Should We Worry About Silicone Chip Technology De-Skilling Us?

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Abstract
It is argued that many means-end skills are mere drudgery, and there is no case from well-being to regret that the advance of technology has replaced them with machines. But a case is made that for humans possessing some skills is important for well-being, and that certain core skills are important for it. It is argued that these include navigational skills. While the march of technology has tended to promote human well-being, there is now some cause for concern that silicone chip technology is de-skilling us to an extent that impacts negatively on well-being.

1. Some important questions about human lives and the value of exercising skills

Consider two individuals, each of whom lives in London, and has booked a holiday cottage in Devon for a week. Each of them addresses the task of driving to their cottage. They employ very different means to navigate their way successfully to their destination. Iris has a good understanding of the geography of the UK. She knows that Devon is in the south west, with both a northern and southern coastline, to the east of Cornwall and west of Dorset, southwest of Somerset. She studies relevant road maps, and works out the best route to take: M4 motorway to Bristol, then on to the M5 until past Exeter, and so on. She utilises this knowledge as she makes her journey, referring occasionally to the map she has already studied to check. Bella, in contrast, has very little geographical knowledge. She knows that Devon has a coastline – her cottage is by the sea; and she vaguely understands that it is in the south of the UK; but beyond that she has little clue where it is relative to London and other parts of the country. She does not even know that she will be travelling west, not east, to get there from London. She does no research into maps of the area. Instead, on the day of travel, she simply inputs her desired destination into the GPS system in her phone, and then uncritically follows the instructions that its synthetic voice gives her at each decision point in her journey.[1]

[1] To serve the purpose of our present enquiry I have described two extremes. Most individual journey-makers will be somewhere between

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Both Iris and Bella arrive safely at their destination. Each is happy with the method they use. Each method has been equally effective. My question in this discussion is: is there any reason to think one method preferable to the other? Iris has an understanding, a mental map, of the region of the UK she has travelled through, and of the relative positions in it of the origin and endpoint of her journey. She has deployed this knowledge, along with map-reading skills, in working out her route. Bella lacks these skills, and this geographical understanding and knowledge almost entirely; instead, she possesses the relatively limited skill of knowing how to input a destination into her GPS device, and then follow its instructions ('at the roundabout, take the second exit'; 'in a quarter of a mile, turn left onto Chapel Lane' – etc).

One reason for preferring to rely on one's own navigational skills, rather than a GPS device, is avoidance of risk. Whenever one relies entirely on a device to replace a skill for one, one incurs dependence on the device for the execution of the task in question, and so the risk of being let down if it fails. The GPS worked well on this occasion; but on another it might break down, or be unavailable. (If it is on one's phone, that might run out of battery, or there might be no satellite signal for it to detect one's current location.). But this argument cuts both ways: computational systems can fail, but so can humans, whose susceptibility to error for all kinds of reasons from tiredness to carelessness to drunkenness is constitutional.

In any case, I want here to do what we might, after J.S. Mill refer to as 'taking the higher ground' (Mill, 1998 (1863), Ch. 2)[2]. I will consider whether there is a case to be made that deploying one's own navigational skills and geographic understanding to make one's journey is somehow non-instrumentally better than delegating all understanding and responsibility to an electronic device, of which one knows only that it generally works, and how to follow its dictates.

Even the most skilful orienteering enthusiast might on occasion, for sheer lack of time, make a car journey to a destination without seeking to attain any understanding of its location or the route to it, instead resorting to a GPS device. So our question is a more

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them. Using a GPS device critically, with some understanding of the task in hand, is very different from the uncritical use Bella is stipulated to make of it.

[2] In Mill's case, this consists in arguing the case for his proposed ethical theory, Utilitarianism, against the criticism that it is a 'doctrine for swine' by arguing that the 'higher' pleasures of intellect and sentiment are not just safer than bodily pleasures, but are intrinsically better qua pleasures.

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general one comparing the methods employed by Iris and Bella respectively. Is it non-instrumentally better as a general practise to use the method of acquiring and deploying geographical knowledge and navigational skills, as one's way of getting about, as opposed to being content entirely to lack that knowledge and those skills, and to instead use the method of relying on a GPS or similar device that simulates this on one's behalf? By 'non-instrumentally better', I mean that a method is better, and is so not merely because it is more reliable, or efficient, or is in some other way likely to have better consequences.

More precisely, I will investigate whether we can find an argument for the conclusion that deploying navigational skills oneself is better, while invoking only uncontroversial evaluative theses in our arguments. Our argument must turn on the question of what things contribute value to a human life. There are philosophers who hold that exercising skills is part of what is distinctively valuable in a human life. (See for instance Aristotle, 2002). This premiss, if allowed, gives immediately the answer that a method of getting around that deploys one's own 'on-board' navigational skills is better, efficiency and reliability being equal, than one in which one lacks those skills, having instead only the very limited skill of knowing how to work and obey the instructions of a GPS device: if exercising skills is one of the goods of human life, then other things equal, achieving a task in a way that exercises one's skill is better than doing it in a way that does not – the first, and not the second, contributes non-instrumental value to one's life. (Of course other things may not be equal. For instance, even if there is something valuable in exercising arithmetical skills, spending many hours doing a complex calculation by hand would not be overall better, if inputting the data to a computer could get the result accurately in seconds – leaving one free to engage in other skilful activities.)

