



Skill and Sensitivity to Reasons

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Accepted: 5 November 2020 / Published online: 6 January 2021
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Abstract

In this paper I explore the relationship between skill and sensitivity to reasons for action. I want to know to what degree we can explain the fact that the skilled agent is very good at performing a cluster of actions within some domain in terms of the fact that the skilled agent has a refined sensitivity to the reasons for action common to the cluster. The picture is a little bit complex. While skill can be partially explained by sensitivity to reasons – a sensitivity often produced by rational practice – the skilled human agent, because imperfect, must navigate a trade-off between full sensitivity and a capacity to succeed.

1 Introduction

The skilled agent is very good at performing a cluster of actions within some domain. For Novak Djokovic, the domain is tennis. For Sharon Van Etten, it is writing and performing songs. For Andrea Mowry, it is writing knitting patterns. In each case, the agent is very good at performing a range of actions, and this range is relatively unique to the domain.

In virtue of what does an agent develop a facility with a particular range of actions? In this paper I explore the following thought. The skilled agent is very good at performing a cluster of actions within some domain in part because she has a refined sensitivity to the reasons for action common to the cluster. This is a thought that links excellence in action performance with excellence in practical rationality.

Of course there are many ways action performance could be related to rationality. The relation I am here exploring is roughly one of explanation between two broad (sets of) capacities. The idea is that the agent's sensitivity to reasons helps to explain (perhaps because it enables, or perhaps because it constitutes, or perhaps because it causes) the agent's skill.¹ The capacities that explain skill would thus emerge as rational, and rationally structured, capacities.

¹This is consistent with the fact that bodily changes – increases in strength or speed or flexibility – can enhance one's capacity for reason sensitivity by enhancing the space and sophistication of the reasons available to one.

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Others have explored connections between skill and rationality from different angles (Fridland 2017, 2019, Small 2014, 2019, Stanley 2015). But it can be said that interest in skill within philosophy is very recent. Accordingly, our understanding of the connections between skill and rationality remains inchoate. My contribution here is minor. I argue that while skill can be partially explained by sensitivity to reasons – a sensitivity often produced by rational practice – the skilled human agent, because imperfect, must navigate a trade-off between full sensitivity and a capacity to succeed. Navigation of this trade-off means that skilled agents must, if they wish to push their skill to the limit, find ways to depart from reasons-sensitivity, relying sometimes on tricks.

2 Action Domains

I begin with a word about action clusters. Agents can be skilled at single actions. I once spent a week of my childhood perfecting a single dance move. By the end of the week, I was a bit more skilled at the move than at the beginning.

More often agents develop skills not at single actions, but at clusters of action, where these clusters hang together in interesting ways. I call these clusters *action domains*. I have developed some thoughts about action domains elsewhere (Shepherd 2021). Here I offer a few comments regarding intuitive examples.

Think of basketball, or ballet, or archery, or sales, or coding, or chess, or dress design, or knee surgery. In all cases we have a cluster of action-types that hang together thanks to certain proprietary standards for success, and proprietary goals, and relationships between goals, means, familiar circumstances, and more. Basketball involves action-types that, in isolation, might impress one's children. Here are four action-types: dribbling a ball between one's legs, leaning one way and adjusting one's feet surreptitiously to enable a quick change of direction, stopping quickly and rising up into a motion apt for shooting a basketball, locating a far-off target in the air and throwing a ball towards the target. One could practice these action-types individually, but the rules and goals of basketball imbue them with interesting relationships to each other. One practices not only various action-types, but one practices how to sequence these action-types into patterns of behavior that enable goal achievement in different circumstances.

An action domain will often generate a probabilistic structure. Some circumstances will be more common than others. If you are training to be a neurosurgeon, you can expect to encounter the surgical room, and to encounter complications specific to brains, fairly often. Some goals will be more frequently satisfiable, and some abilities will need to be exercised more often than others. If you are training to be a guitarist, practicing your scales is smart, and performing exercises that increase the agility of your fingers makes sense. If you are training to be a hockey player, your fingers don't matter much. You should focus on abilities that contribute to fast, agile ice skating.

