Intelligence Socialism[1]

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From artistic performances in the visual arts and in music to motor control in gymnastics, from tool use to chess, from language to scientific and math skills, humans excel in a variety of skills. No other species is capable of excellence in so many disparate domains. The versatility of human skills is quite remarkable.

It is natural to expect for a theory of intelligence to be informed by a theory of skills and skillfulness—i.e., on the plausible assumption that skillful behavior is a visible manifestation of intelligence, it is natural to expect that we can learn about what makes us distinctly intelligent, both individually and as a species, by looking at the sort of tasks at which we excel and by studying how we can reach this sort of excellence.

More controversial is the question as to which kind of skills *in particular* we should study in order to theorize about intelligence. In this article, I want to compare two opposite views about the relation between skills and intelligence. According to the first view, a particular kind of skills—i.e., theoretical or intellectual skills—have a privileged connection to intelligence, in the sense that their acquisition and exercise requires, manifests, and develops intelligence. I call this

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view “**Intelligence Elitism**”—“elitism” for short. According to elitism, there is a big divide among skills when it comes to intelligence, and the divide tracks the distinction between theoretical or intellectual skills—such as math or chess—and practical and embodied skills—such as carpentry, tool use, or sport skills.

Elitism has been well-represented in psychology and in psychometrics since its dawn (e.g., Binet and Simon 1916; Boring 1923). Arguably, it has a long pedigree in philosophy too—though explicit theorizations are hard to come by. The rival view is **Intelligence Socialism**—“socialism” for short. On this view, there is no principled difference in intelligence that tracks the divide between theoretical or intellectual skills and practical and embodied skills.

The primary goal of this article is to make explicit, for the first time in the philosophical literature, the controversy between elitism and socialism, to sharpen it, and to highlight its significance. At the same time, I also aim at laying the foundations for undermining the hegemony of elitism by mounting an inductive argument on behalf of socialism.

Here is the roadmap. In §1, I provide evidence that elitism is pervasive in psychometrics, in philosophy and popular culture, and I discuss an opposite trend in machine learning. In §2, I spell out elitism and socialism. In §3, I explain why the controversy matters. In §4, I defend the general claim that, on a plausible behavioral understanding of intelligence, every kind of skillful behavior, simply *qua* skillful, counts as intelligent. This first argument assumes a psychologically thin, behavioral, notion of intelligence and establishes a moderate form of socialism. It therefore raises the question whether socialism can be upheld on a thicker conception of intelligence that makes substantial commitments on the cognitive structures involved in intelligent behavior—whether a stronger form of socialism is warranted. In §5, I provide a general line of argument from moderate socialism to strong socialism that relies on the argument in §4 and on the principle that similar effects have similar causes; then I go on to isolate the best set of arguments for the further elitist claim that, on a thicker, non-behavioral, understanding of intelligence, there is a difference in intelligence that tracks the divide between theoretical or intellectual skills, on one hand, and practical and embodied skills, on the other. I suggest that these arguments rest on shaky empirical and philosophical grounds. While I will not be able to foreclose all arguments that one might envisage on behalf of elitism, I hope to discuss the most interesting and challenging ones, and in this way to shift the burden of proof on the advocates of elitism. In §6, I discuss an anthropocentric argument for elitism, according to which skills that humans only possess are especially intelligent and I highlight its flaws. In §7, I end by rebutting the objection that the whole controversy might just be a big verbal dispute.

1. Elitism in the wild

1.1. Elitism in Psychometrics

Since its dawn, the history of psychometrics has been a history of elitism. Binet and Simon (1916)'s first tests of intelligence effectively only tested verbal, logical and mathematical skills, and so did every subsequent edition of the Stanford Binet intelligence scale based on it. Weschler scales were put forward as an alternative to the Stanford-Binet intelligence scale but effectively were based on the same assumptions—i.e., that verbal skills as well as logical skills, including those tested by picture completion tests, were the main indicators of general intelligence. Tests for so-called fluid intelligence (Cattell 1987; Horn 1994) look at puzzle solving skills whereas tests for crystallized intelligence test rate of knowledge acquisition (e.g., KAIT, Kaufman and Kaufman 1993). No drawing tests or tests for manual dexterity were ever included in any of these tests, nor were any motor coordination tests. All these tests are often accompanied by definitions of intelligence that more or less explicitly betray their underlying elitism. Intelligence is sometimes declared to reside in analytical and verbal skills. To this day, Edwin Boring's (1923) dictum "Intelligence is what the tests test" constitutes a popular slogan in the psychometric literature.

This tradition of psychometrics has been criticized by many quarters. However, these critiques have often gone in the direction of merely extending the set of skills that are supposedly core for intelligence. For example, Sternberg (1997:399) suggests that standard intelligence tests leave out "practical intelligence," to be measured by measuring "practical skills." But by "practical skills," Sternberg really only means the ability to solve everyday problems—to include organizational skills, managerial skills, or social skills. So Sternberg's work on intelligence still neglects a variety of skills—such as dancing and athletic skills, as well as manual skills.

Gardner (1983, 1993) is famous for having proposed a theory that contemplates the existence of seven distinct intelligences—linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, intrapersonal sense of self, and interpersonal—thereby considerably enlarging the scope of traditional psychological theories of intelligence. His theory of multiple intelligence is motivated by a rejection of elitism. In many quarters of psychology, psychometrics, and education studies, however, Gardner's theory has been quickly dismissed as tapping not so much intelligence but "aptitude" or "motor skills"—both deemed outside of the scope of intelligence (e.g., Gottfredson 1998:26; Klein 1997; Waterhouse 2006; Blumenfeld-Jones 2009).

This reception of Gardner's theory is indicative of the still prevailing elitism in psychometrics. Elitism also transpires in the conception of those tests measuring practical and embodied skills. In the motor sciences, tests to assess motor performances and coordination are not thought of as intelligence tests but rather as tests for "physical fitness" (e.g., Australian

Sports Commission 1994; President's Council on Physical Fitness and Sports 2001). While some have come up with similar tests for manual dexterity, by and large these tests are used for diagnostics of motor abnormalities rather than as intelligence tests. Likewise in the musical and artistic domain, tests for excellence have been proposed but their predictive validity remains well below those of IQ tests (Plucker & Renzulli, 1999; Gagne', 2005).

1.2 Elitism in philosophy

Explicit theorizations of elitism are hard to come by in philosophy. Nonetheless, the celebration of the theoretical over the practical has a long pedigree.

Plato sharply distinguishes between the theoretical and the practical. At the end of book VI in the *Republic*, in the Divided Line (Figure #5), mental states are described as getting more 'clear' as one goes up the line. In this context, theoretical knowledge of the Forms, or *noesis*, is last in the ranking. In *Philebus* 55-58, Plato explicitly contrasts skills on whether they are closer to knowledge (55d5-10); theoretical skills, such as arithmetic and measurement, are deemed closer to knowledge and also more worthwhile since more precise than practical skills, such as farming, flute-playing, and building (56b5-10).

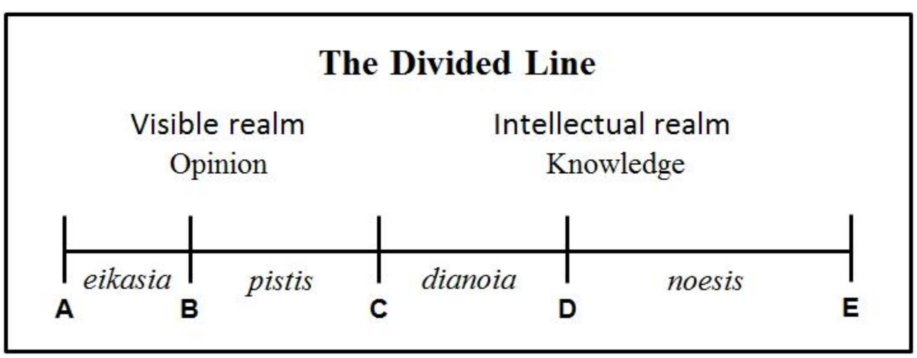

Figure #5 The Divided Line

Similarly for Aristotle. He thought that intelligence as a whole (*dianoia*) had both a theoretical and a practical kind (*dianoia praktikê versus theôrêtikê dianoia)*. He distinguishes the "practical mind" (or "practical intellect") from "theoretical mind" (or "theoretical intellect") (*Nicomachean Ethics* VI 8 1143a35-b5) and between three domains of knowledge: the theoretical, the practical, and the productive (*Top*. 145a15–16; *Phys*. 192b8–12; *DC* 298a27–32; *DA* 403a27–b2; *Met.* 1025b25, 1026a18–19, 1064a16–19, b1–3; *EN*1139a26–28, 1141b29–32). Like Plato, Aristotle thought that *nous*, *sophia*, and *theoretical epistēmē* are better *qua* knowledge than practical *epistēmē* (*phronesis*) and productive *epistēmē* (*technē*), even though those are also kinds of knowledge—the former are more precise and more true (e.g., *Met*. A.1, *APo*. 100b5-12). Theoretical intelligence and theoretical knowledge are the sort of intelligence and knowledge that the strict sciences, such as mathematics and physics, and philosophy incarnate; these activities are the most valuable since they involve the contemplation of more valuable objects, necessary rather than contingent, and correspondingly exhibiting more epistemic virtues, like precision; such theoretical contemplation is an end in itself. In Book X of the *Nicomachean Ethics* (10.7-8), Aristotle describes the life spent contemplating the necessary as the most fulfilling life.[2]

Thus, while they might not amount to explicit endorsements of elitism as defined at the outset, elitist vibes can be found in ancient philosophy. Explicit theorizations of elitism are not very common in contemporary times either, partly because, as also others have noticed, philosophers of intelligence by and large shy away from providing substantive theories of intelligence (White 2002:78; Fridland 2015; Coelho Mollo 2022). However, elitist definitions of intelligence in terms of linguistic competence modeled along Turing's (1950) test are often discussed in the philosophy of mind (e.g., Block 1981:11).

[2] Among the interpreters taking this line, see e.g., Kenny (1996).

A plausible case can be made that elitism was one of the main targets of anti-cognitivists about skills such as Ryle and Dreyfus. Ryle (1949:26) targeted the view according to which "intellectual operations" are the "core of mental conducts," and according to which "all mental concepts are defined in terms of concepts of cognition." According to this view, that Ryle labeled "intellectualist legend," "the primary exercise of the mind consists in finding answers to questions," or in a "special class of operations that constitute theorizing" and "the goal of these operations is the knowledge of true propositions and facts. Mathematics and the established natural sciences are the model accomplishments of human intellects."