But such a case would not persuade Bella – who, remember, is content with her practise - that her life would be better if she were to learn some geography and navigational skills. An insistence that her preferred method of getting by car to her intended destinations – relying on her GPS – is objectively worse, according to an invoked conception of the good in human life that places value on skills, seems to be a mere exercise in elitist paternalism. If we are to provide an argument that can persuade Bella she is missing out on something she herself would consider of value, worth having in her life, then we must find one that invokes only an uncontroversial component of the good for human lives: well-being. The core idea of well-being is that it turns on how well

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an agent's life goes *for that agent*; it measures a life as better only if it is better for her, from her point of view. The main components of well-being, happiness and pleasure, are internally connected to desire and preference. (See Crisp, 2017). So if we can make a case to Bella that by relying on her GPS, and failing to acquire and exercise navigational skills, she is missing out on something that has the potential to contribute to how well her life goes for her, we will have pointed out something that she will surely recognise as giving her some reason to acquire and exercise navigational skills.

Happiness and pleasure are uncontroversial components of well-being. I will consider whether invoking only these, one can make an argument – not that one should never choose to make a journey by reliance on a GPS device; as remarked already, that would be absurdly strong – but make an argument that the kind of skills involved when one does one's navigation for oneself are basic ingredients of a good (viz. happy) human life[3]; so that having and sometimes exercising them tends to make one's life better (happier).

Our question comparing two methods of arriving at one's destination on a car journey instances a very broad general question:

> For every task whose performance involves the exercise of a (more or less complex) skill, is it in some way non-instrumentally better, other things being equal, to acquire and exercise the skill oneself to complete the task, rather than relying on another person who has that skill, or a device embodying the skill designed and built by other person(s), to do the task for one?

This question is to be understood so that it receives a positive answer just if for every skill one is capable of acquiring, exercising that skill would contribute some distinctive positive non-instrumental value to one's life. If this is so, then for every skill one is capable of acquiring, one has some reason – pro tanto reason – to acquire and exercise that skill.

A positive answer to the general question would yield our conclusion about the value of navigational skills as an instance. However, it could be that there is no general case for the non-instrumental betterness of deploying skills oneself rather than relying on others, but there is one in the special case of navigational skills. This is what I will make a case for in what follows.

[3] This statement should be understood as a generic. The claim I will here argue for is not that it is impossible for a human being to lead a happy life while lacking any navigational skills; but that this would be exceptional. Typical happy human lives involve some deployment of them.

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Seeing our question as an instance of the broad general one suggests a case against it: it goes against a foundational feature of civilisation. The division of labour, and the development of specialist expertise, is a paradigmatic and essential feature of an economically and socially developed society. Some have a natural talent or bent for one thing, and go in for that; others' talents and inclinations point in a different direction. One person is good at growing crops, another at making pots, another at ironwork. So the blacksmith buys his corn, and sells his ploughshares to the corn-grower. No-one has both time and aptitude to acquire and deploy all the skills whose products contribute to a prosperous life, so each specialises in one department, and relies on the skills of others for other things.

But not so fast: this fact of the inevitable division of labour and specialisation of different people in different skills does not entail that our question receives a negative answer. It could be that, while I cannot both grow my own corn and make my own pottery, I have grounds to regret this fact. It could be that, for each skilful task, through failing to acquire and exercise its skill I am missing out on something worthwhile that I can't get in any other way. Sadly my limited capacities and circumstances mean I am restricted to acquiring only a few of the myriad of my potential skills. If this is so, then I have some reason – *pro tanto* reason – to learn to grow my own corn; although this reason is outweighed by circumstances that provide stronger counter-reasons in my case – I can't both grow my own corn and make my own pots, and I'm better at, and get more from, the latter. Generalising this point: if, for every skill I am capable of acquiring, exercising it would contribute some distinctive non-instrumental value to my life that I can't otherwise obtain, then for every such skill, I have some reason to acquire it; and some ground for regret if, given all the constraints of my situation, I cannot do so.

As remarked, no one human being can possibly acquire and exercise for herself all the skills whose outputs she will benefit from and rely on during her life. No-one can acquire all the skills of a car mechanic, an IT expert, a surgeon, a house builder…etc. So dependence on others in the form of reliance on them to exercise skills on one's behalf is part of the civilised human condition. But we still have choices to make, and questions to answer in this regard: should I seek over time to acquire and exercise as many skills as I can, thereby reducing my dependence on others? Which skills do I have some reason to acquire? Are there some core skills such that each one of us has some reason to acquire them?

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So how we answer our question about the non-instrumental value of exercising skills has practical implications for how we should seek to lead our lives - what choices we should make about which skills to acquire, and which to continue to employ others (or devices created by others) to exercise on our behalf. Whether exercising skills contributes value to human life is an issue with normative practical implications for each one of us; it affects what we have reason to do, as we plan the course of our life over time.

And there is a broad concern that the advance of silicone-chip-based technology in the 21st century, of which GPS navigation is just one instance, should prompt us to raise: should we be worried that our human lives are at risk of becoming increasingly de-skilled, as ever more sophisticated electronic devices are developed, which take over skilled tasks that previously could only be done by suitably skilled humans?

