; Owens 2017; Pollard 2006). Due to spatial limit, we will not pursue this thought here.

it enters sight and regardless of your other goals or interests. In such cases, your habit makes you pursue one and the same course of behaviour almost mechanically in response to one salient aspect of the situation; hence, it can positively get in the way of your other goals and interests. However, this is not because it shapes your behaviour differently from when it leads to intelligent cases of habitual action. Rather, it is only because you have developed a habit through your past experience that does not cohere with—or actively frustrates—your other purposes and interests.

Its weakness concerns what we can describe as its *single-mindedness*. Dreyfus thinks that habits contribute to action by enabling the agent to intuitively recognize a single course of action to be pursued in the situation. Habitual behaviour is framed as a matter of intuiting and taking the required measures to realize the "satisfactory gestalt" (Dreyfus 2002, p. 379) in the current situation. In social distancing, thus, "[w]e are *directly drawn to the appropriate distance* to stand from these people, in this light, in this elevator, with this background noise, and so forth" (Dreyfus 2013, p. 23, emphasis added). Habits sustain intelligence by narrowing down the range of action possibilities intuitively presented to the agent in a given situation to just one possible course of action.

In this respect, Dreyfus' account of habitual action is strikingly similar to Ryle's non-intelligent conception of habit: They both envisage habit as a matter of pursuing a single course of action in response to the current situation. Of course, there are obvious differences between their accounts. For Ryle, habits make us mindlessly pursue a single course of action because they are nothing but "single-track dispositions" that repeatedly generate the exact same sequence of conditioned responses to a single specific type of environmental stimulus. Dreyfus will surely deny that habits respond to sensory stimuli, as opposed to holistic patterns of the environment ("satisfactory gestalt"), or that they can only generate exact replicas of preceding performances.[8] Nevertheless, to the extent that they both depict habitual action as a matter of being passively drawn into a single course of action, we can see them as fellow proponents of *single-minded conceptions* of habitual action.

The single-minded view, however, only applies to a narrow range of what we usually consider to be habitual actions. A wide range of habitual action involves much more than just being "directly drawn to" pursue a single course of action. For example, drivers with the habit of keeping a safe following distance are not just disposed to respond to the perception of a car in front being closer than it should be by placing her foot on the brake pedal. Rather, they are more generally disposed to watchfully observe the distance between her own and other cars while driving. Good drivers do not just passively wait until an action-soliciting perception occurs. Rather, they actively look for the relevant information crucial for safe navigation in the traffic situation, for example, by moving their eyes and heads non-deliberately, drawing on nothing but their habitual responsiveness to traffic situations. Habitual driving involves much more than simply responding to the satisfactory gestalt. It consists rather in a process of constantly taking account of the complexities of the situation and making adjustments to its dynamic flow. Because of the single-minded conception of habitual action, however, Dreyfus cannot acknowledge the vital role of such dynamic engagement with the situation in his account.

A similar point can be made by considering an even simpler case of habitual action. Suppose you always work on your laptop while placing your coffee mug to its left and hence have the habit of reaching and picking it up with your left hand while working. The reaching act exhibits some degree of context-sensitive intelligence since the location of the mug relative to your body is not always exactly the same and the specificities of the arm movement must be adjusted to these specific variations. One might take this to be a purely spontaneous form of habitual yet intelligent action, in which we are directly drawn to execute a specific sequence of motor movements in response to the perception of the mug. This overlooks, however, how the habitual reaching is embedded in a wider situation shaped in part through your prior engagement with it. For example, the mug does not just happen to sit there next to your laptop within your reaching distance. It's there because you have arranged your work environment like this in the beginning and because you always put it back there as you take a sip. Since habitual reaching takes place in quite static situations, the engagement with the environment sustaining the habitual action is much less dynamic compared to the case of driving habits. Nevertheless, once we take a closer look, we can even see from such simple cases that habitual action is not simply a spontaneous response to action-soliciting perception, as it is portrayed by Dreyfus, but rather something that always takes place within the context of an agent's active ongoing engagement with the evolving situation.