An action domain possesses an internal structure, and agents who develop skill in a particular domain develop familiarity with this structure. Their paths through the action space become more efficient, more elegant, as they learn new ways to behave, and to deal with difficulties, and to succeed.

What I am curious about is how much we can explain the skilled agent's propensity to succeed in her domain – her propensity to behave in a skilled way – by reference to reasons-sensitivity.

But wait. What is reasons-sensitivity?

3 Sensitivity to Reasons as Reason-Handling

Step back from the prior question. What are reasons for action? I have in mind here what some call *normative* reasons – that is, not factors that actually motivate agents (although they may do), but factors that provide rational backing to what they do, factors that count in rational favor (to some degree) of some course of action.

The literature offers a range of proposals regarding what a normative reason might be (e.g., Kearns and Star 2009, Setiya 2014, Way 2017, Dancy 2018). I will not endorse any particular proposal here, but consider Dancy's for illustration.

Dancy (2018) argues that reasons should be understood as three-place relations between some consideration (some state of affairs, or fact, say), an agent, and a mode of response (some way of acting, e.g.). What a reason does is to link the fact, agent, and mode of response via a relation of favoring. Some consideration favors, for some agent, a particular mode of response. One might disagree that a reason should be understood in exactly this way. But one can recover from many different accounts the basic idea that a reason is something like a consideration capable of indicating that in the situation at hand, certain modes of response are normatively better than others.

Sensitivity to reasons involves the coordination of a wide range of perceptual, cognitive, and volitional capacities in human beings. And there are various ways humans could be understood as displaying sensitivity to reasons. By way of elucidation, consider a rough distinction between behavioral, psychological, and cognitive sensitivity.

An agent is behaviorally sensitive to reasons (within some domain) if, across wide enough differences in circumstance, her behavior reliably conforms to the modes of behavior recommended by the reasons (within some domain). Of course an agent need not be perfectly reliable, and on occasion its behavior may be partially rational, or may conform to modes of behavior only weakly recommended by reasons. And we can imagine an agent with fragmented rationality in that the agent is sensitive to a particular reason or class of reasons and completely insensitive to other reasons. Hurley (2003) argues that some non-human animals are like this: they display 'islands of practical rationality.'

An agent is psychologically sensitive to reasons (within some domain) if, across wide enough differences in circumstance, the agent's key psychological capacities – e.g., perception, emotion, attention – reliably track, in manners appropriate to the function of these capacities, the reasons that are available. An agent need not track all reasons at all times, of course, and the way that perception tracks reasons may be different than the way imagination or emotion does. We might expect perception to assist in recognition of relevant objects, imagination to assist in the suggestion of patterns of action relevant to the circumstances, emotion to track the relevance of ongoing circumstance to the agent's values, needs, and goals, and so on. Behavioral and psychological sensitivity come apart, but in agents like humans they are nested in an important way. Psychological sensitivity drives and guides behavioral sensitivity.

Cognitive sensitivity is further nested within psychological sensitivity. An agent is cognitively sensitive to reasons (within some domain) if she tends to recognize or conceptualize available reasons as reasons – as considerations that recommend certain modes of behavior – and if this conceptualization tends to drive and guide her reasoning and planning, as well as her behavior.² Now the agent need not have mastery with the concepts used to conceptualize some fact as a reason for action. But the agent does need some minimal level of competence with the relevant concepts, and with their relationship to forms of action, to qualify as able to conceptualize the reason for what it is.

My primary focus in this paper is on the operation of psychological and cognitive modes of sensitivity. Let us call the operation of the processes and mechanisms that undergird psychological and cognitive sensitivity the operation of reason-handling. Reason-handling decomposes into a series of operations that we can describe at a certain level of abstraction.³ I propose we break reason-handling up into five phases.