Here, Ryle's main target was apparently the Aristotelian elitist idea that theorizing behavior in physics or mathematics is the model of intelligent behavior. Ryle took on debunking this elitist picture. Ryle (1949: 32) argues that "What distinguishes sensible from silly operations is not their parentage but their procedure, and this holds no less for intellectual than for practical performances". He concludes (1949: 32) "'Intelligent' cannot be defined in terms of 'intellectual'". Ryle (e.g., 1949:48) argues that every skillful behavior—that of "the boxer, the surgeon, the poet, and the salesman" alike—is intelligent and that all human actions, whether theoretical or practical, are operations of the mind, and as such they can all be performed either intelligently or stupidly. Indeed, arguably, Ryle was not just a socialist—he was a multiple intelligence theorist *ante litteram*, since he thought that the general question "What is intelligence?" hardly makes any sense and argued that there are as many kinds of intelligence as there are spheres of human activity (1974:55-6).

So, Ryle was definitely a socialist. Dreyfus (e.g., 2002) was one too. Dreyfus (2002: 367-8) describes skilled behavior as a paradigmatic example of intelligent behavior and clarifies that both motor skills, such as driving, and intellectual skills, such as chess, are examples of intelligent behavior. Importing the idea of absorbed coping from Merleau Ponty, Dreyfus argued that both motor and intellectual skilled actions are a matter of having developed a bodily sensitivity, which enables one to adapt flexibly to the demands of one's tasks. Thus, in skilled action quite generally the body takes over and the mind goes on vacation. Dreyfus is clear that that applies just as much to the artisan immersed into their craft and to the chess grandmaster: "The same phenomenon appears in more sophisticated skills. I once heard a Grandmaster say that under extreme time pressure he sometimes finds his arm going out and making a move before he can take the board position" (Dreyfus 2007a:374). According to Gehrman and Schwenkler (2020: 123-24), Dreyfus was fighting a platonic picture, according to which "human intelligence is fundamentally calculative, computational, or rule-based, involving explicit and codifiable thought, the paradigm of which is inferential reasoning." By contrast, for Dreyfus, "human intelligence can be understood only in light of our *embodied* manner of being-in-the-world." So that embodied and intellectual skills alike were, according to him, intelligent in virtue of their embodiment. Gehrman and Schwenkler conclude (2020: 124) that, according to Dreyfus, "when we attend to our characteristic embodiment, we see that human intelligence is first and foremost, and most fundamentally, *practical* as opposed to theoretical." Indeed, when skillfully acting, the agent does not (even) need a mental representation of one's goal, let alone have knowledge or reason about it. It is simply wrong to recognize intelligence only in activities involving reflection and representation—hence his slogan "intelligence without cognition" (Dreyfus 2002).

If all of this is correct, then even Dreyfus' fight against cognitivism about intelligence can be understood as a fight against elitism. Though elitism has been attacked by two prominent anti-cognitivists about skills, it is still well represented in the philosophy of education. For example, Hand (2007:41; 2009) argues that the quality of mind picked out by the term 'intelligence' is an aptitude for theorizing and that classifying non-theoretical activities as intelligent unduly changes the subject matter (more on this in §7).

1.3 Elitism in popular culture.

The internet is replete with many general rankings of the most intelligent individuals. None includes outstanding athletes or artisans.[3] In these rankings, chess players, mathematicians and scientists are listed as stereotypical examples of intelligent individuals—more so than carpenters, embroiderers, farmers, and soccer players.

Elitism is also implicit in the ordinary choices of words to refer to embodied skills. For example, while it is ordinary to speak of "manual skills," "manual intelligence" is not nearly as common—other labels tend to be used instead, such as *manual dexterity*: indeed, a google search for "manual dexterity" returns 5.4 millions entries, "manual skills" returns about a million entries; a search for "manual intelligence" returns less than 80 thousands entries, while a google scholar search returns only 500 entries for "manual intelligence", against the 50 thousands entries for "manual skills" and the 90 thousands entries for "manual dexterity".

Finally, elitism underwrites striking patterns of inference about intelligence. Let us distinguish *attributive* uses of an adjective from its *predicative* uses. In an attributive use, "an X Y" does not necessarily entail that one is both X and Y. For example, "Mary is the main client" does not entail that Mary is both main and a client"—in "Mary is the main client," "main" is used only attributively and not predicatively. Now, people are generally much less inclined to accept inferences from "She is an intelligent footballer" to "She is intelligent", or from "She is a

[3] E.g., https://www.jagranjosh.com/general-knowledge/top-10-most-intelligent-people-on-earth-1477392275-1, https://learnonlineschool.info/top-10-most-intelligent-people-of-all-time/, https://financesonline.com/13-most-intelligent-people-in-the-history-of-the-world/

soccer genius" to "She is a genius" than they are to accept inference from "She is a math genius" to "She is a genius". That is to say, in phrases such as "an Intelligent X" or "an X genius," "intelligence" or "genius" tend to be used non-predicatively when X stands for embodied activities and predicatively when X stands for intellectual activities.

1.5 Opposite Trend in Machine Intelligence

While prevalent in psychometrics, it is worth noting that, in machine learning, elitism is widely questioned. One line of argumentation in these quarters rests on the observation that certain motor skills—such as holding an egg without breaking it—are much harder to program (e.g., Kim *et al* 2021) than intellectual skills such as chess. Indeed, the problem of programming such motor skills is, as of now, unsolved. This point is often also made together with the observation that animals and later humans have been evolving the capacity for motor skills over millions of years and only recently—in the last 80000 years or so—have they acquired intellectual or theoretical skills (Gabora & Russon 2011). Since we had more time to refine them, and given that they prove much harder to program, the argument concludes that motor skills must rate higher in the hierarchy of intelligence than intellectual skills.[4]

This argument effectively replaces standard elitism (theoretical, intellectual > practical, embodied) with a different form of elitism—one that also posits a difference in intelligence across these domains but in the opposite direction (practical, embodied > theoretical, intellectual)—**practical elitism**. I will bracket this argument in the following, since my primary goal here is to offer a systematic critique of intellectual or theoretical elitism rather than to positively replace it with a different form of elitism.

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[4] I am grateful to Krim Delko here.

2. Clarifying elitism and socialism

As a rule of thumb, by 'skills', I will mean abilities that correspond to *areas of learned expertise*. In this technical sense of 'skills', very basic motor abilities such as moving one's thumb do not count as skills, since they do not correspond to areas of expertise. By contrast, soccer, math, gymnastics, painting, or chess all count as skills. So understood, skills allow for different stages of acquisition—novice, beginner, competent, proficient, and expert. Throughout, in this article, I will be comparing skilled agents across domains *at the highest level—i.e., at the expertise level*.

Every skill is practical *in a sense*, since every skill characteristically manifests in actions. The distinction between theoretical and practical skills concerns the kind of *goal* that skills have. Theoretical skills have *epistemic* goals—they aim at truth or knowledge. Practical skills do not have epistemic goals. So, philosophical, mathematical, or scientific skills count as theoretical since they aim at truth or knowledge. Soccer skills, chess skills, musical composition skills, in contrast, are practical since their goals—such as scoring goals, winning a game, or composing music—are not epistemic.

	Manifestations	Limbs/extremities	Aim at truth/knowledge
Theoretical skills	Mental actions (thinking)	✘	✔

Practical skills	Mental/bodily actions	Some do	✘
Intellectual skills	Mental actions (thinking)	✘	Some do
Embodied skills	Bodily actions	✔	✘ (mostly don't)

Table #1: Theoretical, Practical, Intellectual, and Embodied Skills

The distinction between intellectual and embodied skills is orthogonal to that between theoretical and practical skills. It does not concern the characteristic goal of the skill; rather, it concerns whether its exercise requires the use of limbs, extremities, and muscles. Embodied skills are those that require for their exercise the use of muscles—in particular that of striatic and skeleton muscles, or 'controllable muscles'. Their characteristic manifestations are *bodily actions*. Intellectual skills, by contrast, do not constitutively require the use of controllable muscles. Their characteristic manifestations are *mental actions*. For example, chess is an intellectual skill since it can also be played mentally.

Thus, certain skills, such as chess, are practical since they do not have epistemic aims but also intellectual since they do not need muscle movements for their exercise (Table #1). Theoretical skills tend to be intellectual. However, there are exceptions. Under the current taxonomy, linguistic skills such as asserting count as theoretical in that they plausibly aim at truth or knowledge; however, such skills are embodied, since they need the use of muscles and extremities for their exercise. Or consider using the abacus for calculating: its goal is plausibly truth and knowledge, but seems also embodied. If this is correct, then there are embodied skills that have epistemic goals. I will keep using "theoretical" for any skills which have epistemic goals, whether or not they are embodied. So in this sense, "theoretical" will be used to include linguistic embodied skills too. Moreover, I am taking elitism to concern theoretical skills as well as intellectual but practical skills such as chess. Thus, in the following, the divide that will concern us is between "theoretical *or* intellectual" skills on one hand, and "practical *and* embodied" skills on the other. The former category includes skills that characteristically manifest in mental actions as well as some embodied skills (such as linguistic skills). The latter only include skills that characteristically manifest in bodily actions and that do not have epistemic goals.

Given our understanding of the relevant categories, let strong elitism be the view that:

> **Strong (Theoretical/Intellectual) Elitism:** Only some kinds of skillful behavior (that which exercises theoretical or intellectual skills) are intelligent.

I call "moderate socialism" the view that denies Strong (Theoretical/Intellectual) Elitism:

> **Moderate Socialism:** *All* skillful behavior—whether it exercises theoretical or intellectual skills, or practical and embodied skills—is intelligent.[5]

[5] I could have used "anti-elitism" or "egalitarianism" instead of "socialism" to a similar effect. As Uriah Kriegel points out to me, "egalitarianism" is the standard terminological contrast with "elitism" in other areas of philosophy. Moreover, "socialism" might evoke the view that there is an essential social aspect to intelligence—a kind of "social externalism." I will stick nonetheless to "socialism" since this label has stronger political connotations than egalitarianism, given its history as a political party's label. I do feel strongly that the controversy between elitism

A more moderate form of elitism might allow that practical and embodied skills are intelligent too. It insists, however, that only some kind of skillful behavior, that which exercises theoretical and intellectual skills, is *especially* intelligent:

> **Moderate (Theoretical/Intellectual) Elitism:** Only some kinds of skillful behavior (that which exercises theoretical or intellectual skills) are especially intelligent.

Strong socialism denies it:

> **Strong Socialism:** The distinction between theoretical or intellectual skills on one hand, and practical and embodied skills on the other, does not track a principled difference in intelligence.

The qualification 'principled' in 'principled distinction' is very important: strong socialism might concede that certain kinds of skillful behavior are *as a matter of fact*—that is, for contingencies having to do with how those skills have been practiced, exercised, and taught—more intelligent. Their proponents contend that, *even so*, there is nothing *principled* about this difference. Thus, in both its moderate and strong forms, socialism is a claim about the level of intelligence that *can* in principle be manifested by practical and embodied skills, rather than a statement about the current and actual level of intelligence exercised in those domains.

A second observation is that socialism is not the same as the view that *any* intelligent

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and socialism has political repercussions—concerning the rights of those who exercise skills which are not typically associated with intelligence and the privileges of those who score well on standard IQ tests.

behavior is skillful behavior. On the assumption that skillful behavior is learned, a socialist might allow for some intelligent behavior that is not learned, and so might deny that every intelligent behavior is skillful. Socialism is also not committed to the multiple intelligences thesis. According to multiple intelligence theorists, there is no such thing as *general intelligence*—the only sort of intelligence that there is is domain-specific. By contrast, one might be a socialist by virtue of believing that there is such a thing as general intelligence but also think that general intelligence is equally required, developed, manifested across the theoretical/intellectual and practical/embodied divide.