5 Dewey on Intelligent Habits: A Pragmatist Solution

In the previous section, we saw that Dreyfus' perceptual account of habitual intelligence has a strength and a weakness. One might take this as showing the limit of anti-intellectualism as such: in particular, that we will only be able to account for the intelligence of a very limited range of actions

[8] See Cappuccio and Wheeler (2012) for more on the significance of the holistic background in Dreyfus' account of "absorbed coping" and "ground-level intelligence".

unless by appealing to intellectual resources. In this section, however, we articulate an alternative form of anti-intellectualism by drawing on John Dewey's pragmatist account of habit developed in his *Human Nature and Conduct* (Dewey 1922, hereafter HNC).[9] Dewey's pragmatic account, we claim, supplements Dreyfus' anti-intellectualist account by providing a richer description of habitually-informed perception (Sect. 5.1), clarifying how intelligent habits consist in interrelated networks of habits (Sect. 5.2), and indicating how the environment can play a cooperative role in the production of habitual actions (Sect. 5.3).

Dewey explicitly denies that habit is a matter of repeatedly generating "a replica of its predecessors" (Ryle 2009, p. 30). Habits generate the same pattern of responses to the same pattern of situations, but they do so by flexibly adapting the concrete details of the action to the specific circumstances. "Repetition," Dewey writes, "is in no sense the essence of habit. […] Habit means special sensitiveness or accessibility to certain classes of stimuli […], rather than bare recurrences of specific acts" (HNC p. 42). In this way, Dewey, echoing Dreyfus, allows that habits can be intelligent in virtue of their involving a sort of sensitivity towards the world. In saying this, however, he does not deny that there is a sense in which habitual behaviours consist of uncontrolled responses to the situation. He assures that "all habits involve mechanization" (HNC p. 70). He draws a distinction between two kinds of habits, routine and intelligent habit, without positing a fundamental difference between their nature.[10] Habitual actions can differ in terms of their degree of intelligence, but they all share the feature of being a non-deliberate or uncontrolled ("mechanical") sequence of bodily movements produced in response to the given situation. His account requires some reconstruction, but it has the resources to provide a promising, alternative approach to the intelligence puzzle, as we shall see below.

5.1 The Perceptual Function of Habits

Like Dreyfus, Dewey claims that habit shapes behaviour by shaping perception. "The medium of habit," as he puts it, "filters all the materials that reaches our perception and thought" (HNC p. 32). They would also agree that habitually-informed perception is not neutral in its relation to action: "Immediate, seemingly instinctive, feeling of direction and end of various lines of behaviour," as Dewey puts it, "is in reality the feeling of habits working below direct consciousness" (HNC p. 32).

However, there are a few important differences in the way they consider the perceptual function of habits. One is that, for Dewey, perception informed by habit does less than determine and motivate a single course of action headed towards the establishment of a satisfactory gestalt. He advances a more nuanced observation that habit gives order to perception and constrains the range of possibilities, which constrain our subsequent courses of both action and thinking. By virtue of having habits, accordingly, we do not always need to consider and evaluate every conceptually possible courses of action to navigate the situation intelligently (HNC p. 172).

Another difference concerns what happens when habits are refined and enriched. Dreyfus suggests that this will make us capable of intuiting and executing the singly most intelligent course of action immediately in all relevant situations. In contrast, Dewey argues that those with refined and enriched sets of habits will perceive the situation as presenting a wider range of possibilities than those without. He writes: "The more numerous our habits the wider the field of possible observation and foretelling. The more flexible they are, the more refined is perception in its discrimination and the more delicate the presentation evoked by imagination" (HNC pp. 175–6). In short, Dreyfus suggests that habits serve to narrow down possible courses of action in a given situation to just one; Dewey notes to the contrary that they can serve to enrich the range of possibilities one encounters in perception (Miyahara et al. 2020).

We suggest that Dewey's proposal applies better to the actual phenomenon of habitually-developed perception. When you first visited your campus (or workplace), for example, you had no intuitive sense of orientation. You had no idea which path leads to where and hence every corner appeared equally meaningless. Soon you start to build a few habits for navigating the campus, for example, the habit of walking from the bus stop to your office by taking the same route. This is accompanied by some change to your perception: you come to see the particular path you always use as the path leading to your office. All the other paths, however, remain equally meaningless such that you have no idea where people diverting from your habitual route are heading. After a while, you develop a more heterogenous

[9] For existing attempts to revive Dewey's concept of habit in contemporary research, see Cohen (2007) and Turner and Cacciatori (2016). While these works explore the contemporary relevance of Dewey in the context of routine research in the organization sciences, we aim to do so in the context of philosophy of mind and action, or more specifically, in order to propose an answer to the intelligence puzzle. We thank the anonymous reviewer for pointing us to these works of which we were previously unaware.