Phase one we might call reason finding. This is a search phase, based upon the sensible idea that complex agents like human beings cannot cognize every consideration relevant to behavior at the snap of a finger. Instead, we must sometimes search – via perception, or in memory or imagination – for considerations relevant to what we are doing, or to what we want to do.

A second phase we can call reason recognition. This is the moment of cognizing a consideration for what it is – something that favors some mode of response, or several.

The third phase we call reason assessment. This phase involves sorting through the reasons already recognized, in order to determine which reason or combination of reasons might be strongest, and why. Obviously work at this phase often engages further work at the first and second phases. Sometimes assessment leads to further searching and recognition.

The fourth phase is the close of assessment – reason response. One typically responds to reasons by committing to (intending to execute, if you like) some plan for action (either immediately or in the future) that is coherently related to the reasons (see Shepherd 2015a). It is possible, and sometimes rational, to respond by suspending deliberation, or changing course entirely.

These four phases together constitute the bulk of what we commonly call deliberation. But it should be said that rational agents do not need to progress through these phases explicitly, or with any particular effort, or by way of any particular intentional mental actions – even though sometimes they do. It is possible for an agent to find, recognize, assess, and commit to some reason quickly, by default even, transitioning from perception to action without much fuss.

The fifth phase is reason implementation. Sometimes this is a relatively straightforward matter of execution. But this phase may – I think, commonly does – put one back through the first four phases, depending on the case. Usually when this happens it is because one needs to find the best ways to implement faulty or unspecified elements of one's plan for action, or to correct for mistakes made.

² Some forms of conceptualization are slower and more laborious, and leave imprints on conscious experience, while other forms of conceptualization are relatively rapid, and involve relatively implicit (or non-conscious) perception-to-action cycles. It is an open question how to draw the line between mere psychological sensitivity to some consideration and cognitive sensitivity.

³ This is not offered as a rigorous model of deliberation, but rather an intuitive characterization of familiar operations that adds some descriptive heft to the ways agents may engage reasons in various action contexts.

I speak of these five phases together as ways of handling reasons. In the best cases one does well at each phase, and the result is successful, rational, skilled action. But of course one can be better or worse at any of the phases, and often excellence at one phase will compensate for deficiencies at another. The abstract goal here is to progress from the first phase to action execution – to engage in state transitions that lead one from a state permitting several potential actions to a state of action completion – in a way that supports successful action.

4 The Reasons-Sensitive Ideal

There is no doubt that humans do handle reasons, along all of the phases I have suggested. Sometimes this is a learned sensitivity to various perceptual or sensory cues, and operates more or less automatically. Sometimes this depends upon conceptually structured cognition, and depends upon recognition of and response to reasons as reasons. The question is to what extent this explains skilled action execution. To what extent is a cognitive sensitivity to reasons – which we can further break down into a facility with finding, recognizing, assessing, responding to, and implementing reasons – responsible for a skilled agent’s actual performance?⁴ Is skilled action execution not, in fact, more to do with automatizing behavioral routines, and thus less to do with attempts to discover and implement one’s reasons in the moment? Is automaticity at odds with reasons-sensitivity?

Consider a *reasons-sensitive ideal*, according to which cognitive sensitivity to reasons does the bulk of the explanatory work for skilled action. Development of skill at some domain would thus be development of rationality with respect to the reasons familiar within that domain (assuming, note, that development of reasons-sensitivity and rationality go more or less hand-in-hand). And the skilled agent’s achievements would be praiseworthy in part as rational achievements.

There is a way of portraying the skilled agent that makes this ideal seem attractive. The skilled agent becomes the genius, at least within some particular domain. Consider how David Foster Wallace (famously) portrays Roger Federer. The passage is long, but worth reading in any case, so here it is.