2. Four Principles about Reason to Exercise Skills

Let us refine our issue. I next formulate four principles of differing strengths about reason to exercise skills. The rest of the paper will consider which, if any, has a plausible case for it based only on the uncontroversial components of well-being: happiness and pleasure or enjoyment. The domain of quantification here is humans.

Unrestricted RAS: For each one of us, for every skill that one lacks and is able to acquire, one has some reason to acquire and sometimes exercise that skill; and for every skill one has, one has some reason to maintain and sometimes exercise it; where this is not merely instrumental reason.

Certain RAS: For each one of us, there is a certain set of skills one has or is able to acquire such that one has some reason, for each skill in the set, if one lacks it, to acquire and sometimes exercise it; and if one has it, to maintain and sometimes exercise it; where this is not merely instrumental reason. (Note: which these are will differ from person to person)

Some-RAS: Each one of us has some reason to ensure that one has and sometimes exercises some skills – that one is not entirely skill-less; where this is not merely instrumental reason.

Core RAS: There is a certain set of broad skill-types such that each one of us has some reason to ensure, if she is able, for every skill-type in the set, that she has and sometimes exercises a skill of that type; where this is not merely instrumental reason.

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The reasons mentioned in these principles are *pro tanto* reasons only, and the reason may be very weak. As regards Unrestricted-RAS and Certain-RAS, the reason to acquire a particular skill will inevitably in most cases be outweighed by other stronger reasons against since, as already remarked, no one has time to acquire all the skills they have the potential to master. However the reason is not destroyed, one still has some reason to acquire that skill though circumstance does not permit this; hence there is cause for regret about this fact. (Compare: suppose I want both to go to my friend's birthday party, and to attend the performance of the school play in which my daughter has a main role. Both are scheduled for the same time, so I cannot do both; I must lose out on one of these pleasures – there is cause for regret. While one reason is strongest and wins, the other is outweighed, not annulled.)

The reasons mentioned are not instrumental reasons: that is to say, the reason to acquire and exercise a skill obtains due to some value for one in that exercise itself, not due to beneficial further consequences of exercising it. (I have an instrumental reason to learn to play golf if taking part in my firm's golf days is an important means to further my career in the firm. This reason applies even if I hate playing golf, and get no enjoyment from doing so. In contrast, as will be argued below, the fact that I would enjoy playing golf provides some non-instrumental reason for me to learn to do so.)

There would be an instrumental reason to acquire skills if dependence on others was in itself bad, so that I have a reason to acquire skills to enable me to avoid this. We noted earlier that avoiding the risk of being let down by others provides one instrumental reason to avoid such dependence. This is not what I am interested in here. And in fact, dependence on others is in many cases itself part of a good. It is, for one thing, an essential part of caring personal relationships.

The reasons in our principles are normative reasons – reasons *for* acting in a certain way (See Raz 1999; Parfit 2011). There is for agent A a normative reason for her to perform an action of a certain kind φ-ing, when φ-ing would have some property that counts in favour of performing it, for agent A – there is something about φ-ing that makes it worth doing, for A. I am here concerned with properties of φ-ing that provide a prudential normative (PN) reason for A to φ; that is, something about φ-ing makes it good for A, from A's point of view. And I will assume that the property of φ-ing that confers such PN reason is that φ-ing would make a distinctive positive contribution not otherwise available to A's well-being - to how well A's life goes *for her*.

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So: A has a PN reason to φ just if φ-ing will make a distinctive positive contribution to A's well-being. This principle tells us what needs to be shown, for each of our principles, to establish it: the possession and exercise of skills as specified in the principle must in itself directly contribute in a distinctive way to the agent's well-being. In my arguments regarding our principles I appeal only to uncontroversial ingredients of well-being that are undeniably motivating as features of prospective actions: pleasure and enjoyment, and happiness

I shall assume that, where an agent has the desire to acquire a skill, she has some PN reason to do so. (If someone desires to φ, then φ-ing has at least one evaluatively positive property for her that links to well-being: it fulfils her desire to φ. This involves some neglect of tricky issues: cases where someone is wrong about what she would enjoy, and desires for bad things). The more difficult task is to show that an agent has some PN reason to acquire and exercise a skill, even when she lacks any inclination so to do. To say she does is to maintain that she is missing out on some good of human life if she fails to acquire and exercise the skill – i.e. that exercising the skill would contribute directly to her wellbeing in a specific way not otherwise available.

In the rest of the paper I will argue that there is no case to be made invoking only well-being for our strongest principle, Unrestricted RAS, and it is likely false. We next see that there is a relatively straightforward case for Certain RAS: I have some reason to acquire and exercise any skill such that I would enjoy its exercise.[4] I then make an empirical case for Some-RAS; and I finish with a further empirically-backed argument for Core-RAS. But first I need to say a bit more about what skills are.