[10] Turner and Cacciatori (2016) draws a distinction between *automatic* and *skilful habit*. They further distinguish *infused* from *contested habit* based on how it relates with deliberation. The last two categories, however, seem to describe types of relationships that can hold between habits and deliberations, rather than different types of habits as such. Assessing how these distinctions relate to Dewey's distinction between intelligent and routine habit is an issue lying beyond the scope of this paper.

group of habits, including navigation habits having to do with your frequent visit to the library, the administration building, and the coffee shop, and you come to see more paths on campus meaningfully: You immediately see which paths to take when you need to visit one of your habitual destinations; furthermore, people walking on campus can now appear to you as heading towards the library, the admin building, the coffee shop, etc. This example suggests two important observations regarding habit development and its relation to perception: first, developing a habit is often a matter of acquiring a diverse range of habits, rather than just refining the immediate sensorimotor link between perception and action; second, the development of such diverse habits allows us to perceive the world in enriched terms, rather than intuit a singly possible course of action.

One might think that the fact that habits enrich and refine our perception in this way is nothing more than a commonplace observation, which Dewey would say is "universally recognized in the concrete" (HNC p. 176). These commonplaces, however, do not have a place in Dreyfus' single-minded account of everyday coping, which holds that in habitual performance: "One's body is simply solicited by the situation to get into equilibrium with it" (Dreyfus 2002, p. 378). For Dreyfus, being presented with a variety of possibilities is a sign that we have not developed our habits well enough. This view is informed by the premise that pursuing a single course of action out of many possibilities is only possible by virtue of some non-habitual, intellectual operation. As we see next, however, there are reasons to question this premise as well.

5.2 Interrelated Network of Habits

If Dewey is right in saying that habitually-informed perception presents us with a variety of action possibilities (or "various lines of behaviour"), then how exactly are we supposed to determine the course of action we are actually going to undertake? One might argue that habits always require some form of intellectual decision-making: they constrain the range of possible actions, but one must always choose the most appropriate among them deliberately to adjust well to the given situation.

Dewey, however, considers it a "myth" to posit some form of non-habitual, intellectual operation that makes habitual action intelligent (HNC p. 176). Our course of action is not determined by something separate from the habitual process, "a separate knower" (HNC p. 176). Rather, on his view: "Concrete habits do all the perceiving, recognising, imagining, recalling, judging, conceiving and reasoning that is done" (HNC p. 177). For example, consider an experienced driver who always commutes by car enters and prepares to turn right at an intersection. She controls the car spontaneously without thinking, but then sees a car approaching the intersection from the other end. She can either press the gas pedal to complete the turn swiftly or press the brake pedal to stop the car and wait until the approaching car passes. Whichever option she decides to pursue, in this case, her flexible response to the situation is seemingly based on some form of explicit decision-making.[11]

Importantly, however, this does not mean that she chooses a course of action by deliberately comparing the costs and benefits of the two options. One *can* engage in this form of detached intellectual analysis to make the decision, but doing so is quite unnecessary for an experienced driver navigating a familiar environment. It is more likely that she makes the explicit decision based on her driving habits. One with a driving habit on the safer side, for example, will immediately decide to press the brake pedal without comparing it with the other option, even if she was aware of the possibility of navigating the situation in a more reckless manner. Habitual acts of driving, thus, exhibit the level of intelligence they do partly because driving habits consist of an interrelated network of habitual dispositions, including those concerning perception, action, and also thinking. In fact, experienced drivers in real life will draw on a much richer network of habits including more or less communal ones shared among a range of drivers from the same community (e.g., the habit of turning the winker on before changing lanes, etc.) and more or less individualised ones that have been cultivated through their specific history of driving (e.g., the habit of taking the slow-driving lane, etc.).

What this suggests is that habit taken as a singular can be nothing more than a physiological mechanism set up to respond to a pre-determined cue (HNC p. 70). As most everyday activities consist in repeated patterns of perception, action, and thinking, however, the corresponding habits typically develop over time to work in coordination to promote intelligent adjustments to varying situations. More specifically, this means that when we are presented in perception with various possibilities, we can already be disposed to select one of them on a purely habitual basis. Accordingly, Dewey claims that habitual behaviour exhibits intelligent organization not because the operation of habit is overseen by some intellectual process, but partly because habits tend to develop in such a way as to function as a holistic network of perception, action, and thinking.[12]

[11] As an anonymous reviewer indicated, there are also cases in which we abstract information from the immediate situation and share it in propositional form not necessarily in order to resolve a problem here and now. Determining how Dewey accommodates such cases and the validity of his account in this regard lies beyond the scope of this paper.