It’s 2-1 Nadal in the final’s second set, and he’s serving. Federer won the first set at love but then flagged a bit, as he sometimes does, and is quickly down a break. Now, on Nadal’s ad, there’s a 16-stroke point. Nadal is serving a lot faster than he did in Paris, and this one’s down the center. Federer floats a soft forehand high over the net, which he can get away with because Nadal never comes in behind his serve. The Spaniard now hits a characteristically heavy topspin forehand deep to Federer’s backhand; Federer comes back with an even heavier topspin backhand, almost a clay-court shot. It’s unexpected and backs Nadal up, slightly, and his response is a low hard short ball that lands just past the service line’s T on

⁴ Note again that the claim that reason-sensitivity partially explains an agent’s skill is consistent with the thought that as skill is developed, the range of reasons available to an agent changes, and that non-conceptual action-guidance capacities may assist the agent’s overall facility with the cognitive tracking of available reasons. (I’m thinking, for example, of the ways that learning might assist perception, imagination and attention in expert performers.)

Federer's forehand side. Against most other opponents, Federer could simply end the point on a ball like this, but one reason Nadal gives him trouble is that he's faster than the others, can get to stuff they can't; and so Federer here just hits a flat, medium-hard cross-court forehand, going not for a winner but for a low, shallowly angled ball that forces Nadal up and out to the deuce side, his backhand. Nadal, on the run, backhands it hard down the line to Federer's backhand; Federer slices it right back down the same line, slow and floaty with backspin, making Nadal come back to the same spot. Nadal slices the ball right back — three shots now all down the same line — and Federer slices the ball back to the same spot yet again, this one even slower and floatier, and Nadal gets planted and hits a big two-hander back down the same line — it's like Nadal's camped out now on his deuce side; he's no longer moving all the way back to the baseline's center between shots; Federer's hypnotized him a little. Federer now hits a very hard, deep topspin backhand, the kind that hisses, to a point just slightly on the ad side of Nadal's baseline, which Nadal gets to and forehands cross-court; and Federer responds with an even harder, heavier cross-court backhand, baseline-deep and moving so fast that Nadal has to hit the forehand off his back foot and then scramble to get back to center as the shot lands maybe two feet short on Federer's backhand side again. Federer steps to this ball and now hits a totally different cross-court backhand, this one much shorter and sharper-angled, an angle no one would anticipate, and so heavy and blurred with topspin that it lands shallow and just inside the sideline and takes off hard after the bounce, and Nadal can't move in to cut it off and can't get to it laterally along the baseline, because of all the angle and topspin — end of point. It's a spectacular winner, a Federer Moment; but watching it live, you can see that it's also a winner that Federer started setting up four or even five shots earlier. Everything after that first down-the-line slice was designed by the Swiss to maneuver Nadal and lull him and then disrupt his rhythm and balance and open up that last, unimaginable angle . . .⁵

To hear Foster Wallace tell it, Federer's success is largely a matter of his seeing the Matrix, so to speak — largely a matter of his plotting (and then executing) a complicated and difficult plan, a plan perfectly constructed to defeat his opponent in the present circumstances. Of course Foster Wallace is not committing to a particular story about how Federer set up the plan and the winning stroke. He is not trying to explain the structure of Federer's skill in any psychological sense. So I don't want to attribute intentions to him that he lacks. My point is that the reader can easily interpret what is going on here in terms of the reasons-sensitive ideal. Federer here emerges triumphant not simply because of his execution, but because his execution is legitimately reason implementation — the last stage of a series of phases of reason handling. Federer's planning and execution was conducted in full congress with the relevant reasons. What Federer did was to handle the reasons well. Federer out-planned Nadal. He read the rational structure of the point, and Nadal did not.

⁵ From 'Federer as Religious Experience,' available on-line at <http://www.nytimes.com/2006/08/20/sports/playmagazine/20federer.html>, accessed March 8, 2018.