3. Task-achieving skills and skilful activities

Skills enable one to do things. One has the ability to φ just if one is sufficiently likely to succeed in φ-ing if one tries, and one is disposed to try over a sufficiently broad range of circumstances. (This second clause blocks abilities vacuously possessed by those who refuse ever to try to achieve anything; see Sosa, 2015, p. 95). Speaking of trying ensures that only things one does, that involve agency, count as abilities – falling over is not an ability, even if one does it frequently. (The clown who 'falls' intentionally and skilfully is

[4] This case turns on the account of pleasure that I adopt. Whether this account is necessarily true or is contingent and empirical is itself debatable.

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another matter.) Skills are best seen as the mediators of abilities, hence more fine-grained than abilities. For instance, both Iris and Bella have the ability to reliably get by car to their intended destination; but they do so by means of different skills – skill at map-reading, versus at using a GPS device. (Clearly there are issues as to how finely skills are individuated: is someone who looks up a recipe online to bake a victoria sponge using a different skill from one who learned it from her mother and can remember it? These will not be pursued here.)

Skills can be sorted into epistemic or practical, however many involve elements of both. An epistemic skill is a knowledge base plus know-how or mastery of techniques that allows one to generate for oneself fresh knowledge in new circumstances, where one lacking that skill could not do so. Thus, for instance, a lab technician will be able to tell, from looking at a slide under a microscope, whether a certain virus is present in the sample, where a layman could not do so. And an expert on wild birds will be able to tell, from a variety of cues, what birds she is seeing or hearing while out on a hike. This skill is based in recognitional capacities for visual appearances and sounds of birds, mediated by relevant background knowledge, such as knowing that of two birds with similar appearance, one is common, the other very rare, in a certain region.

Being able to replace a worn-out clutch in a car is a practical skill: it has a practical result, a fixed car that can again be driven. Classifying skills thus by their outputs allows us to sort them as either epistemic or practical. A cabinet maker has the skill to make a fine chest of drawers and other items of polished wood furniture; a good baker has the skill to make a range of excellent breads and cakes. But this distinguishing criterion conceals the fact that most skills involve both epistemic and practical components: the mechanic both can diagnose what is amiss with my car, and knows how to fix it. Knowledge-base and skills to operate deftly are both involved, and are intermingled – a skilful worker 'knows what she is doing'.

Amongst practical skills, skills of doing something (other than generating new knowledge), there is an important distinction between skills that are, and are not, substantially teleological. The latter are skills that produce an end product, skilful means by which one achieves an end result that is distinct from the exercise of the skill, and (typically) remains after skilful activity stops. This is so of the cake-baker and cabinet maker. But other skills do not have an independent end-product, they are simply skilful activities. For instance swimming is a skill, but the only output it produces is itself, the activity of swimming. Of course one may swim to pursue further

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purposes such as winning a swimming race, but this is not an internal object of the skill itself. Cake-baking, in contrast, has producing a cake as its internal object; one who lacked it would not be engaging in the activity.

This distinction is significant when we consider our principles. Many substantially teleological skills are activities that humans only engage in because they are a necessary means to achieve their end-result. For most of us they are a tedious chore that must be done, and is only done, to get the desired end-product. Many domestic chores – washing clothes, house cleaning and so on – fit this model.

Skilled activities with no separate end-product do not fit the means-end model. There is no reason to engage in them unless either one finds them enjoyable, or they serve some further goal external to their identity – as with our reluctant golfer. Armed with this distinction, we will now consider the case for our principles.

4. No Case for Unrestricted RAS

For means-end skills whose exercise is not enjoyable for one, one has no PN-reason based in well-being to acquire and exercise the skill to attain its end-product, once a preferable alternative way of obtaining it is available – in the case of laundry, a washing machine. (A washing machine is a device invented and manufactured through the skills of others. In previous eras the wealthy would pay the less fortunate to engage in the drudgery of doing their laundry for them, without the aid of machines.) Many means-end skills such as doing housework and laundry are not enjoyable for most people, and so there is no cogent case from well-being to be made for Unrestricted-RAS. The falsity of Unrestricted-RAS is however contingent on the fact that many means-end skills are unpleasant drudgery: if, for every skill one is capable of acquiring, one would enjoy exercising it, then this principle would be contingently true for one. Invoking richer normative resources might also provide a case for its truth – for instance, if every piece of knowledge is of some value, and one can only know what it is like to exercise a skill by doing so. I find this implausible, and I conjecture that no convincing case can be made for Unrestricted-RAS, and that it is false.

Given that Unrestricted-RAS is false, contrary to this principle, there is nothing at all to regret about the invention of washing-machines, no distinctive aspect of human wellbeing is threatened or curtailed by their advent. On the contrary, it frees up people, mainly women, from the drudgery of scrubbing, rinsing and

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mangling, enabling them to spend their precious time on other more rewarding activities. What goes for washing machines goes for many other modern labour-saving devices: they are an unalloyed good, and their invention and widespread availability constitutes unambiguous human progress.

Equally, there is nothing to regret about the extensive social division of skills of labour. The division of labour and skills is a pervasive general good of civilisation and economic advance – so long as tastes and aptitudes are idiosyncratic, so some will gain satisfaction from exercising skills in activities that to others are just a boring chore. (Of course in our actual society who does what on behalf of whom is determined to a large extent by relative income and wealth, rather than differences in preferences. But the point about diverse preferences and aptitudes underwriting specialisation as welfare-promoting survives this fact.)