[12] Dreyfus does not explicitly discuss the holistic organization of habits, but given his Heideggerian background, he may concur with the analysis being presented here. However, we can note an important distinction between different holistic approaches. Heideggerian

5.3 Dynamical Cooperation with the Environment

Another notable feature of Dewey's account is that it strongly emphasises the role of the environment. One might think that the role of the environment in habitual action is simply to provide triggering cues associated with specific responses; accordingly, habitual actions are triggered by the external environment, but are ultimately generated from inside the agent's mind.[13] In contrast, Dewey contends that habitual action depends equally on intra- and extra-personal factors: habits require "the cooperation of organism and environment" (HNC p. 14) where the latter's contribution is no less significant than that of the former.

To see what this means in concrete, we describe two different ways in which the environment contributes to the shaping of habitual behaviour. First, the environment serves to constrain the range of possibilities available in habitually-informed perception. The driving habits that make one see a certain range of action possibilities while driving in a town, for example, would not present one with the same range of possibilities if one were driving an empty motorway. If the perceived possibilities were determined solely by internal qualities of the individual, they would be unhelpful in making our actions intelligently adjusted to the current situation. There would be no guarantee that we will respond appropriately to the situation by pursuing any of the suggested lines of behaviour. It is precisely because our perception is determined both by individual qualities and the given environment that our perceptually-guided actions tend to be more or less adjusted to the situation here and now.

Second, it actively guides the dynamic unfolding of habitual behaviours. Internalist notions of habitual action as something generated inside the brain-bound mind in response to perceived environmental cues is overly simplistic. Habitual actions often unfold over space and time as our perception of the situation change dynamically along the course. They are thus generated through a process of constant negotiation with the dynamical flux of an ever-changing environment. One might be cued to do one thing at one point in time, but then anything can happen the next moment to make us pursue a slightly different line of behaviour. But this doesn't mean that the environment constantly interferes with the habitual agent to lead her astray. Rather, we are often able to adapt flexibly to the situation precisely by being provided with these interferences and responding to them. "The truth is," as Dewey puts it, "that in every waking moment, the complete balance of the organism and its environment is constantly interfered with and as constantly restored" (HNC pp. 178–9).

The interference need not be anything dramatic. Suppose you are driving home. You are about to cross an intersection and so you take a glance at the traffic light as a matter of habit. If the light stays green, you will keep driving or stay on your original course of action. If the light turns yellow, you must do something to recover a balanced relation with the situation. Depending on your driving habit (and other parameters of the situation), you may place your foot on the brake pedal to stop or press hard on the gas pedal to get through the intersection in time. Either way, you will once again be able to pursue a course of action that allows you to achieve your goal of safely reaching home.

In other words, the environment contributes to habitual action not so much by just triggering a specific response, but rather by guiding the action as it unfolds over time by constantly presenting it with scaffoldings. While you are engaged in the action, you might feel unexpected occurrences in the environment as simply getting in the way of your performance. For instance, you might feel that your driving would have flowed much more smoothly without the traffic lights that have made you stop at every intersection. In reality, however, you can navigate the traffic safely without constantly engaging in deliberate thinking only with the help of such sociocultural scaffoldings:

> Civilized activity is too complex to be carried on without smoothed roads. It requires signals and junction points; traffic authorities and means of easy and rapid transportation. It demands a congenial, antecedently prepared environment. Without it, civilization would relapse into barbarism in spite of the best of subjective intention and internal good disposition. (HNC p. 20)

Individual driving habits play an indispensable role in conferring intelligent organization to our act of driving, but the environment plays an equally important role in this respect. Accordingly, we can fail to navigate the traffic safely if we

Footnote 12 (continued)

holism is primarily ontological, elucidating how something can be what it is only against a background of relevant practices. For example, driving habits presuppose a social and technological environment in which people drive cars abiding by traffic rules and hence cannot be reduced to whatever internal processes that sustain our habitual driving behaviours. Our point is more directly about the nature of mind and action. We appeal to the holistic organization of habits to explain how we end up pursuing a single course of action in habitual performance. In contrast, Dreyfus tells a single-minded story when it comes to this question without mentioning the role of anything like the dynamical cooperation of interconnected habits. We thank an anonymous reviewer for pressing us to clarify this issue.