I can't speak to the accuracy of this line of thought regarding a point between Federer and Nadal. But regarding skill in general: how accurate is this?

5 How Human Agents Depart from the Ideal

One tradition of thinking about skill will reject the reasons-sensitive ideal. This tradition's idea is that the skilled agent tunes her capacities through practice until their coordinated production of behavior flows automatically. The more practice-driven automaticity we find in an agent, the more we should expect to see high levels of skill (Fitts and Posner 1967, Anderson 1982, Dreyfus and Dreyfus 1986).

Automaticity theories of skill are motivated in part by the thought that processes that have not become automatic through practice will be processes associated with higher consumption of limited processing resources, and with slower processing speeds.⁶ Human agents are limited in certain ways, and one way to overcome these limitations is to automate as much as possible.

That's true as far as it goes, but a newer family of empirical approaches to skill recognizes that automaticity cannot explain the full range of skilled behavior of which human agents are capable (Ericsson 2006, Fridland 2014, Shepherd 2015b, Christensen et al. 2016, Montero 2016), even if automaticity remains in some ways important (see Stanley and Krakauer 2013, Mylopoulos and Pacherie 2017). There is a lot of work being done in working through the details of studies from sport psychology, sensorimotor adaptation, and cognitive control. But here is a very general reason to doubt that skills can be explained entirely in terms of practice-driven automaticity.⁷ Practice-driven automaticity makes rigid transitions between states – paradigmatically, transitions between stimulus and response. Many action domains, however, present the agent with a wide range of subtly different circumstances. And in many action domains, conditions on the ground may change the ways that a stimulus should be registered, or may change the kind of response that would best suit the agent's goals. The action space is not only too complex in many cases, the relationships between states and goal-achievement are too fluid, too holistic, to enable the kind of learning that could lead to automatization. Whenever one renders a process automatic, one should hope that the loss of flexibility will be outweighed by the gains in processing speed and resource consumption. For very complex action domains, this will sometimes be a foolhardy hope.

We are here tracking a general tension between automatization and reason sensitivity. Automatization makes rigid the joints of processes and behavioral sequences. If these joints remain fluid, they are easier to manipulate, to detach, to recombine with other modes of behavior. For familiar reasons to do with the recombinatorial structure of

⁶ A referee notes that a primary motivation for Dreyfus 'is not the idea of conserving cognitive resources, from the third-personal standpoint of cognitive psychology. Instead, the view is rooted in the first-person phenomenology of the acquisition of skill and ascending to higher levels of mastery and expertise. A key strength is (supposedly) that this view does better justice to our lived experience of gaining and exercising practical expertise.' This is right, but note that psychologists invoke automaticity for different reasons, and also note that cognitive control views of skill and expertise also wish to capture the phenomenology of skill and would argue that their view does better than Dreyfus.

⁷ This idea can be found in others working on these questions. See Christensen et al. (2019), Cushman and Morris (2015).

concepts, this is especially true of processes that are driven by capacities for conceptual cognition. The rationale for automatization is that this is expensive – either computationally, or temporally, or energetically. So the agent has good reason to automatize, provided the sequence one renders automatic is not a sequence better left fluid.⁸

I have been speaking as though the agent has a choice about the automatization of behavioral sequences. But of course her choices are limited. Learning processes render associations between items in a behavioral sequence more automatic according to their own rules. They run – agents learn – more or less constantly (Collins and Frank 2013). So task-set structures, the quality of behavioral sequence connections, the viability of various state-transitions leading to goal achievement: these things are being constantly assessed by learning and control mechanisms, leading to the pruning of an agent's behavioral space. And in principle, any number of processes, or state-transition sequences, may be rendered more automatic.

Consider, for example, a three-step tree of behavioral options. The agent is hungry. The first step involves two options: find the kitchen or find the local ramblas. If the agent selects the kitchen, further options will present themselves at the second step: find the pantry, find the refrigerator, etc. The same is true of the ramblas: find the tapas place, find the kebab place, etc. Still further options will be available at the third step, involving the specific food the agent winds up eating. Now say that we associate the specific foods with reward-levels for the agent. And we ask: how will our agent make her way through this behavioral space?