5. A Pleasure-Based Case for Certain-RAS

There are skills one possesses that one enjoys exercising; and there are other skills one currently lacks, but would enjoy exercising if one possessed them. It may seem a no-brainer that, for each such skill, one has some PN reason based in well-being to maintain and sometimes exercise that skill, if one already has it; and to acquire it and sometimes exercise it if one does not already. (Remember that these are only *pro tanto* reasons. Since, given my limitations of capacity and circumstance, I can only acquire a tiny proportion of the skills I am potentially capable of mastering, the reason to acquire a skill will be over-ridden by other competing factors in most cases. I have some PN reason derived from well-being to learn Russian, and Chinese, and Ancient Greek, and many other languages, since I would enjoy reading the literature written in them; but sadly it is way beyond my capability in my circumstances to learn them all.)

Not so fast. There is a fallacy in the inference here. One has some PN reason based in well-being to acquire a particular skill whose exercise one would enjoy, in virtue of that fact, only if the kind of enjoyment one would thereby get is distinctive, and cannot be obtained in another way; and its contribution to one's well-being consists in providing that distinctive kind. The pleasure of reading Russian poetry in the original must be something one can only obtain through doing just that, and that distinctive type of pleasure must contribute distinctively to one's well-being. If and only if this is so, then by not being able to read Russian, one is missing out on a

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good of human life that one cannot otherwise obtain; and so one has some reason to learn Russian.

So, if pleasure and enjoyment were a kind of uniform psychological stuff, a sensation caused by various activities and experiences but distinct from them, then the pleasure-based reason to engage in a pleasure-inducing activity would be only instrumental: in order to get the pleasure it causes; and, being one kind of stuff caused in different ways, any way of causing it would be equally good, as regards the pleasure. If this were so, then one would not need to learn to read Russian poetry in order to obtain the pleasure doing so induces; that same pleasure could equally be caused by many other pleasure-inducing activities, or indeed by suitable electrode-stimulation of the brain. There would be no hedonistic case for acquiring specific skills.

Pleasure and enjoyment are not like this. Pleasure is not one kind of sensation, but a variety of different pleasant experiences. And most of these experiences have complex representational content, and are inherently cognitive. Maybe there are some purely sensational pleasures: pleasant sensations such that their sensational quality is independent of any cognitive appreciation of their provenance and context. But the undeniable pleasures of our many pleasant skilled activities are not like this. And pure pleasant sensation independent of skill is rarer than one might think. Take tastes, for instance: surely these are simply pleasant (or unpleasant!) sensations, a sensory given that is independent of their cognitive setting? But try sipping a glass of milk thinking it is water – the result is very weird. Cognitive priming affects taste sensation; and in the same vein, relevant knowledge and discriminatory skill is involved in the background of taste experience. Think of the range of distinctive pleasant taste experiences enjoyed by an expert on fine wines. Her experiences are a product of her discriminatory skill and knowledge, and not available to one who lacks this. What she enjoys are the distinct specific tastes of particular wines. This not a generalised pleasantness with various different causes, nor is it a range of sensations whose availability and quality is independent of her background skills. (For an overview of accounts of pleasure, see Katz, 2016).

At the other extreme is Gilbert Ryle's view of pleasure as an aspect or manner of one's engagement in an activity (Ryle, 1949). If his view were correct, then one could only gain the pleasure when actually engaging in the activity. I will not adopt such an extreme view. Rather, I suggest that for our various skilled activities, the pleasure one gains from engaging in them is part of an inherently representational experience of one's engagement in the activity. This being so, one

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cannot enjoy the associated pleasure of a skill unless one has acquired the skill, with the discriminatory perceptual and action capacities that this involves. One cannot appreciate Chinese poetry if one cannot understand Chinese: accessing the pleasant experiences requires possession of the relevant skill. This is no less so in the case of various genres of music, which are also languages in the relevant sense. Appreciating a Mozart symphony, or a John Coltrane solo, involves hearing what is going on musically in its harmonic and rhythmic sequences, and this requires prior training of the ear. Enjoyment in this and many cases is a matter of appreciation, and this is a cognitive skill dependent on background knowledge and trained perceptual capacities. The same goes for many skilled activities: the enjoyable experiences of playing tennis, for example, are just that – experiences as of playing tennis; as such, they are available only to someone who has sufficient skill to play it. To have the enjoyable experiences of playing tennis one must know what it is like to play tennis; and this knowledge is only available to someone with some skill at it. (There are delicate issues about extent of skill required, of course. I cannot address these in this brief essay.)

Contrary to Ryle, I allow that one could on an occasion enjoy the pleasure of listening to a Mozart symphony through suitable stimulation of the brain to simulate the experience of actually hearing one (listening to a recording, after all, simulates the experience of hearing a live orchestra playing); and that one could enjoy the experience of playing tennis in, for instance, a vivid lifelike dream of doing so. But these pleasant experiences, with their complex representational content, are only available to one who in fact has the skill in question; and this requires having learned it, and exercised it on previous occasions.[5]

If this proposed account of the pleasure of skilled activities is correct, then Some-RAS is assured: one has some reason to acquire each skill such that one would enjoy exercising it since, on this account, there is no other way to obtain the distinctive pleasure in question. And that pleasure makes a distinctive contribution to one's well-being not otherwise obtainable. Which particular skills these are will, human nature admitting of variation, vary from one person to another. For the adventurous, the thrill of sky-diving and mountaineering are great; for others, the intellectual and homely pleasures of reading and knitting are preferable. As already remarked, this variation in human tastes and capacities makes specialisation in

[5] A more detailed treatment of these delicate issues is given in Fricker (2019).