A third qualification is that the debate between socialism and elitism is orthogonal to the debate between intellectualism about skills (or know-how) and anti-intellectualism about skills (or know-how). Though Ryle (1949:26) defines intellectualist legend as elitism—as the view that intelligent operations aim at knowledge—this definition is not even coextensive to a definition of intellectualism that is standard in the current literature as the view that skills are partly or entirely constituted by knowledge (Pavese forthcoming, Chapter 6). This understanding of intellectualism does not entail socialism. One might think that both practical and theoretical skills reduce to propositional knowledge, and yet think that the sort of propositional knowledge theoretical skills endows one with is more connected to intelligence than the sort of propositional knowledge practical skills endows one with.[6]

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[6]I am strongly departing from Stanley (2012), who argues that undermining the know-how/know-that distinction suffices to undermine the theoretical/practical distinction and suffices to undermine the elitist idea that the theoretical is superior to the practical. (https://archive.nytimes.com/opinionator.blogs.nytimes.com/2012/05/06/the-practical-and-the-theoretical/).
According to Stanley, the theoretical/practical distinction tracks the distinction between know-that and know-how: the theoretical maps into propositional knowledge; the practical maps into know-how. Thus, Stanley thinks that undermining the know-how/know-that distinction suffices to undermine the theoretical/practical distinction and thereby elitism. However, the distinction between theoretical/practical does not *prima facie* line up with the know-that/know-how distinction. Thinking and reflecting—the theoretical operations *par excellence*—are not themselves states of knowledge-that. Rather, they are (mental) actions. Just like for any other action, it makes sense to ask whether one knows how to perform them. Since the theoretical and practical each correspond to kinds of know-how, it is unclear why one ought to think that the theoretical/practical distinction maps into the propositional knowledge/know-how distinction.

The final observation is that socialism is compatible with there being differences in how difficult it is to acquire the skills within the practical/embodied cluster or within the theoretical/intellectual cluster of skills. Each of these levels of difficulty might correspond to a difference in intelligence. For example, mathematical skills for first-year college students are easier than those of a math graduate student, and being able to solve higher-than-n-sided Rubik's cubes is more difficult than solving n-sided Rubik's cubes. Strong socialism is *not* the claim that each skill in each cluster is as intelligent as any skill in that cluster or even as any skill in the other cluster. Just like there are differences in intelligence among theoretical and intellectual skills, socialism does not have to deny that there are some embodied skills that are less intelligent than some theoretical skills. Rather, it denies the claim that practical and embodied skills are less intelligent *qua* practical and embodied—that there is a principled difference in intelligence that tracks the divide between theoretical or intellectual skills and practical and embodied skills.

3 Why the controversy matters

The controversy is of moral significance. A straightforward argument for this conclusion starts with the premise:

Premise 1: Everything being equal, what is intelligent has more value than what is not.

According to Premise 1, intelligence is an added value (and lack of intelligence is a lack of *some* value). Of course, intelligence is not the *only* value, nor the most important one. Indeed, our society does value *some* practical skills a lot, if not more than theoretical skills—e.g., top athletes get paid way more than top scholars, for example. Premise 1 does not deny that many dimensions of value are independent of perceived intelligence and are determined by other considerations, such as, e.g., by the market. Premise 1 only claims that, if two pieces of behavior differ only in their intelligence, and not in other dimensions (moral, aesthetics, market value etc), then this difference in intelligence between the two behaviors alone corresponds to a difference in value.

The next premise is:

Premise 2: Arbitrary distributions of unequal value are likely to promote unfairness.

By "arbitrary," I mean a distribution that does not actually track any real difference in value. This premise is hardly controversial. If in a population, some individuals are deemed more valuable than others, and if this unequal distribution does not track any real difference in value, then those individuals who are deemed more valuable are valued more than they should, and at any rate more than other equally deserving individuals. Thus, if arbitrary, distributions of unequal value are likely to promote unfairness.

Premise 3 follows from the definition of elitism and from Premise 1:

Premise 3: Elitism recommends an unequal distribution of intelligence-value.

The conclusion follows that, if the distribution of value recommended by elitism is arbitrary—i.e., if it does not track any real difference in value—then it is likely to promote unfairness:

Conclusion: If arbitrary, elitism is likely to promote unfairness.

Resisting Premise 1 commits one to the claim that intelligence is not really something valuable, under any dimension. This seems hardly believable. If intelligence is normative even just in a minimal sense—i.e., thumbs up for what is intelligent, thumbs down for what is not intelligent—then there must be some value to intelligence and to the behavior that manifests it.

So **Conclusion** follows from some rather weak assumptions about intelligence, value, and elitism. So, it does matter a great deal which of socialism versus elitism is right.

4. A Behavioral Argument for Moderate Socialism.

As Dretske (1993:201) put it, intelligence can be thought of as something like *money*, as something most have in some quantity, or like *wealth*—as something possessed only by those who have more than the average amount of money. In this section, I develop an argument to the effect that every skillful behavior is intelligent in the *money sense*—i.e., that there is a thin sense of intelligence that attaches to every skilled action, whether theoretical or intellectual, or practical and embodied.

As I will understand it, the relevant 'thin' sense of intelligence is *behavioral*. Behavioral intelligence has some features that are widely agreed upon. For one thing, it is goal-directed. Agentively intelligent behavior is intelligent relative to goals—the goals of its agent. So investors' behavior is intelligent only if conducive to their goal of maximizing utility, and unintelligent otherwise. Even outside of agentive intelligent behavior, the teleological structure of intelligence is evident: e.g., when we say that an adaptation is intelligent—such as the giraffe's neck, or plant's root motion toward water sources or that its closing its leaves in response to perceived threats—are intelligent, these ascriptions are understood relative to goals of fitness and reproduction.

Whether agentive or not, intelligent behavior by S is *goal-directed*, and its goal fixes the standard of success for that behavior. Another feature of intelligent behavior is its *flexibility*—the ability to change appropriately in light of the different, novel, or changing circumstances. Repetitive and automatic behavior such as that of the assembly line or parroting is at odds with intelligence. Likewise, the flexible behavior of an expert dancer is more intelligent than the repetitive and stereotyped waggle or round dance of honeybees. It is its open-endedness that makes the former intelligent, and the fixity of the latter that makes it not-so-intelligent.

Finally, it is plausible that some behavior is intelligent only if it *learns* from past experiences—i.e., if one makes the same mistake over and over again, then it would be legitimate to conclude that one's behavior is not intelligent. This discussion suggests that a behavior by S is intelligent only if it is (i), (ii), and (iii) (cf. Coelho Mollo 2022:§3):[7]

(i) **goal-directed**—appropriate in light of goals S possesses.

(ii) **flexible**—changes appropriately in light of a variety of different, novel, and changed circumstances.

(iii) **adaptive**—changes appropriately in light of previous interactions with the world.

[7] My characterization of behavioral intelligence and of its three features (i), (ii), and (iii) follows closely that by Coelho Mollo (2022:§3). One notable difference is that Coelho Mollo distinguishes between flexibility and generality, whereas I am thinking of generality as one kind of flexibility.

Many cognitive scientists and philosophers who talk of intelligence, treats these three necessary conditions on intelligent behavior also as jointly sufficient (e.g., Dennett 1969; Dretske 1993; 1998, Legg and Hutter 2007, Hurley and Nudds 2006, Marcus 2020, Fridland 2015; Deacon 1997; Coelho Mollo 2022). Thus, according to them, any behavior that is goal-directed, flexible, and adaptive is thereby intelligent.

As Coelho Mollo (2022:§3) has recently emphasized, there are several perks to this behavioral definition of intelligence. For one thing, it is not *species-specific*—it does not apply only to humans; it is not *origins-specific*—it applies to biological as well as artificial systems; it also captures the normativity of intelligence—the fact that, everything else being equal, intelligence is a good thing and lack of intelligence is not a good thing.

Now, skillful behavior satisfies this behavioral definition of intelligence. For one thing, skillfulness is goal-directed. Skills characteristically manifest in *actions*—abilities that do not characteristically manifest in actions like digesting or sweating are not skills. Compare, moreover, the clown who tumbles with the goal of amusing the audience, and the klutz who tumbles but with no goal. Only the former behavior is agentive and skillful. Its goals fix the standards of success for skillful behavior—e.g., jumping above a certain height is both the goal of a skilled high jumper as well as the success condition for their performances.

The idea that skillful behavior is flexible has a long history. It is a point Aristotle was fond of making about *technai*. *Technē* is *flexible*, in the sense that it can bring about the best possible product under the available conditions (cf. *Rhet*. I.1 1355b12-14, *PA* II.14 658a23-24, *GA* II.6 744b15-16). Their *technē* enables the doctor to treat a variety of cases by diagnosing the underlying illnesses and procuring the needed treatment. In this way, possession of a skill enables the person to succeed relative to the aim of the practice, not just in this or that circumstance, but in general through the grasp of a *logos*. As Charles (2001: 63) puts it, for Aristotle skilled craftsmen, “have the ability to devise new methods and new products: give him the wood, and he can tell you what can and cannot be done with it.”

The same idea is present in Chinese philosophy. According to the Zhuangzi (2013: 148), “A good swimmer will get the knack of it in no time. And if a man can swim under water, he may never have seen a boat before and still he’ll know how to handle it!” According to Gartfield and Priest (2020: 41)’s interpretation of this passage, here the skill (*dao*) of the swimmer is described “as developing naturally out of his having grown up both on land and in water, and thus being adept and at ease in both environments.” In more contemporary times, Ryle (1949: 45) makes this point about the flexibility of skills as well, when he states “Take his example of the soldier exercising at scoring a bull’s eye: “Was it luck or was it skill? If he has the skill, then he can get on or near the bull’s eye again, even if the wind strengthens, the range alters and the target moves.”

Against the common assumption that experts lose flexibility as their consolidate their expertise, very recent experimental work on both sport skills and tool use suggests that the higher level of one’s skill, the higher one’s flexibility: in competitions, climbers have to deal with highly diverse novel climbing problems and allow little time to inspect the wall and formulate strategies (Christensen & Bicknell 2022:20). Mountaineering bikers—both expert and intermediate—are found to quickly adapt to new techniques, new bikes as well as new routes (Christensen & Bicknell 2022:23) and horse riders have to deal with the with the substantial variation in the execution of their skills that comes with riding living horses (Milton 2024: 216); moreover, across a variety of different cultural traditions and material conditions, the more skilled potters are also the more likely to be successful in introducing new shapes and techniques, while low-level skilled artisans (characterized by low-quality production) had great difficulties in adapting to new raw material (e.g., glass instead of stone) (Charbonneau 2024; Roux et al 2024).