She may do so via a computationally expensive modelling process, whereby she simulates what is best to do at each stage, comparing costs and benefits along the way. Or she may, if she has done this enough, proceed immediately from hunger to some specific option at the third step. Perhaps a connection from hunger to kebab place has become fairly automatized for her. This will be much less expensive computationally. But it will be rigid.

Note that I am not claiming that a relatively automatized process is incapable, in virtue of its automaticity, of supporting an event we would classify as recognition of, or response to, a reason for action. I see no good reason to deny that relatively automatic processes may qualify as relatively automatic recognition of reasons.⁹ But it does seem

⁸ That said, and with thanks to a referee, it is worth registering the possibility that skilled action, in particular, may include resources for partial mitigation of this tension. The reason is that, as recent views of skill have emphasized (see especially Mylopoulos and Pacherie 2017, Pacherie and Mylopoulos 2020), skilled agents develop refined representations of action, and refined models of the action domains in which their skill is exercised. These refined representations and models are plausibly connected to refined reason-sensitivity. Indeed, Pacherie and Mylopoulos have very recently proposed that these representational achievements might enable 'skilled performers to exert cognitive control over their actions at both the decision and implementation levels' (2020, 13). So the very learning that produces relative automaticity might, in skilled agents, also produce refined reason-sensitivity and fluidity in action control. Whether these refinements are enough to undermine the points I develop in this paper will depend, it seems to me, on growth in our understanding of the role of these representational refinements, and of cognitive control, in skilled action.

⁹ After this paper was accepted, but before it went to press, I came into contact with an interesting proposal by Amaya (2020). He develops a notion of acting for a reason that appeals to dispositions, and in particular, to the notion of a reasonable disposition the propensity of which to track reasons is a part of the explanation for how it was acquired. What he calls reasonable dispositions I call heuristics and tricks – or at least the notions occupy a similar space. I think Amaya's view and the one articulated here would experience friction surrounding cases in which, while tracking the better option requires full reasons-sensitivity, the agent relies upon a sub-optimal but generally reasonable disposition. Sorting through this is a task for another region in spacetime.

plausible to think that processes that have undergone automatization will less frequently qualify as recognizing the reason for what it is in the relevant circumstance. The rationale is that reasons for action often bear subtle relationships to particular characteristics of specific situations. But automatized processes tend to be triggered by relatively stereotyped considerations – stimuli that occur repeatedly enough to drive the automatization in the first place. So automatized responses may often more plausibly qualify as a kind of psychological sensitivity to cues, rather than a cognitive sensitivity to reasons as reasons.

The claim I am presently making is that, depending upon her learning history, any of the steps in this behavioral tree may be reinforced, and may become more automatized. The agent may have an automatic connection between hunger and heading for the kitchen, and she may depend on expensive modelling and reasoning once she gets there. Or the agent may reason her way to the tapas place, at which point the selection of the *xipirones* are automatic. Or the agent may have automatized an intermediate link, between the kitchen and the refrigerator, for example (see Cushman and Morris 2015, Daw 2015, Haith and Krakauer 2018).

The significance of these points is that the basic conflict between automatization and reason-sensitivity is present at each stage of reason handling, and at each level of abstraction within the hierarchical computational architecture of action production. If the agent's planning processes are more automatized, then she will be more likely to display what Daw has called 'abstract habits' (2015, 13,750), and what Cushman and Morris call 'habits of thought' (2015, 13,817). This will leave room for more flexibility with the implementation of goals that are selected more automatically. In general, at each stage the agent's learning will be sailing between flexibility and reason-sensitivity on the one hand, and cost-efficiency and higher levels of performance on the other.