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skills beneficial to welfare. Some people like doing tax returns! The specialisation of skills allows them become tax accountants, while others become doctors, or performing artists, or farmers, or mechanics, or IT experts – and so on.

Our discussion above has shown how someone can have a PN reason based in well-being to acquire a skill, despite having no current desire to do so: she would gain a distinctive kind of enjoyment from exercising it, not obtainable in other ways. This reason applies to her, it is a reason for her to learn and deploy the skill, even if as things stand she does not appreciate this fact. Such normative reasons *for* acting are thus 'external' reasons for action: they apply to an individual in virtue of relevant facts about her and the world (Williams, 1979). The reason becomes 'internal', motivating, when she herself comes to appreciate the relevant facts. Our social interactions show sensitivity to such reasons – 'Come on, try it, I promise you you'll love it!' we say to someone, about a novel experience or skilled activity she at present has no desire to engage in. 'You don't know what you're missing!' – this is the basis of the case for trying the new skilled activity: the person would want to do it, if she knew what it would be like for her.

The advance of technology replaces human labour, mostly exhausting drudgery, with machines, freeing up humans' time so they can spend it on other less exhausting and more interesting activities. With the advent of these technologies human skills that they replace are lost, perhaps irretrievably; but from the standpoint of a view of the value of human life on which it consists entirely in well-being, we have so far found nothing to regret about this. The Luddite urge to resist the advance of technology is entirely understandable. The fear is primarily the loss of employment as machines replace skilled human workers; but a thought about the value of the skills being lost may also be a motivation. (Think of the resistance to the introduction of machine looms to textile mills in the UK in the 19th century.) I am told that, when writing was first introduced into the ancient world, there were those who lamented the loss of the skill of memorising long narratives by heart that this would herald.[6]

From what we have established so far, it seems there is no reason to acquire a skill, or to regret lacking it, unless one would gain a distinctive kind of enjoyment from exercising that skill. And so it seems that

[6] Sadly I am no classical scholar, and I am indebted for this point to an audience member at a talk based on these ideas that I gave in the Philosophy Department at Edinburgh University.

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lamentation of our loss of means-end skills in the face of advancing technology is misplaced. (Add to this the fact that, as one skill becomes obsolete, a new skill – of operating the technology in question – replaces it. Once long poems could be written down, there was no need to learn them by heart; but there was a new need – to become literate. And this new technology and its skill opened up new possibilities that were an essential part of the advance of civilisation.)

But our investigation is not over. What about our last two principles concerning skills? Even though, in itself, one has no reason to acquire a skill if one would not enjoy exercising it, it could be that Some-RAS holds: one has some PN reason based in well-being to ensure one is not entirely skill-less. If so, this would give one some reason to ensure one has some skills, even if one does not enjoy exercising any of them, so none is such that one has some reason to acquire and exercise it in particular. (Compare: it may be that I need, on a certain date, to be in the UK; even though there is no particular location in the UK such that I need, on that date, to be in it.) So, if Some-RAS holds, we may have cause to worry about the advance of technology rendering us skill-less, even if the particular skills we no longer need, because computers and robots do for us the skilled things we used to do for ourselves, are not distinctively enjoyable to exercise.

And the worry about the advance of technology robbing us of our skills might also be validated, if we found a case for Core-RAS. Core-RAS will be true if there are certain broad skill-types whose possession is a necessary condition for, or ingredient of, human well-being. If the current amazing advances in computing science and robotics are developing devices with the potential to replace one or more of these core skills, then there is cause for concern that aspects of what makes human life worth living may be undermined, threatened by them.

6. An empirical case for Some-RAS

An adult human with normal cognitive capacities cannot be happy without some degree of self-respect. Pleasures are fleeting and with a salient sensory component, and it may be one can experience some of these although one thinks oneself worthless; but one will not enjoy them fully if one feels bad about oneself. A sense of oneself as being of no value, useless and not worth anything, is like a background pain that prevents one from enjoying what would

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otherwise be enjoyable events. So enjoyment is hard for someone who lacks self-respect. This is yet more so for happiness. Happiness is a more stable and global feature of one's psychology, and one cannot be happy unless one is at ease with oneself; and this requires that one regard oneself as of some worth.[7] Thinking of oneself as of no value, as 'useless' is intimately linked to thinking of oneself as 'not good at anything'. So it is very hard to have self-respect, unless one believes oneself to be good at something, to have at least some skills.

Given these facts about human psychology, each one of us has a PN-reason based in wellbeing to ensure that she has self-respect. And, this being so, each one of us has some reason to ensure that she has some skills. Having some skills is a necessary precondition for enjoyment and happiness.[8] This psychological law admits of exceptions for very young children, and some adults who are cognitively limited and simpler, child-like. But it holds as a broad generalisation about human nature: it holds for all those who have the cognitive capacity to have an opinion or attitude (explicit or tacit) about their self-worth.