Indeed, the flexibility of skillful behavior arguably tells it apart from habitual behavior, such as the autopilot or the assembly line, as well as from instinctual behavior. Compare the beautiful instinctual wild song of zebra finches, which never changes (Fehér et al 2009) to the versatility of an opera singer. Flexibility is also a criterion for the folk concept of skillfulness—e.g., Alcaraz counts as more skilled in virtue of his remarkable flexibility to play on different surfaces (clay, grass, cement, and carpets); Meryl Streep is more skilled in virtue of her flexibility to play a variety of acting roles.

Thus skillful behavior is both goal-directed and flexible. Is skillful behavior adaptive? For starters, recall that skills are areas of *learned* expertise. There are different ways of characterizing learnability. One promising way is in terms of *modal dependence* on the environment—a behavior is learned rather than innate if it exhibits a strong modal dependence on the environment, in the sense that it would not easily develop in a variety of different environments (Pavese forthcoming, Chapter 1). The acquisition of skills is modally dependent on the environment, since it does depend on the resources made available by the environment—e.g., Incas' tool skills were shaped by the availability of stone, copper, and bronze, but not of iron (Romney 2021)—as well as on the social environment: on the availability of vertical or horizontal transmission (Hosfield 2009) and of verbal feedback (e.g., Morgan *et al*. 2015; e.g., Sullivan *et al.* 2008). Instinctual behavior is, instead, resilient: it develops across a variety of different environments (cf. Ariew 2007).

Pointing out that skilled behavior is learned goes only some way towards demonstrating its adaptivity, since one might wonder whether a skilled agent is capable of adaptive behavior even *after* becoming an expert. Work in the psychology of expertise suggests that that is exactly the case. Since the Fifties, research showed that manual skills are continuously adaptive. Crossman (1959) reports studies on an industrial cigar rolling task, which included workers who had processed more than ten million cigars over seven years of work and they were still getting better (i.e. faster) at the task. According to Newell and Rosenbloom's (1993) estimate, in a variety of different skill domains, the relationship between the speed of task completion and the number of trials is well approximated by a power law—suggesting that performance keeps improving indefinitely with practice, even though the rate of improvement declines with time.

This work concerns adaptivity along one dimension—speed and efficiency. But expert behavior is demonstrably adaptive also along the quality dimension. Ericsson (et al 2003, 2006) has studied the role of practice in expert improvements and offers evidence that experts can continuously improve their performances provided they keep engaging in *deliberate practice*. In other words, experts can keep improving if they keep practicing with the intention of fixing mistakes and learning from them—dull repetition of sequences will not do for improvement. Arguably, moreover, recent evidence from the psychology of sports suggests that it is not just through deliberate practice but also through competitive performances that the experts continuously adapt. Toner and Moran (2015) provide evidence that athletes can improve substantially through competitive performances, especially when they are experimenting new techniques (see also Toner et al 2015). So, for example, tennis players like Federer who switched to a larger racket or golfers players who start utilizing a new swing are observed to fully master their new tool only after facing several competitive performances.

The proponent of strong elitism might object to these three behavioral hallmarks of intelligence—goal-directedness, flexibility, adaptivity—being jointly sufficient for intelligent behavior and insist that a further feature is missing from the definition—that of the behavior being ‘intellectual’, or ‘theoretical’. In response, this definition of behavioral intelligence arises from a regimentation of talk of behavioral intelligence among cognitive scientists and philosophers which is motivated independently of the controversy between socialism and elitism. In taking these three features to be jointly sufficient for intelligent behavior, Dennett (1969, 1996), Dretske (1993; 1998), Fridland (2015), Coelho Mollo (2022), and others were thinking about what makes *any* behavior intelligent—not just what makes theoretical behavior intelligent. Demanding to enrich the definition of behavior intelligence to encompass features that only intellectual and theoretical behavior have is simply begging the question in favor of the elitist.

5. Similar effects have similar causes: Towards Strong Socialism

This concludes my first argument that skillful behavior *in general*—whether theoretical or practical, or intellectual and embodied—is intelligent. This argument assumed a thin, behavioral, definition of intelligence. As such, it can be accepted by philosophers of all stripes, including behaviorists such as Ryle and anti-cognitivists such as Dreyfus.

Precisely because it only invokes a behavioral definition of intelligence, one might wonder whether the argument establishes *enough*. Recall Blockheads: systems comprising giant look-up tables or tree structures that include all possible sensible behaviors given any possible input, in addition to a brute force string or tree search computational procedure to find the appropriate output for each input. These systems are arguably not intelligent (Block 1981); yet they might well satisfy the current behavioral definition of intelligence. Accordingly, one might worry that skillful behavior counting as intelligent in this thin behavioral sense does not suffice to show that it is *really* intelligent.

So, the question arises whether socialism can be held on a thicker notion of intelligence—one that makes substantial commitments on the sort of cognitive structures plausibly involved in intelligent behavior. This question is methodologically difficult to tackle. For one thing, there does not exist at the moment any consensus among cognitive scientists and philosophers about what cognitive structures are required for intelligent behavior; moreover, given how pervasive elitism is, it cannot be ruled out that the identification of certain structures with cognition and intelligence might itself be due to an implicit elitist bias. It is a well-known point in cognitive neuroscience that the mapping of neural areas into functions relies on a theory of the structure of the mind that specifies the component operations that comprise cognitive function (e.g., Price & Friston 2005; Poldrack 2010). If this underlying theory is elitist—only includes intellectual and theoretical operations among the cognitive functions—then the mapping will be imbued with elitism too. For example, only recently have neurocognitive scientists started classifying the motor system among the cognitive systems (Stanley and Krakauer 2013:2). And the "cognitive" neural areas are routinely identified with those having to do with linguistic, and so intellectual, operations, on the assumption that these are the most intelligent tasks (Kemmerer 2022:29-69). Finally, as we have noted, it is hard to find explicit arguments for elitism in both psychometrics and philosophy. Thus, the extant cognitive science and the philosophy of intelligence do not offer reliable guidance on how to address this question.

Bearing these methodological quibbles in mind, here is an argument for strong socialism that moves from the defense of moderate socialism in the last section. As Hume (1975, Section XV) writes, "...the same effect never arises but from the same cause." On this general principle, if skillful behavior across the practical and embodied/theoretical-intellectual divide exhibits similar characteristics, then we are on good ground to expect that similar mental and cognitive causes are responsible for those characteristics. In the last section, we have seen that, across the board, skillful behavior is goal-directed, flexible, and adaptive. These alike effects must have alike mental antecedents and causes. And while Blockheads might be possible, they are not nomologically possible, and Hume's principle holds provided that the relevant laws are kept fixed (Dennett 1994:517-8). In this sense, the last section's defense of moderate socialism is also conducive to strong socialism.

Nonetheless, there are several arguments that it is tempting to adduce in favor of moderate elitism and against strong socialism. Each invokes cognitive structures that are commonly thought to be involved in intelligent behavior in a thicker sense—i.e, thinking processes, executive functions, cognitive control and cognitive architecture, abstraction, levels of difficulty and of independence, and knowledge. For each of these, I argue either that there is evidence that those cognitive structures are equally present across the theoretical/intellectual and practical/embodied divide; or there is reason to question whether they ought to be identified with higher forms of intelligence.

5.1 The argument from thinking

Intellectual skills constitutively manifest in mental actions of *thinking* (§2). Thus, it is tempting to argue that thinking plays more of a constitutive role in intellectual skills than in practical and embodied skills. If so, one might think "game over for the socialist."

Not so fast. The fact that practical and embodied skills manifest in bodily actions rather than mental activities does not mean that thinking does not play a constitutive role in them too.

After all, thinking might play a constitutive role in the exercise of a skill even though it is not its characteristic manifestation—for example, if it were a necessary condition for its manifestation. To be sure, *theoretical* thinking—thinking about how things are, the sort of thinking aimed at truth or knowledge—cannot be plausibly taken to play the same role in practical and embodied skills as it does in theoretical or intellectual skills.

However, theoretical thinking is not the only kind of thinking that there is, by philosophers' lights too. Philosophers have for long appealed to *practical thinking*—thinking about what to do, aimed at good actions—as a distinctive sort of thinking. In addition to theoretical thinking, and as a *particular* kind of practical thinking, Aristotle (*Met*. Z.7, 1032b6-10) talks of a distinctively *productive* kind of thinking. 'Productive' thinking is thinking about *how to do things*—a kind of thinking that has a product as a goal and is the sort of thinking that the exercise of *technai* requires. So, even if theoretical thinking is not constitutive of practical and embodied skills, we ought not conclude that *other* kinds of thinking, such as practical and productive thinking, do not play a constitutive role in practical and embodied skills.

Nonetheless, an argument is needed for why we should expect *any* thinking to enter constitutively in the exercise of practical and embodied skills. My goal next is to outline a novel argument to the conclusion that *some* thinking, or some cognitive process very much like it, is constitutive of any skilled performance.

A long tradition in philosophy takes thinking to be good cognitively because, among other things, it has the feature of '*productivity*' or, as I will call it, '*generativity'* (e.g., Fodor 2001, 233). By 'generativity', I am referring to the capacity of producing an indefinite number of meaningful thoughts about a vast array of possible subject matter starting from a certain finite number of building blocks, or conceptual resources (Frege 1892). Not only is thinking generative in this sense. It is *the* generative cognitive process *par excellence*. Even the generativity of language is generally believed to be parasitic on the generativity of thought (e.g., Fodor and Lepore 1996).

Now, as noted in §3, skills quite generally are flexible. One aspect of skills' flexibility is that they are *generative*. A skill is *generative*, in the sense that a skill enables the expert to produce a potentially infinite number of different products of the same kind, out of a finite number of building blocks. For example, music builds a potentially infinite number of different songs out of a finite number of notes. Math builds a potentially infinite number of theorems out of a finite set of axioms. Dance builds a potentially infinite number of sequences of moves out of a basic set. Carpentry builds a potentially infinite set of wooden objects out of a basic set of tools and operations. Gymnastics and lifting build a potentially infinite set of routines out of a finite set of basic bodily movements. And so on and so forth.

Now, if generativity is the hallmark of thinking, the generativity of skills suggests that thinking, *or a cognitive process very much like it*, might equally characterize theoretical or intellectual skills as well as practical and embodied skills. Indeed, the argument that the generativity of skills is to be explained by the generativity of thinking is even stronger. It is widely thought that what explains the generativity of thinking is its recursivity (Hauser, Chomsky and Fitch 2002) and that the recursivity of thought is realized in its *hierarchical structure* (versus linear structure) (Hinzen 2012; Berwick & Chomsky 2016). A long tradition in philosophy takes thoughts themselves to be LF-trees (Larson and Ludlow 1993; King 2007). The hierarchical structure would explain the generativity of thought, since this sort of structure enables one to create an infinite number of thoughts by adding more branches to the tree out of a finite number of building blocks and given a set of rules (Martins et al 2017).