Equally exciting is the following idea. Perhaps in some cases what agents automatize is not just a transition link between states, but a link between modes of behaving. Perhaps, that is, agents sometimes automatize a link between a type of stimulus and a subsequent need to engage in more flexible processing. Bream (2017) demonstrated that if you reward participants more for engaging in task switching as opposed to task repetition, they will begin to spontaneously choose to engage in task switching. But task switching is a hallmark of cognitive control – more difficult, more computationally expensive, and ultimately a more flexible mode of behavior. Why would participants behave in this way? It may be that a more automatized entry into task switching behavior gives participants more time and preparation to engage in this mode. Chiu and Egner (2017) demonstrated that if you can teach participants to (likely, implicitly) associate stimuli with a need for task switching in order to reach success, their task switching behavior will display less switch costs (i.e., quicker switches). As Braem and Egner note in a recent review, 'these studies suggest that the choice to be cognitively flexible is very susceptible to its recent reinforcement-learning history' (2018, 472).

Indeed, Braem and Egner argue for a perspective on which cognitive flexibility itself is a mode of responding that needs to be learned in various contexts. There is more research to be done, but I find their arguments plausible, so I repeat:

The basic premise of this perspective is that, rather than seeing cognitive flexibility as originating from a standalone module (or brain region) that intervenes –

like a *deus ex machina* – to solve problems in lower-level associative processing, the processes underlying cognitive flexibility are grounded in the same learning framework (and associative network) as simple stimulus-response associations. Thus, while cognitive control processes are higher level in that they can produce generalizable benefits, their regulation must be understood in terms of basic associative-learning processes. (474)

What this means, more generally, is that whether the agent's behavioral space is pruned in the right way – whether her cognitive routines, behavioral sequences, action options have been 'chunked' and 'parsed' (see, e.g., Collins and Frank 2013) in the right way – very much depends upon whether the agent's behavioral space is well-suited to the domains in which she acts. More complex domains will generally require greater flexibility and reason-sensitivity. Less complex domains will permit greater degrees of automatization. Many domains will reward specific behavioral structures – automatization at some places, expensive flexibility at others. This will depend upon features like the structure of the domain, the stability of the circumstances in the domain, the agent's level of ability, the ways an agent's ability-levels fluctuate across times and circumstances. But it appears that (at least human) agents have tricks to maximize success. In some cases, we may use automaticity to promote flexible modes of behavior.

6 Conclusion: Morals of the Story

My main aim in this paper has been to find some clarity regarding the degree to which an agent's sensitivity to reasons might explain her skilled performance, in some action domain. The picture is nuanced. I wish to draw six points out of the foregoing discussion.

First, there seems to exist a spectrum along which an agent's reason handling may fall, from relatively effortless, quick, inflexible, and resource cheap, to relatively effortful, slow, flexible, and resource expensive. In simple domains, agents may be sensitive to reasons without much cost, simply because the reasons are few, and easily recognized. In complex domains, the number of reasons and their interactions may easily overwhelm an agent.

Second, in part because reason-handling can be costly in terms of resources and time, approximating the reason-sensitive ideal is not always the best policy. Agents may not always need to be tuned into whatever in-the-moment reasons for action are delivered by the circumstance. Automatization may benefit agents in the long run, in cases where the domain or environment are stable enough, or the gains in efficiency are high enough, to make up for losses in flexibility. However, it is worth noting that this long-run benefit may nonetheless lead to difficulties in some circumstances. In more difficult action domains, this may lead to genuine mistakes – cases in which a more reasons-sensitive mode of response would have been better, but a more automatized mode of response is taken.

Third, because a movement away from full reasons-sensitivity need not be a net loss for an agent, there will be cases of skilled action that are not cases of cognitive sensitivity. Sometimes an agent's skilled performance will not be due to recognizing

the reasons that exist, but instead to relying on generally useful heuristics and tricks – whatever they may be in the particular domain of action.