7. And One for Core-RAS

Ok, so we need to have some skills in order to be able to respect ourselves, and so to be able to enjoy life. But are there any particular skills we need to have to be able to enjoy life to the full? – Any particular skills that play an important role in enabling or enhancing one's level of well-being?

Our fourth principle, Core-RAS, will be a contingent nomological truth if there is a certain set of skills such that every human enjoys

[7] These empirical claims are validated in the empirical psychology literature. Du, King et al. (2017) states that '…studies have shown that self-esteem is an important predictor of subjective well-being.'

[8] Pedants may object that the case offered shows only that one must believe oneself to have some skills in order to have self-esteem, rather than that one must actually have them. Unlike beliefs on theoretical topics remote from everyday experience, it would be hard for a belief that one has a skill to survive long, if it were false; in any case, it is likely that the actual experience of exercising skills is what promotes self-esteem. It is true that someone may overestimate the extent of their skill; and the converse gap is a real issue: individuals who find it very hard to believe in their abilities, despite in fact having various skills. The case made for Some-RAS requires that having skills is a necessary condition for self-esteem, not that it is sufficient.

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exercising them. But the issue I want to get at is whether the following thesis is true:

> (CS) There exist certain core skills (broad skill-types) whose possession is a generally necessary[9] facilitating condition for attaining and maintaining a happy human life.

One of the difficulties for determining whether (CS) is true, is that it is hard to place limits in advance on the diversity of possible types of happy human lives. Who knows how culture and social life will evolve, as technology produces new possibilities? Rather than seeking to anticipate all such possibilities and produce a thesis that holds necessarily, for all time, I will argue for a version of (CS) that holds as a lawlike truth regarding human life broadly as we know it now, in the early 21st century.

Human life has various broad features that recur across societies as we know them. The means of subsistence are scarce, so we need to be able to think and reason effectively about how to obtain them, as well as how to find a suitable mate. It is in our interests to understand the world we inhabit as fully as possible, in order to manipulate and control it, so a capacity for causal reasoning is a core skill. We are social creatures, and interpersonal communication and interactions including, in different circumstances, both cooperation and competition, are a fundamental aspect of our lives. So skills needed for social interaction are core. We need to have a capacity for mind-reading and empathetic understanding of others. We need to be able to communicate, so mastery of a common language is a core skill.

This much should be uncontroversial; but it is not my aim here to draw up a list of core skill-types. My aim is to sketch a case for the view that having a cognitive map of one's environment, and associated navigational skills for getting around in it, is among the core skills that each of us benefits greatly from having, since it greatly enhances one's possibilities for a happy life.

Why is knowing one's way around in one's environment conducive to well-being? Because it plays a fundamental role in enabling one to be in control of one's life, enabling one effectively to pursue one's goals. For most of one's projects and plans, being able to get to the right place at the right time is an essential ingredient in effectively pursuing them.

[9] By 'generally necessary' I mean that for the overwhelming majority of happy human lives it is a necessary enabling condition; but there can be exceptions. Cf footnote 11.

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There are two components to being able get around independently in one's environment: one's cognitive map and associated navigational skills, and one's capacity and opportunity by some means actually to travel around in it. My current focus is on the first of these. (Of course her cognitive map is of little use in furthering her goals to someone who is trapped in one location – if, for example, she is imprisoned. And we all need some means of travel to be available. For the less able – for instance, someone confined to a wheelchair after an accident – this may require supporting means of transportation even for short journeys, and we all must resort to them for longer ones, too far to walk, which must made by bicycle, or car, or train, or bus, or ship, or plane.)

We are animals. And animals need to know how to get home, where the dangers are and where one can keep safe from them, where the food is, where one can find a mate, and so on – all represented in a cognitive map of one's environment with one's current location at its centre.[10] The ability to locate oneself in one's environment, in which one knows the locations of the features that are salient for one's needs, is basic to effective pursuit of one's goals. It is needed for, or at least highly conducive to, autonomy, being oneself in control of one's life; and this, because it enables one to fulfil one's goals, greatly enhances one's possibilities for happiness.

Consider again Iris and Bella. Iris is always interested in understanding the geographic layout of a place she visits, and placing this within a broader grasp of the layout of her environment; and she likes to navigate her way through it by deploying this understanding: she likes to 'know her way about'. Bella in contrast has no interest in understanding the layout of her environment. She is happy uncritically to follow the instructions of a GPS device when making a long journey by car; and when she is, say, visiting a city with friends, she lets them do all the navigation in getting from the hotel to the museum to the coffee shop to the park and back to the hotel, herself acquiring no understanding of their spatial relations, no mental representation of this.

So far so fine for Bella: this is a choice she has, explicitly or tacitly, made for herself and, you may object, there is no reduction in her capacities for well-being entailed by it. I concede this. My case for the core status of navigational skills is not that one cannot lead a

[10] 'Cognitive map' here should be understood broadly: I do not mean to commit as to the particular format of the mental representations, which could represent spatial information procedurally, rather than in the manner of a physical map.

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happy life without employing them whenever possible, and extending them as much as one can. I only want to insist on a weaker, but still significant thesis: the skill that Bella fails to employ, when she gets to Devon using her GPS, without any grasp of the route, is an extension of a skill which, in its basic applications, is essential to being in control of one's life, and hence to well-being.