But here is the thing: hierarchical structure is to be found in pretty much *every* skilled action, including practical and embodied skills: in musical skills (e.g., Lerdahl. & Jackendoff 1983; Patel 2003); in dancing skills (e.g., Charnavel 2016, 2023; Patel-Grosz et al 2022), in motor skills (Lashley 1951), lifting skills (e.g., Esipova 2022), in tool use as well as in food processing (Sterenly 2012) and more generally action planning (Fitch & Martins 2014). Here is an overview of three case studies: music, dance, and lifting.

Based on empirical research on the psychology and neuroscience of musical skills, Lerdahl (2001) provides an algebraic model for quantifying the tonal distance between any two musical chords in a sequence, yielding a value that incorporates the tripartite distances of pitch classes, chords and keys. This model also provides a method for deriving tree structures, such as that in Figure #1, where a phrase from a musical composition is shown to be structured along a hierarchical pattern of tension and relaxation. Right-branching indicates an increase in tension and left-branching a decrease. The tree shows how local tensing and relaxing motions are embedded in larger scale ones. Work on musical skills suggests that like linguistic sequences, musical sequences are not resulting from the haphazard juxtaposition of basic elements. Instead, combinatorial principles operate at multiple levels, such as in the formation of chords, chord progressions, as well as keys in music, generating a hierarchical structure (Lerdahl and Jackendoff 1983; Patel *et al* 1998; Patel 2003).

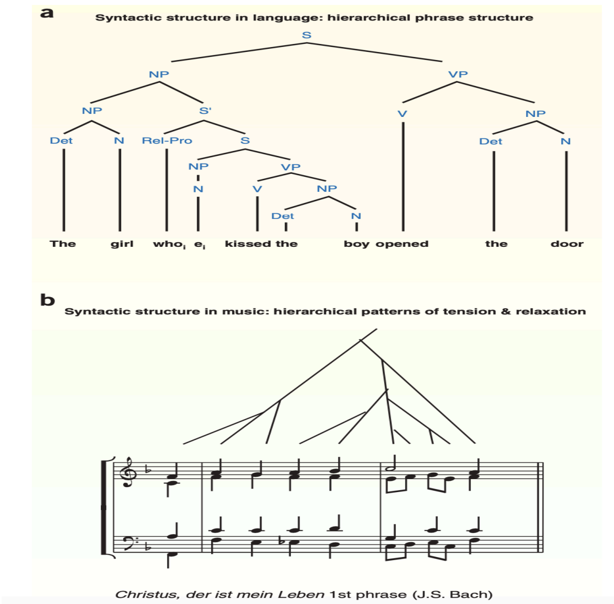

Figure #1: Hierarchy and Recursivity in Music (Jackendoff and Lerdahl 2006: 56)

Recent work on the grammar of dancing has similarly unveiled its hierarchical structure (Charnavel 2016; 2023). Like musical sequences, dancing sequences come with a *grouping structure*, which in the case of dancing has as its most basic components *continuous positions*. Movement is, accordingly, a sequence of continuous positions. Groups are themselves segmentations of movements into a set of continuous positions in the scenic space. Such grouping is subject to *well-formedness rules*—e.g., what positions can constitute a group—and to *preference rules,* which state substantive conditions about what parameters within dance affect perceived grouping, such as similarity—according to which positions that resemble each other tend to be perceived as grouped together—or repetition and parallelism. Rules of similarity, parallelism, symmetry and repetition apply recursively, and yield several hierarchical levels of grouping (Figure #2).

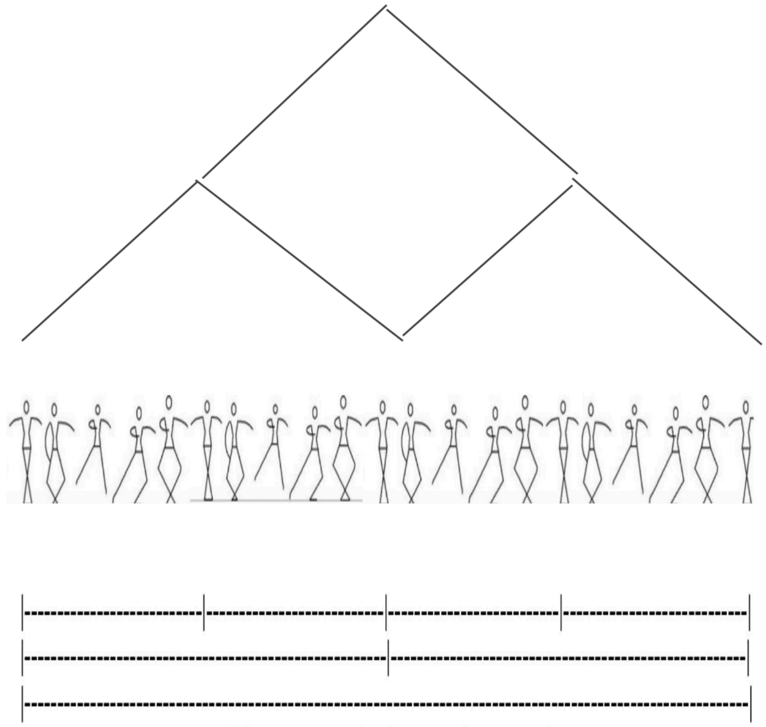

Figure #2: Recursivity in dance (Charnavel 2016: 30)

The non-linearized hierarchical structure of embodied skills such as lifting has been studied by Esipova (2023). Figure #3 represents its concentric phase in the repetition of a deadlift—where the eccentric phase is the reversing of the movement. Though the deadlift requires several repetitions, the repetitions themselves are hierarchical, and their nodes are movements such as knee extension and hip extension. New exercises can be created as innovative variations of existing exercises. There also exist modification patterns that, once learnt, can be productively applied to new cases. For example, one productive modification is the "1.5-rep" modification, whereby the lifter goes through a certain portion of the full routine twice within a single rep to increase time under tension for the target muscle(s) in that portion of the full routine. Repetitions themselves are embedded into large structures (Esipova 2023:§4), such as warm-up sets, exercise sessions, training sessions, training microcycle (weekly), training mesocycle (e.g., several weeks), and training macrocycle (over years).

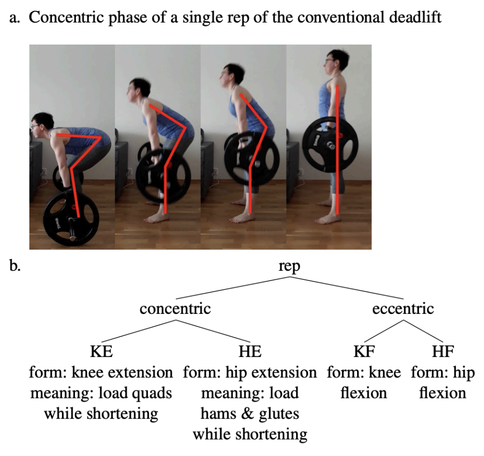

Figure #3: Hierarchy and Recursivity in a Deadlift (Esipova 2023: 888)

Indeed, any complex action—whether embodied or intellectual—can be thought of as having a hierarchical structure. Figure #4 shows how to think of the complex action of *making coffee* hierarchically as a tree.[8]

Now, of course, it is important not to conflate recursion with hierarchy. Recursion is a property of a function, not a structure. However, hierarchical structure is the sort of structure generated by recursive functions. Merely iterative or addition functions do not generate hierarchical structures (cf. Martins et al 2017). Thus, just like Chomsky argues that at the root of the hierarchy of languages there must be a recursive function such as merge (Hauser, Chomsky and Fitch 2002 and Berwick & Chomsky 2016), similarly, the hierarchical structure of skilled action warrants us to posit recursivity at its roots.

[8] Indeed, human cognition seems to be generally biased towards a hierarchical organization. See Steedman (2009). Recent work in semantics shows that context as well is best modeled as having a hierarchical organization (Kocurek and Pavese 2022).

Thus, just like that of thinking, the generativity of skills might be explained by their hierarchical structure and their recursivity. Moreover, if the signature of thinking is generativity and the generativity of thinking is explained by its hierarchical structure, then we have an argument that *every* kind of skill in virtue of its hierarchical structure—whether theoretical or intellectual, or practical and embodied—does bear the signature of thinking, or least of some cognitive process very much like thinking *vis a vis* its generativity.

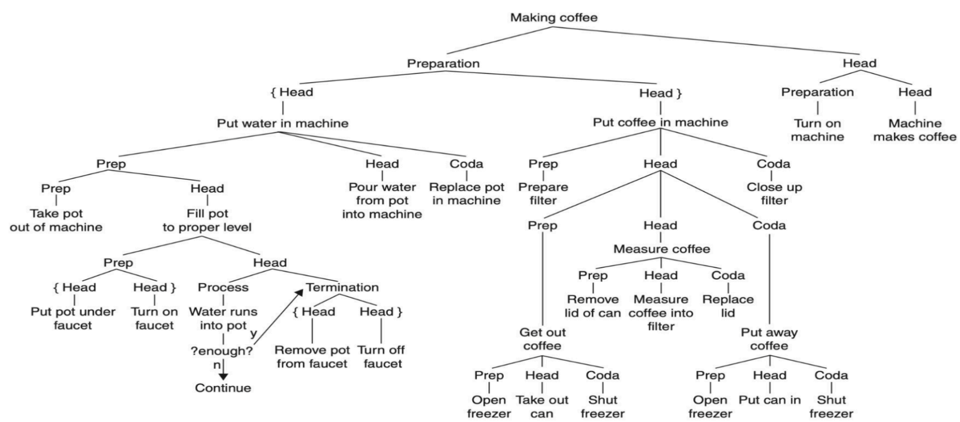

Figure #4: Hierarchy in food processing

5.2 The argument from executive functions

In the light of the generativity of skills and their hierarchical structure, one might concede that something like thinking—or a cognitive process very much like it in its generativity—is constitutively involved in every kind of skilled action. But one might insist that what is crucial to intelligent action is not just thinking *per se* but a *particular* kind of thinking—*conscious or flexible* thinking, the sort of thinking that pertains to what cognitive scientists call *executive functions*. The elitist might argue that, while conscious thinking is constitutive of theoretical and intellectual skills, it is incompatible, or even *hinders*, practical and embodied skills. Indeed, there is a long tradition that argues that conscious thinking hinders skilled performance in the practical domain. As Williams (1985, 167) states it "... a practical skill is destroyed by reflection on how one practices it."

In response, I first discuss a case study that nicely illustrates that conscious thinking improves embodied performance in cases of targeted innovation. Then, I sketch an argument to the effect that most, if not all, expert performances involve *some* degree of innovation. Following a widespread belief in cognitive science that conscious thinking is unmatched for its flexibility and creativity, this will provide some grounds for the claim that conscious thinking plays a role in many or most of expert performances, independently of the intellectual and embodied divide.