[13] Contemporary habit research acknowledges the significance of the environment in habit formation, habit maintenance, and habit change, yet also tend to endorse the internalist view described here. Wood and Rünger (2016) notes, for example: "Once habits form, perception of the relevant context cues automatically activates the *mental representations* of the habitual response" (p. 292, emphasis added). Assessing how this assumption of internalism might be affecting the research is an important issue that lies beyond the scope of this paper. We thank an anonymous reviewer for pressing us to clarify this point.

lack the right kind of driving habits, but also if the environment is not well-maintained: for example, if the traffic lights were turned off due to power shortage. To rephrase the point in slightly different terms, on Dewey's view, the environment contributes to habitual behaviour by providing both the problem and part of the solution: It is what we need to respond and adjust ourselves to through our habitual performance, but it is also what enables us to adjust flexibly to the situation solely on habitual bases.[14]

5.4 Unintelligent Habits

Dewey accounts for the intelligence of habitual action by pointing to features of habit that are largely neglected in contemporary discussions. On his view, habits promote intelligent behaviour by constraining the range of possible actions at the level of perception, by forming an interrelated network among themselves, and by using environmental scaffoldings. By virtue of all these features, they can sustain intelligence without having any form of intellectual process built into them.

The intelligence puzzle, however, also requires that we account for habits' disposition to produce unintelligent routine behaviours. Dewey would meet this challenge by pointing to internal and external factors that hinder habits from guiding intelligent behaviour. On the one hand, a habit may fail to produce intelligent behaviour by working in isolation, that is, by failing to cooperate with other groups of habits. This may result from some unfortunate neurological accident, but it can also result from reinforcement learning or the individual's history of repeated engagement with a practice. On the other hand, a habit can also lead to unintelligent routine behaviour because of the way in which the environment is set up. These two factors are often complicit with one another. Suppose you have a bad phone-using habit: you cannot help checking your phone every time you see it. From the Deweyan perspective, this suggests that this habit is strongly reinforced through your past interaction with your phone without being integrated with your other habits very well. But it also suggests that you are living in an environment in which this single course of action is too easily available and hence reinforced over time: for example, the phone is already designed to catch your attention by popping up notifications and making sounds, and you probably always keep your phone within an arm's length.

In short, for Dewey, habits can generate unintelligent responses not simply because they consist of uncontrolled, mechanized processes. This is surely an indispensable element of the account, but more important is that habits can promote intelligent behaviour only in cooperation with other habits and with the environment. Neither the internal network of habits, nor the external environment is designed to deliver such results from the beginning. They are only shaped that way through the history of human activity, both individual and communal, and hence whether or not our habits promote intelligence is in part up to how we shape and design our own living environments.[15] Of course, they can be compromised by inevitable accidents beyond the reach of human control: We might have a stroke and immediately lose our individual networks of habits shaped through years of engagement with some habitual practice; a natural disaster may destroy the whole human environment in the area shaped through decades or centuries of human activity. Either way, that habit tends to generate unintelligent response is not so much a metaphysical statement about its fixed nature as a practical problem to be solved. Habits can be both intelligent and unintelligent. Whether or not they will depend largely on how we shape ourselves and our living environment through our everyday lives.[16]

6 Conclusion

Habits play two roles which do not seem to cohere with one another in shaping practical life: They seem to make us undertake routine behaviours that preclude intelligent adjustment to the situation; but they also seem to promote behaviours that are intelligently adjusted to the situation despite their independence from reflective control. Philosophical theories of habits must be able to account for this apparent incoherence. We considered four different approaches to this puzzle and argued that Dewey's pragmatist approach is most illuminating. The pragmatist account appeals to three features of habits mostly overlooked in other approaches: First, habits guide behaviour by shaping perception. Second, they sustain intelligence by forming interrelated networks among themselves. Third, they promote intelligent behaviour

[14] We do not mean to suggest that Dreyfus and Dewey should be construed as providing conflicting definitions of habitual action. Indeed, a reviewer helpfully drew our attention to the deep consonance between Dreyfus' notion of an organism being enabled to establish and maintain a maximal grip upon its environment, on the one hand, and Dewey's notion of inquiry facilitating a continual balance between organism and its environment, on the other.

[15] Determining how interventions into the extra-personal situation can contribute to the formation and maintenance of intelligent habits is an issue that requires much empirical research (see Wood 2017 for a review).

[16] This suggests that, although habits are *synchronically* uncontrolled, we control them *diachronically* by making interventions in the environment and in our lives. Sometimes this form of control might manifest itself as a conscious attempt to "break the habit". As an anonymous reviewer pointed out, one might—echoing Peirce—say that truly intelligent creatures have habits of habit-formation. For more discussion, see Legg and Black (2020).

by using environmental scaffoldings. Conversely, they can produce unintelligent behaviours both when the internal network is spoiled and when the external environment is disrupted. The pragmatist approach is uniquely suited to account for habitual intelligence because it avoids imposing a fixed, metaphysical relationship between habit and intelligence.

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