Knowing one's way about in one's environment is so basic that it is hard to imagine someone with a complete lack of it. Surely someone must at least know the way to her local supermarket, her children's school, her office; must have a mental map of their location relative to her home, and be able to deploy this to make her way there. And surely she must know how to get from the bedroom to the bathroom, from her home office in the attic to the kitchen in the basement! The capacity for mental representation of the layout of one's environment, together with navigational skills, which Iris but not Bella deploys in getting from London to Devon, is a cognitive resource that is fundamental to conducting one's everyday life. It is hard to see how one could get by, achieve one's most basic needs to survive, without deploying them to some extent. A complete inability to represent the spatial relations of significant objects and locations in one's environment, and correlated inability to navigate one's way to and from them, would render one reliant on specially devised compensating heuristics, or a suitable ever-present electronic device, or a faithful carer who leads one to where one next needs to be. There exist individuals who suffer from such topographical agnosia, or place-blindness, and one need only search the internet to find accounts from them of how disabling it is.

We have seen that some capacity to locate oneself and other objects of significance for one in a mental map of one's environment is a precondition, in the broad circumstances of human life as they currently are for most people, for effectively pursuing one's goals.[11] This makes it a key enabling condition for leading a happy life, and so a core skill. Is this a reason to value extending it beyond the level that is necessary for one's well-being? Should it motivate Bella, once we point this out to her, to stop using her GPS and instead apply herself to gain some understanding of geography and map-reading? There is no

[11] To re-emphasise: I am not claiming this as an exceptionless truth, even in current conditions. I do not intend to rule out that someone might lead a happy life of contemplation and abstract thought, while never leaving a small windowless room, food being delivered to them, and having no understanding of their environment. But this is radically a-typical for a human life.

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entailment: the fact that one must use a certain skill in order to pursue one's goals in some circumstances (getting from the bedroom to the bathroom, say), does not in itself give one a reason to use it in other circumstances where an alternative – a GPS device – is available. Nonetheless, appreciating that in navigating for herself on her trip to Devon she would be cultivating a skill some exercises of which are necessary for being in control of her life, might make Bella think differently about whether it is worth investing the time to find out where Devon is, and learn to get there without using a GPS. Contemporary authors have written books emphasising the value and importance in human life of navigational skills (Huth, 2015; O'Connor, 2019). Moreover there is evidence of the importance for brain health of cultivating navigational skills. Recent neuroscience studies have identified the key role of the hippocampus in navigational tasks, during performance of which it is activated (O'Keefe and Nadel, 1978). It fails to be activated when a GPS is used, and is larger in those with good navigational skills (Javadi et al., 2017). And there are indications that brain function in general is protected against decline when navigational skills are developed and regularly employed, thus maintaining the size of the hippocampus (Konishi and Bohbot, 2013).

One could try another tack, and seek to persuade Bella that she would enjoy using a map to herself navigate her way to her Devon cottage. In fact the two strategies are not wholly distinct: a sense of being in control of what one is doing, the progress of one's current activity, is itself pleasant. So, showing that in navigating herself Bella would be exercising a core skill, one whose use is key to being in control of one's life, is ipso facto making a case that she would enjoy exercising that skill. Bella might or might not be persuaded to improve her map-reading skills. I have sought to show that she has some PN-reason based in well-being to do so: if she remains unmoved, this is because she does not know what she is missing.

Finally, what of the larger question of our title: should we be worried by the prospect that, with the advance of increasingly sophisticated silicone-chip-based technology, computers and robots are taking over ever more of what have always been exclusively human capabilities, and are progressively de-skilling us? We saw that there is no general case, from the standpoint of well-being, to regret the demise of means-end skills that were not enjoyable to exercise; and we concluded that the march of technology has had a largely positive impact on the quality of human life. As one skill is lost, other new ones arise and replace it, and we have not so far been de-skilled as a result of advancing technology. Self-driving cars, for instance, will

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allow to more of humanity what the rich already had in the form of a chauffeur, and not having to drive frees one up to work or read while travelling – as train and bus travel already permit.

But still – have we reached a new place now, in this march, where human skills that contribute value to our lives are threatened? This question is too big to answer decisively here. But if the case made here that navigational skills are core is sound, there is some reason for concern. We should at least step back from what is happening in silicone valley and in robotics labs elsewhere, and say: 'Hey, wait a minute, let's think about the implications of all these new robotic devices for what is valuable in our human lives'. That is the moral I hope you will take away from the discussion in this paper.[12]

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[12] I have been mulling over the ideas in this paper for a long time, and they have developed in response to the numerous very valuable comments made by audiences on various occasions when I have presented them. Venues where I have done so include: Philosophy Dept, University of Edinburgh; Moral Sciences Club, University of Cambridge; Philosophy Department, University College Dublin; international epistemology conference in Bled, Slovenia; Philosophy Graduate Conference, University College London; and most recently, at a Royal Institute of Philosophy lecture in December 2019. My thanks to the many individuals in these audiences whose comments have improved and enriched the paper. A longer more detailed treatment including similar ideas is published in Fricker (2019).

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