As a case study, consider the famous invention of the Fosbury flop, by the young Dick Fosbury. As a high school student, Fosbury struggled with the most common high jumping technique then available—the straddle technique, involving facing the bar forward, and twisting the body mid-air to navigate their way over the bar (Figure #5). Fosbury would not perform well with this technique, as he found himself dislodging the bar too often with his legs while passing the bar. As a result, he failed to even clear the minimum qualifying height for high school competitions. Fosbury soon realized he had to change his body movement in order to clear the necessary height—in particular, that by facing the bar backwards, he could elevate his body as well as with the straddle technique but that from that position he could more easily elevate the legs as the center mass of his body was passing below the bar, thus lowering the chances of dislodging the bar with his lower body. After many refinements and experiments, he realized that the flop would improve by building up sufficient speed to launch his or her center of mass into the air. So, he further reasoned to improve the run up to the jump. On this new technique, at take-off the leg nearer the bar (the lead leg) is held straight and swung into the air to clear the bar. At exactly the same time the hips and body are driven into the air by the take-off leg. As the jumper crosses the bar, the trailing or take-off leg has to be quickly swung up to clear the bar (Figure #5)

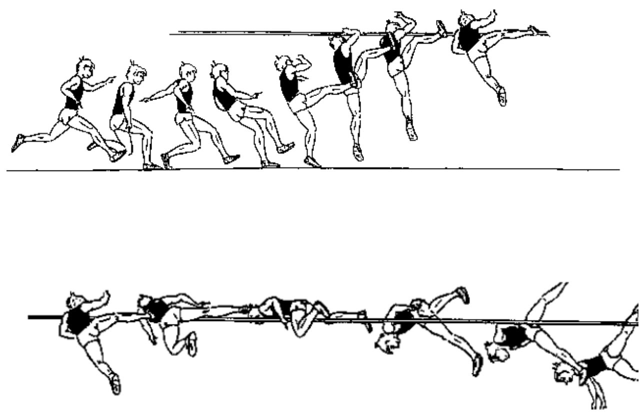

Figure #5: The Straddle Technique

Now Fosbury progressively developed his flop and the run up, over a 5-years period. He went from struggling to clear the minimum height required to qualify for high school meetings in 1963 to winning the olympic medals 5 years after, in 1968. He achieved this innovation, which revolutionized the sport of high jump, with continuous planning and conscious productive reasoning about how best to get his center mass to reach a higher height, given his physical characteristics and given his understanding of the extant techniques. Indeed, Fosbury provided explicit reports documenting the process of his innovation. In a 2014 interview with The Corvallis Gazette-Times, Fosbury said "I knew I had to change my body position and that's what started first the revolution, and over the next two years, the evolution."[9] He is reported to be looking for a "technique which involves sprinting diagonally towards the bar, then curve and leap backwards over the bar, to give one a much lower center of mass in flight than traditional techniques."[10]

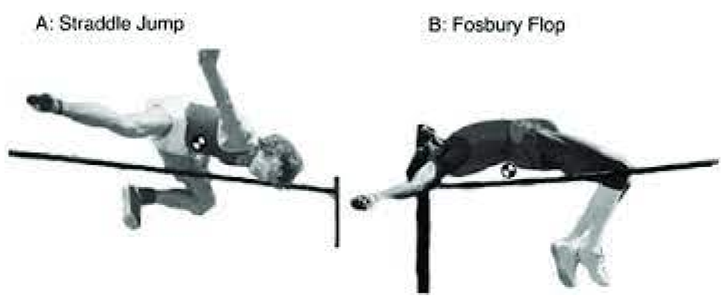

Figure #6: A Comparison

This case study is a vivid example of how conscious reasoning *can* improve skilled embodied performance. When a performance is to be innovated upon, conscious reasoning provides the level of flexibility required for the innovation.

This observation is, however, still compatible with conscious thinking being only preparatory, not central to the performance itself—for it is only in the preparation of the jump that Fosbury ought to think in order to innovate. If so, why at all think that conscious thought is present also during the performance?[11]

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[9] https://www.cbc.ca/sports/olympics/summer/trackandfield/dick-fosbury-death-high-jump-pioneer-1.6777588

[10] https://www.linkedin.com/pulse/innovation-mindset-lessons-from-dick-fosbury-ian-brookes

[11] Lots of work has been done in recent times to debunk the general idea that conscious thinking is necessarily detrimental to embodied performance (see Montero 2016). For a long time, people had thought that thinking processes were too slow to sustain the speed of expert performances—e.g., Papineau (2013). However, this conviction has recently been shown to be empirically unsupported. The voluntary reaction time response, which is the minimum time it takes to produce a non-automated response to a stimulus, has been estimated very fast—at 120-180 ms (Schmidt and Wrisberg, 2008; Christensen et al 2019:704). Likewise, the objection that thinking can be distracting has been similarly rebutted—it turns out that it is not so much thinking that distracts but *what* the expert

In the following, I would like to outline a more general argument that typical expert performances must all require some level of conscious thinking—an argument that is predicated on some assumptions that are widespread in the cognitive sciences. I develop the argument more systematically in Pavese (forthcoming: Chapters 7, 8, 12). Here, I will only give the argument a general overview.

The first premise is that targeted innovation must invoke some degree of conscious thinking whereby the expert individuates the issue to be addressed and devises a solution to it. This is well illustrated by the case of the Fosbury flop. Quite generally, conscious thinking is unmatched in its flexibility and creativity—indeed, it is widely thought in cognitive science that no other cognitive function exhibits the level of flexibility that conscious thinking affords (e.g. Collins & Koechlin 2012; Diamond 2013).

The second premise is that it is not only in the preparatory and planning phase that this sort of innovation is needed. Targeted innovation is often required *during the performance*, since it is not the case that every contingency can be planned ahead: almost every performance will involve problems the expert has not previously experienced. A new competitive performance, e.g., for a tennis player will involve a new adversary, on a new field and perhaps different terrain, in new climate conditions such as a drier or a umid weather, as well as novel combinations of factors. One might think that when factors are uncontrolled, performance must suffer, and it is at its best when the circumstances allow for automatism to be in charge. However, interestingly, that is not what we observe in a variety of embodied and practical skills: in a variety of new contingencies, the expert athlete can manage and perform successfully. Indeed, the capacity for the sort of novel behavior that one would have to exhibit in such contingencies arguably sets the

thinks about when acting (Montero 2016, chapter 6). See Pavese (forthcoming: Chapters 7-8-10) for a discussion of these issues.

expert apart from the novice in a variety of skill domains. As we have seen in §3, this flexibility is observed across a variety of domains—from climbing to mountaineering bikers as well as horse riding and pottery (Chisholm 2008; Christensen & Bicknell 2022:20; Milton 2024; Roux et al 2024).

Now, if expert performance were fully automatic and did not involve conscious thinking, then the skilled agent would have to have an automated response to all those contingencies. However, these responses would require *very large* spaces of different solutions, and so all skill domains will have very large solution spaces for all contingencies. Since this seems implausible, Christensen et al (2019:700-1) have argued on these very bases that skills cannot ever fully automatize.

Now, it is a general methodological assumption in cognitive science that only high order executive functions exhibit high flexibility (e.g. Collins & Koechlin 2012; Diamond 2013; Christensen et al. 2019), and in particular that *a particular reasoning system does*—system 2. 'Fluid intelligence' is a kind of flexibility that is supposed to attach to system 2 reasoning in particular (Sternberg 2008). This reasoning system especially exhibits flexibility, in the sense that it is less confined to previous solutions to a problem in order to deliver a workable solution to the current problem (Kahneman 2002).

Why think that conscious reasoning is unmatched in its flexibility and creativity by any other cognitive process? For one thing, conscious reasoning has access to *more general knowledge*—not just domain-specific knowledge that is accessible by subsystems. So, it is not similarly limited in the sort of information it can access. Moreover, it being conscious ensures that the agent has more control over it, and what that amounts to, among other things, is that when reasoning about a task and a situation, the agent has more latitude about modifying the reasoning in response to subtleties and changes of the situation and as well as of the task that they can reckon as they reason. Access to a more general knowledge database, more control by the agent, and consequent capability to adjust the reasoning in response to ongoing detected features of the situation makes conscious reasoning the flexible cognitive process *par* excellence.

Following this line of reasoning, expert performance will require some level of conscious thinking for coming up with innovative solutions to new contingencies.

5.3 The argument from cognitive control

The argument just sketched for the role of conscious thinking in expert action is entirely general. Nonetheless, one might contend that conscious thinking is still more central in theoretical and intellectual skills. It is tempting to think that while in theoretical and intellectual skills, the skilled performance is *always* under the cognitive control of the agent, not so for practical and embodied skilled performances, in which the body plays more of a starring role.

However, the assumption that intellectual skilled performances are dominated throughout by conscious thinking is actually at odds with what we know from the cognitive science of these sorts of skills. The picture of intellectual skills that emerges from the cognitive sciences is one in which part of every or most intellectual performance is actually not under executive functions at all (Smith and Blankenship 1989, 1991; Stokes 2007; Ivy 2022). Rather, it is *incubated*—delegated to cognitive subsystems that fall below the agent's control. Consider Jane, a mathematician who thinks all the hard thoughts for a bit, then leaves them to pause while a subcognitive system elaborates them to finally spit out the solution to her query, which Jane the day after simply has to acknowledge and verify. Jane is very efficient with her math problems and theorems. But the central part of the performance does not happen at the conscious level

(Figure #7).

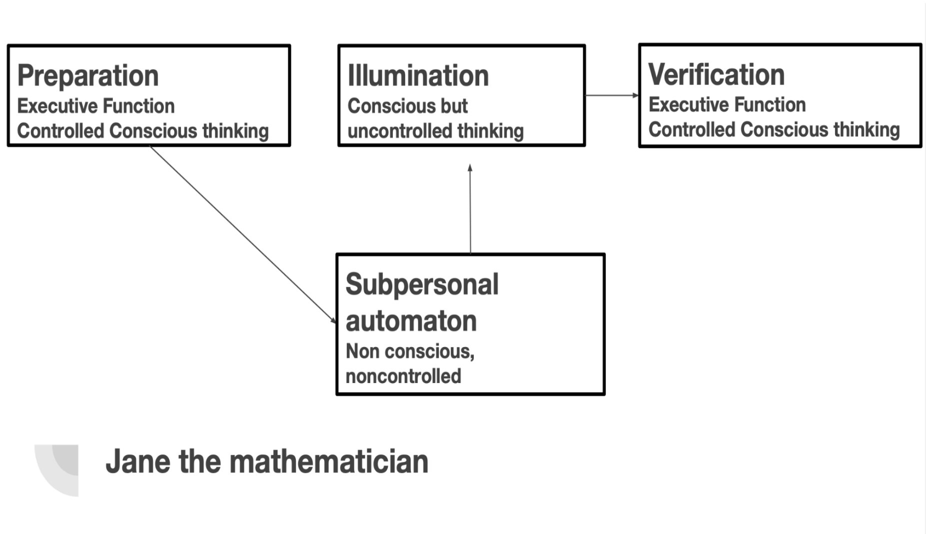

Figure #7: Incubation in theoretical/intellectual skills

Incubation is observable in practical and embodied skills too. A natural place to look to find the analogue of incubation for these kinds of skills is at mental practice and its long term effects on athletic performance. There is a strong correlation between mentally practicing and improvement in athletic performances; athletes who visualize do better, and athletes have stronger visualization abilities than non-athletes (Blankert & Hamstra 2017). Also, there is a general theory according to which imagined models for possible actions can be stored in working memory and latently activate connections between visual stimuli and motor control through dorsal processing streams (Moran & O'Shea 2020; Holmes & Collins 2001). So, mental practice gives rise to a cognitively loaded process with downstream effects on motor control—something functionally very much alike the sort of incubation that is found in intellectual skills (Figure #8).[12]

[12]Thanks to Ivy Spencer for discussion here.