This is not to claim that agents are irrational for automatizing. They may be. But they may also be following a rational strategy for long-term success, by sacrificing in-the-moment reasons-sensitivity. Put differently, they may more closely accord with standards for success in a domain, because they have given up on actually cognizing their reasons in a given moment. Even if practically rational, this is a kind of sacrifice, in the following sense. If the agent had more time or more processing resources, they could drive their success rates up by handling reasons in a more explicit way. When engaging reasons via capacities for cognitive sensitivity, the agent will have available the flexibility provided by the recombinability of the concepts used in recognition and assessment of her reasons. Given time and processing resources, she will be able to find better behavioral options. What happens when learning automatizes a part of her behavior is that, even in conditions of available time and resources, the agent will be less likely to take a more flexible approach.

Fourth, we can think of the relation between an agent's reason-sensitivity and her skill level in part in terms of the match between the agent's behavioral space and the space of reasons present in a domain. Importantly, these two come apart. Some agents become partially skilled in some domain by perfecting certain tricks. They can perform a small package of actions that tend to promote success, or that promote success in a particular way (think of the reliever in baseball, who only knows one pitch, but knows it very well), in spite of their incapacity with most of the reasons available in some domain. Other agents will compensate for deficiencies in physical attributes by developing fine-grained sensitivity to the reasons. It is probably possible to have two agents at roughly equal levels of skill, but vastly different levels of reasons-sensitivity.¹⁰

Fifth, the distance between reasons-sensitivity and skill implies that rational practice is not always directed at enhancing reasons-sensitivity. Say that an agent's practice is rational with respect to some domain when that practice prunes her behavioral space in ways conducive to her own success in that domain. This pruning may sometimes take an agent away from reasons-sensitivity in some contexts or with respect to some of the agent's abilities, while promoting success.

Sixth, we can use the general trade-off between reasons-sensitivity and efficiency in order to further characterize the effects of rational practice. For in spite of the distance between these notions, it may often be the case that the agent should practice in a way that increases her access to reasons in many circumstances. This is because this practice will sacrifice flexibility and sensitivity at places where it is not needed, in order to emphasize flexibility and sensitivity at places where it is most needed. This will be variable across domains and ability-types. But in general, we can expect highly skilled agents to emphasize reasons-sensitivity when flexibility is required, and automaticity when it is not.

To briefly expand upon this point, consider the circumstances of training as opposed to the circumstances of performance. While some action domains may enable the agent to work out most of the kinks during the training phase, other domains may be so variable that no matter how much they practice, the agent must leave room for on-the-

¹⁰ This will depend in part on one's account of skill's gradability. I offer an account in chapter seven of Shepherd (2021).

fly determinations of whether to operate more automatically or less automatically. It may even be possible in some action domains for the agent to explore how best to make the trade-off between expensive reason-sensitivity and relative automaticity. If so, exploring such trade-offs would be a crucial part of rational practice.¹¹

What emerges from the foregoing considerations is a picture of one aspect of the skilled agent. On this picture, excellence in action performance is linked with excellence in practical rationality (cf. Stanley 2015). The skilled agent is very good at performing some cluster of actions in part because she has a refined sensitivity to the reasons for action common to the cluster. But, thanks to human limitations, skilled human agents sometimes depart from full sensitivity to reasons. This is rational overall, in the sense that developing tricks, and automatizing behavioral sequences, is a success-conducive response given certain expectations about available time and computational resources. But it leads in some cases to departures from reasons-sensitivity.

Acknowledgments Thanks to the referees and the editors for excellent comments. The author gratefully acknowledges two sources of support. First, funds from European Research Council Starting Grant 757698, awarded under the Horizon 2020 Programme for Research and Innovation. Second, a fellowship from the Canadian Institute for Advanced Research's Azrieli Global Scholar programme, and the Brain, Mind, and Consciousness program.

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¹¹ Thanks to a referee for suggesting this line of thought.

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