Thus, when it comes to both conscious cognitive control and cognitive architecture, there do not seem to be principled differences in skills that track the intellectual/embodied divide. In all cases, some degree of conscious cognitive control is at least necessary for the sort of targeted innovations that expert performances are replete with; and in all cases, expert performances involve some degree of incubation such that part of the performance is not under the agent's cognitive control.

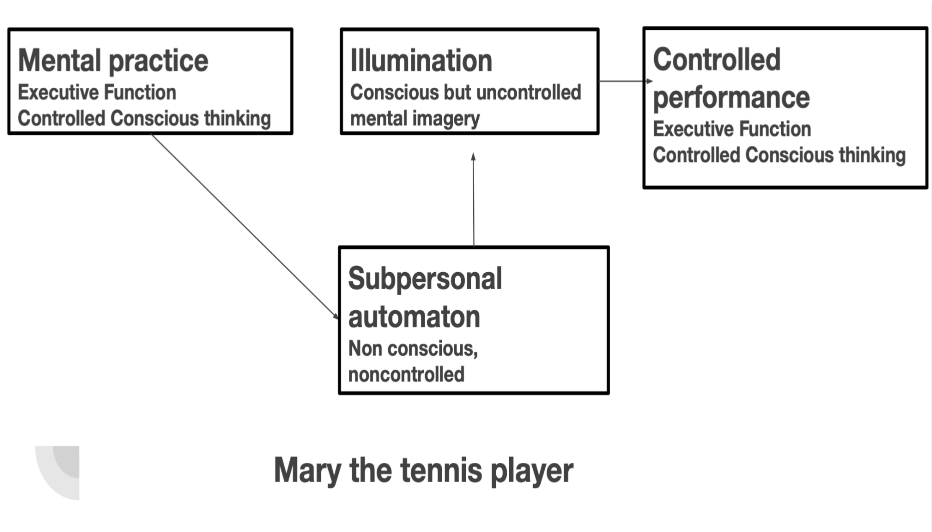

Figure #8: Incubation in embodied skills

5.4 The argument from knowledge and cognitive architecture

Yet another avenue for the elitist is to argue for the superiority of theoretical or intellectual skills on the ground that they require more *knowledge* about their subject matter than practical and embodied skills.

The argument from knowledge is flimsy. Recall that intellectual skills differ from practical and embodied skills in that they do not require the use of extremities for their exercise. It would be bizarre to think that any skill that does not require the use of extremities for its exercise will require more knowledge about their subject matter than any skill that does. In fact, if anything, the opposite seems more likely to be true—embodied skilled actions are likely to require knowledge about the external world more than intellectual skills since the success of bodily actions depends more on whether the external world cooperates than the success of mental actions does.

Now, it is true that the case of motor skills is what originally motivated the foundational distinction in cognitive neuroscience between declarative and procedural cognitive systems. The case of HM is well-known: After bilateral removal of the hippocampus, parahippocampal gyrus, entorhinal cortex, and most of the amygdala to relieve debilitating symptoms of epilepsy, H.M. was unable to form new memories of facts or events and he could no longer access memories he acquired in the few years leading up to his surgery. Nevertheless, Milner (1962) found that over 10 trials, H.M. developed motor-skills necessary to trace the outline of a five-pointed star in a condition of only being able to see the reflection of the star, his hand, and the pencil in a mirror. This learning indicated a dissociation between the function of forming memories for facts and events, on one hand, and the function of improving motor-skills, on the other. Cohen and Squire (1980) used this evidence to warrant the importance of the procedural component to motor skills.

While this has also often been taken to indicate that declarative knowledge is not necessary for motor skills, this conclusion has recently been shown to be unwarranted (Pavese 2013; Stanley and Krakauer 2013; Krakauer 2019). As it turned out, at each trial HM needed to be reminded of basic knowledge of the task—of what a pen and a mirror were—in order to even start the task. So far, from showing that knowledge of the task is not necessary for motor skills, the case of HM and amnesiacs are best understood as showing the necessity of *both* the declarative and procedural component to motor skills (Christiensen et al 2019; Pavese 2017, 2019, 2020). Moreover, the same dichotomy between procedural and declarative components has been subsequently posited for intellectual skills, with parallel evidence from amnesiacs (Anderson 1982; Taatgen 2013; Knowlton & Foerde 2008).

All in all, the extant neurocognition of embodied and intellectual skills warrants positing no difference in their knowledge component across these kinds of skills.[13] Intellectual and embodied skills are also arguably alike in their procedural components. Cognitive scientists speak of procedural systems as involving procedural instructions and take these procedural instructions to be *bona fide* representations (e.g., Tulving 1985; Anderson 1982; Knowlton & Foerde 2008). For example, Tulving tells us that "[t]he representation of acquired information in the procedural system is prescriptive rather than descriptive" (Tulving 1985: 387–8). Here Tulving is not just talking about the motor system but more generally about procedural memory systems which may be involved in the generation of embodied and intellectual actions alike. Along the same lines, Anderson (1982) studies intellectual skills such as learning to program a computer or to solve a differential equation. For the acquisition of skills of this sort, Anderson (1982:369-371) distinguishes a declarative system and a procedural system in which the domain knowledge is "directly embodied in procedures for performing the task." Procedures are characterized as "primitive rules" and such primitive rules are represented as instructions. Along similar lines, in their study of intellectual skills such as solving a differential equation, Singley & Anderson (1989:165) talk of "procedural representations" for algebraic operations such as 'restate' and 'evaluate'. They model procedural representations, along the lines of computer program's instructions (Singley & Anderson 1989:190–1).

[13]Action-theoretical considerations motivate crediting knowledge with a role to play in expert skilled performance, quite independently of the intellectual and embodied divide. A long tradition takes knowledge to be central to intentional action (Anscombe 1958). Similar arguments support the role of knowledge in skilled expert action as a form of controlled action (Pavese 2018; Beddor and Pavese 2022; Pavese and Beddor 2023; Pavese et al 2023). These arguments for the role of knowledge in skilled action hinge on entirely general features of control in expert action that are independent of the theoretical/intellectual and the practical/embodied divide.

In both the intellectual and embodied cases alike, the procedural component is generally understood as involving procedural representations but also as conducting computations over such representations. At least since Wolpert (1997)'s theory of motor control, neuroscientists have thought of motor processes as involving complex computations translating intentions into motor representations of goals (see also Butterfill and Sinigaglia 2014). In order to explain certain interesting cases of motor adaptations, Mazzoni and Krakauer (2007) talks of the motor system "as having a mind of its own," and elaborating implicitly planning driven by considerations of consistency in the perceptual and motor inputs—planning that can also be at odds with an agent's explicit strategy. As Fridland (2017) stresses, the motor system itself exhibits some intelligent behavior that in some respects resembles agentive intelligence. Chunking processes, enhancing the efficiency of both intellectual and motor performances, are recoverable for both intellectual and motor tasks alike (Pavese 2019, 2020).

5.5 The Arguments from Abstraction, the Level of Difficulty, and Independence

All in all, more parallels than differences emerge from the cognitive architecture of intellectual and embodied skills. Nonetheless, one difference seems undeniable: theoretical and intellectual skills concern more abstract subject matters than practical and embodied skills.

Abstraction is the process of subsuming representations under more general ones. The opposite of abstraction is *specification*—the process of breaking down general and abstract representations into more specific and concrete ones. According to the argument from abstraction, theoretical or intellectual skills are more connected to intelligence since they concern more abstract subject matters and so require higher levels of abstraction.

First off, notice that it would be a mistake to think that only theoretical or intellectual skilled actions involve abstract thinking and abstract representations. In evolutionary psychology, it is a given that the teaching of general and abstract truths enhances the acquisition of tool use. For example, Morgan *et al*. (2015)'s simulation models suggest that the teaching of abstract concepts, such as that of a *platform edge*, contributed to the development of Oldowan stone knapping techniques, as they evidence that just the acquisition of these abstract concepts improve the performance of agents learning how to knap. Even contemporary stone tool production is radically improved by the introduction of concepts for functional parts of the tool. For example, Adze making in Langda is associated with a large body of terminology and other technological concepts concerning both the functional parts of the tool as well as the different raw materials used to make them. The most expert and able craftsmen from Irian Jaya are those that have accumulated such abstract knowledge through years of apprentice and experience (Stout 2002). This work in evolutionary psychology is complemented by recent findings in cognitive psychology according to which abstract and linguistic representations, including the practice of labeling, can substantially improve performances at non-linguistic tasks (Kompa and Mueller 2020).

So, abstract thinking *can* positively affect practical and embodied skills, by affecting both cognitive control and the transmission of the skill. Nonetheless, theoretical and intellectual skills seem to involve *more* abstract thinking than practical and embodied skills. Should we conclude that they are thereby more intelligent?

Though it has a long pedigree in philosophy, the assumption that more abstraction always and invariably allows for a higher level of understanding ought not to be granted. That is so because abstraction is helpful cognitively in that it *simplifies* computation, making it more tractable (Mirolo et al 2022). Specification, by contrast, renders the computation more complex, and so less tractable. Thus, it is actually computationally *harder* to think by specification than to think by abstraction. If so, then it is questionable whether thinking by abstraction is more intelligent than thinking by specification since it is genuinely unclear why thinking of a subject matter by simplifying it should be considered more intelligent than e.g., reaching an understanding of a concrete situation in all its complexity and details. After all, the latter is more computationally difficult and much harder to program.

Of course, one should be cautious to move from the claim that something is harder to achieve to the claim that it requires more intelligence— "*work smarter, nor harder!*" is a popular slogan. Nonetheless, to the very least, these considerations undercut a widespread and commonsensical elitist argument that aims at establishing the higher intelligence of intellectual skills moving from their abstractness, on account that what is more abstract is harder and more difficult. More generally, there seems to be a direct argument from a task being more difficult to it being more cognitive and so more intelligent. Call this the argument from *levels of difficulty*.

It is indeed ordinary to think that certain intellectual endeavors, such math, physics and philosophy, are just intrinsically harder. Nonetheless, these widespread assumptions conceal an elitist bias. For while proving outstanding results in mathematics can be very hard indeed, certain embodied tasks are extremely difficult to do as well. As we have seen (§3.1.3), motor skills are actually much harder to program. One might respond that, though harder to program, such motor skills are easier *for us* to acquire, given our constitution. But this is not true for every embodied skill. The rabona shot or the step over in soccer are performances that only a handful of players can do consistently—most professional players find it too difficult to perform, and most people will never be capable of learning it. The same goes for many other embodied performances, such as the one-handed backhand in tennis or the step over in soccer.

Thus, if considerations of difficulty matter for intelligence, they seem to cut both ways. So, while it might be true that abstract thinking is more needed for theoretical and intellectual activities than for practical and embodied ones, we should be cautious in identifying higher levels of abstraction with higher levels of intelligence, since this identification itself might very well be an expression of a brute elitist bias.

A very different way of pushing the abstractness line on behalf of moderate elitism is to frame it as less about levels of generality and as more about levels of independence from specific features. Some might think, for example, that the activity of reason/intelligence pertains to what is "fully up to us," but once we consider bodily/practical skills, as Davidson (1971:23) puts it, "the rest is up to nature." As a defense of moderate elitism, one might contend that the theoretical/intellectual skills are especially intelligent in the sense that they are the purest: whereas the accomplishments in these areas are fully attributable to intelligence, in the practical/embodied domains they will be attributable to non-cognitive features (like strength) as well as external features (e.g. the particular wind that needed to be present for the whole-in-one).

This argument seems to inherit old substance-dualist assumptions about the independence of the mind on the body, that today are hardly sustainable. It is simply a myth that strength only affects bodily performances: physical strength has a mental correlate in *mental energy*, "the ability to persist for long periods thinking productively about a problem, the ability to focus attention, to shut out distractions, to persist in search of a solution" (Lykken 2005:331). Though mental energy can be improved with mental exercise, it is rooted in cerebral metabolism (Déli & Kisvárday 2020: 746). For example, changes in serotonin levels can affect it, as is well known for anxious subjects whose focus is thereby impaired (Wingen et al. 2008:222). Moreover, purely mental operations are also affected by a variety of bodily influences, such as those coming from the mood, which can affect concentration; think of the influence of a healthy diet on mental focus, or that of exercising or sleep. Thus, a variety of 'external' features over which the agent has little control can affect the operations of the mind—on account of all of this, it seems highly dubious whether mental operations are truly more under our control than bodily operations are.

6. The Anthropocentric Argument for Elitism

Perhaps the most common style of argument in favor of elitism relies on the thought that humans differ from non-human animals in that they uniquely possess certain skills—linguistic skills and skills that are based on linguistic skills, such as research skills. Since this kind of skillful behavior, and the capacity for complex thinking that comes with it, distinguishes us from non-human animals, it is natural to conclude that this sort of skillful behavior stands out as particularly intelligent (e.g., Berwick and Chomsky 2016).

Concerning this line of argument, I would like to question whether linguistic skills are truly the only skills humans excel at. Against this idea, there is reason to think that humans stand out in the animal domain in a *variety* of skills—*including* skills that humans share with nonhuman animals. If linguistic skills are not the only skills humans excel at, the conclusion that linguistic skills are the repository of higher intelligence is harder to sustain.

Of course, it is true that nonhuman animals are often better physically endowed from birth—they can exhibit more physical prowess than humans, more muscle structure, more aerobic capacity, better reaction time, more perceptual acuity, etc. As a result, for example, in many motor and perceptual domains, they outrun humans. But we should not conclude from this that their *skills* are better in those very same domains. For not every ability is a skill.

Skills differ from instincts in that they are learnable and from habits in the sort of control that they elicit and in their amenability to innovation (Pavese forthcoming, Chapter 1). If so, not every motor and perceptual capacity is a skill. For example, general vision, motor and perceptual acuity are not skills, since while they can be developed, they cannot be acquired. Basic motor abilities, such as locomotion and the capacity for basic limb movements, are not skills either, since they have all the hallmarks of instinctual behavior (Piaget 2005). Thus excellence at these tasks does not entail excellent *skilled* behavior in the corresponding motor or perceptual domains.

Instead, if one focuses on those abilities that are better titled to be considered skills—since they are learned, allow for a big variation in a population and are heavily affected by culture and social learning—it is unclear that nonhuman animals are better at them. For one thing, humans show bigger margins of improvements and more progression steps in most or all of those athletic activities for which training, active practice, and cultural innovation make more of a difference. For example, among primates humans excel in the long run (e.g., Lieberman and Bramble 2007), for which running economy, deliberate practice, and regular training play a substantially bigger role than, e.g., in sprinting. In the sprint, performances depend on reaction time and fast muscle fiber (Lippi et al 2008). Whereas reaction time has a limited margin of improvement when compared with muscular power and aerobic capacity, endurance athletes' performance is regulated by slow muscle fibers and by aerobic capacity which can be substantially increased by either regular training or manipulation. So sprint performances have a limited margin of improvement due to training than endurance performance.

As another illustrative example, humans have been capable of the comparatively higher margins of improvement in the high jump, where innovations such the straddle technique, the Fosbury's flop, or fiberglass poles (Dapena 2016), as well as the role of teaching and imitation from others are more determinant (Lippi et al. 2008). If what distinguishes skills from other abilities such as instincts and habits in the practical domain is precisely the role of active learning in their acquisition and their susceptibility to cultural innovation, then we find that it is not at all clear that humans do not also excel at practical and embodied skills.

As a final example, consider tool use. Primates are capable of tool use, and so are other animals such as dolphins and birds, which use tools for foraging and sheltering. Though tool use is a skill that nonhuman animals possess too, humans clearly excel at it. The sort of tools humans are capable of producing are much more diversified for functions than for any other animals. And complex forms of cumulative culture are clearly present only for humans. Cumulative culture is the phenomenon whereby a skill is innovated in a cumulative fashion across generations (Boyd and Richerson 1988; Tomasello et al 1993; Mesoudi and Thornton 2018; Birch and Heyes 2021), giving rise to the so-called *ratchet effect*—where a ratchet is a device with angled teeth that allow a bar only to move in one direction, with no possibility of reverting back to prior less effective states (e.g., Tennie *et al* 2009). This generational improvement gradually diversifies the range tools and artifacts available (Basalla 1988); sometimes improvements are even less gradual, such as the potters' wheel (Foster 1959), Cristofori's piano incorporation of hammers and action (Giordano 2016), or the electrification of musical instruments (Goldsmith 1977). By contrast, other species of animals, including our nearest primate relatives, do have tool use but it is less clear that their tool use traditions do not exhibit the ratchet effect (Tomasello et al 1993: 508; Boyd and Richerson 1988: 80; Dean et al 2014; Derex 2022).

In conclusion, there are a variety of skills at which humans excel and that are not exclusive to humans. Thus, there is little reason to think that human intelligence manifests more in linguistic and intellectual skills than in any of these other embodied and practical skills.

7. The verbal dispute objection

My goal in this article has been to make explicit the controversy between elitism and socialism, to sharpen it, and to lay the foundations for opposing the hegemony of elitism. On a thin conception of intelligence, every skillful behavior, whether practical or theoretical, whether intellectual or embodied, qualifies as intelligent; moreover, on these bases, a principle of like effects requiring like causes supports the stronger conclusion that skillful behavior is equally intelligent across the board. Finally, common arguments for elitism that are based on a thicker or anthropocentric conception of intelligence rest on shaky philosophical and empirical grounds.

My argument being inductive, it cannot be conclusive. Nonetheless, I take myself to have at the very least covered some of the most compelling arguments for elitism, and in this way to have set up a general divide-and-conquer strategy for a more open-ended defense of socialism. Here is the general strategy: For any cognitive structure that is invoked in a characterization of superior intelligence, either question whether it really is not also involved in practical and embodied skills; or, when there is strong evidence that such cognitive structures cannot be plausibly enter in an explanation of practical and embodied skilled behavior, ask the elitist to motivate why such cognitive structures should be considered as necessary for superior intelligent behavior.

This case for socialism is compatible with there being a *de facto* difference in intelligence that tracks the theoretical-intellectual/practical-embodied divide. I have put emphasis on innovation and flexibility as a mark of high intelligence (§§4-5). Suppose we find that skilled athletes or craftsmen tended, as a matter of fact, to be less innovative and, as a result, less thoughtful and so less intelligent than mathematicians. Even this difference, if there was one, would not show socialism false since it would be more likely due to contingencies about how the respective practices have culturally evolved than to principled considerations due to the nature of the relevant skills. An illustrative example: sport training tends to emphasize social learning—learning by imitation and by teaching—over individual learning, in which the individual has to find their own way to perform a task and so is encouraged to look for innovation if extant ways are not as effective, as in the Fosbury example. But this is a contingency of how the skill is practiced. If the sport skill was taught and transmitted differently, with more emphasis on individual innovation over imitation, then skilled performances in this area could become more innovative and so more intelligent.

I conclude by considering the verbal dispute objection against socialism (e.g., Hand 2007).[14] "Intelligence" comes from the Latin *intelligere*—to understand. Thus, etymologically, "intelligence" refers to intellectual abilities. Thus, while one might use "intelligence" to refer to excellence in the intellectual/theoretical domain or to the name of excellence in learned expertise more generally, both phenomena are real and need a theory of and it is a bit of a bookkeeping matter which one we use the word "intelligence" for. But one might object that, if we have to choose, the natural-language use of "intelligence" recommends reserving it for the narrow phenomenon. By advocating that practical and embodied skills ought to count as intelligent, one might worry that the socialist is simply advocating a change of meaning of the word.

[14] I am grateful to Uriah Kriegel for this formulation of the objection.

In response, my argument for socialism unveils the arbitrariness of restricting "intelligence" to intellectual and theoretical skills, by way of arguing that due to its distinctive amenability to innovation and generativity, every skill must involve cognitive structures of the same sort across the intellectual/theoretical, practical/embodied divide. If my argument is correct, then every skilled behavior falls naturally under the heading of 'intelligent behavior'. Consequently, using 'intelligence' more broadly to refer to the acquisition and exercise of every skill cuts nature at its joints better than using 'intelligence' narrowly just to refer to intellectual and theoretical activities. Thus, using 'intelligence' to refer to the wider phenomenon of skilled behavior is more natural (in Lewis's 1984 sense) than to refer to the narrower phenomenon the tradition has focused on.[15]

With this said, I do believe that a version of the verbal dispute objection applies to other forms of socialism. Recall that, according to anti-cognitivism, skills are not to be understood in terms of cognitive states, processes, or representations. Anti-cognitivist socialists advocate using 'intelligence' to talk about allegedly utterly non-cognitive behavior. In this sense, Ryle (1949) and Dreyfus (2002) are guilty of effectively changing the meaning of the word 'intelligence'.

My claim instead is that "intelligent" applies not just to intellectual and theoretical skillful behavior but also to skillful behavior that is practical and embodied, in virtue of all of these kinds of skilled behavior being highly cognitive. Because it does not compromise on the cognitive nature of skills across the board, this form of socialism is not as exposed to the charges of extending the concept of intelligence beyond its proper bounds.

So much the better for socialism. And for cognitivism.

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[15] One might object to thinking of the concept of intelligence as a natural kind that, as we have seen in §2, intelligence has value and so to this extent, it is normative. However, in this respect, intelligence is no different from other natural kinds that also are normative—such as the biological kind of life.

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