

Virtue, Connaturality and Know-How

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Abstract: In this paper, we sketch a metaphysics of natural purposes that supports the claim that there are objective goods that beings need qua the kinds of being they are in order to flourish. We argue that flourishing includes the acquisition of virtues. We give a general account of virtue, roughly as a stable disposition to act upon a habit elevated to a skill of putting one's know-how into practice that springs from one's motivation to pursue what one perceives as good. We then provide a sketch of intellectual virtues as truth-seeking virtues that stem from a love of the truth. We discuss connaturality, namely those specific metaphysical accidents readily acquired by beings due to their first nature. We make an original distinction between ontological connaturality, namely the connaturality that belongs to animals qua beings of a certain kind, and habitual connaturality, namely our first natures suffused with virtues. Habitual connaturality is acquired through the practice of virtue and involves perceptiveness awakened by the possession of the virtue in question. The knowledge arising from this form of connaturality may be a form of know-how. We give an account of connatural apprehension and connatural propositional knowledge and discuss connatural know-how and argue that it makes certain virtues possible. At this point we will have shown that intellectual and moral virtues are informed by know-how. We go on to give analyses of know-how and skill in terms of counterfactual success. We show how skill is a refined form of know-how and how both know-how and skill are informed by moral and intellectual virtues. We conclude that know-how informs intellectual and moral virtues in the sense that virtue is to be elucidated in terms of skill, which is in turn to be elucidated in terms of know-how. Moreover, virtues inform know-how in the sense that know-how is to be elucidated in terms of intellectual and moral virtues. No circularity arises because different virtues and different forms of know-how are involved.

Keywords: *Aquinas, Metaphysics, Epistemology, Connaturality, Virtue, Intellectual Virtues, Know-How, Skills, Flourishing*

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Introduction

Virtue epistemology is new in one sense but old in another. The new tradition starts with figures such as Code, Greco, Montmarquet, and Zagzebski.¹ The old tradition has its pedigree in Plato, Aristotle, Aquinas,² and their modern interpreters such as Anscombe³ and MacIntyre.⁴ Virtue epistemology recognizes that knowledge is something we value and that propositional knowledge requires intellectual virtues, that is to say, virtues as applied to the intellect. Although much pioneering work in the new tradition has been done on propositional knowledge, comparatively little in it has been done on know-how. This is surprising, because one might naturally think of know-how as something to be refined into a skill, and virtues may be thought of as skills. In the modern epistemological tradition that does not take its direction from virtue ethics, propositional knowledge, as opposed to know-how, has received by far the bulk of the discussion,⁵ although since Ryle first argued that know-how is not always propositional knowledge,⁶ there has been a fairly recent resurgence of interest in know-how.⁷

We value intellectual virtues because they are skills that promote our flourishing, both as individuals and as members of a community. The intellectual

¹ Code, L. (1984). Toward a 'responsibilist' epistemology. *Philosophy and Phenomenological Research*, 45, 29–50; Greco, J. (1993). Virtues and vices of virtue epistemology. *Canadian Journal of Philosophy*, 23, 413–432; Montmarquet, J. (1987). Epistemic virtue. *Mind*, 96, 482–497; Zagzebski, L. (1999). What is Knowledge? In J. Greco and E. Sosa (Eds.) *The Blackwell Guide to Epistemology*, Oxford: Blackwell.

² For example, Plato observes that one may know certain things only if one has the right character. See the *Republic* II.16—III.18. 376e—412b where the education of the Guardians is raised. For Aristotle, see *Nicomachean Ethics* Bk 2 and *Politics* Bk 8. Aquinas recognizes that one's ability to see the demands of the good in particular circumstances depends upon one's character. See Preface to *Disputed Questions on Virtue*, xviii. Aquinas sees that we need to be formed in virtuous habits that dispose us to recognize moral saliency and provide us with an impetus for action, ideally as an immediate consequence of recognition. See *Commentary on the Divine Names*, chap. 2, 1.4, 191–92, translated in Naus, J. (1959). *The nature of the practical intellect according to Saint Thomas Aquinas*. Rome: Libreria Editrice Dell'Università Gregoriana. 147.

³ Anscombe G.E.M. (2005). *Human life, action and ethics: essays by G.E.M. Anscombe*, M. Geach and L. Gormally (Eds.). Charlottesville, VA: Imprint Academic.

⁴ MacIntyre, A. (1988). *Whose justice? Which rationality?* London: Duckworth and MacIntyre, A. (2001). *Dependent rational animals*. La Salle, IL: Open Court.

⁵ A notable exception is Craig, E. (1990). *Knowledge and the state of nature*. Oxford: Oxford University Press.

⁶ Ryle, G. (1949). *The concept of mind*, London: Hutchinson, 29; 31; 57–58.

⁷ For example, Hawley, K. (2003). Success and knowledge-how. *American Philosophical Quarterly*, 40, 19–31; Hetherington, S. (2006). 'How to know that knowledge-that is knowledge-how.' In S. Hetherington (Ed.) *Epistemology futures*, Oxford: Oxford University Press; Koethe, J. (2001). Stanley and Williamson on knowing how. *Journal of Philosophy*, 99, 325–328; Snowden, P. (2003). Knowing how and knowing that: A distinction reconsidered, *Proceedings of the Aristotelian Society*, 104, 1–29; Stanley, J. and Williamson, T. (2001). Knowing how. *Journal of Philosophy*, 98, 411–444; Williams, J. N. (2008). Propositional knowledge and know-how. *Synthese*, 165, 107–125.

virtues are truth-seeking virtues and stem from a love of the truth. Since love is itself a virtue—indeed it was what Tyndale called the greatest Christian virtue before the King James translation renamed it as charity—it may be seen as the virtue that motivates all other intellectual virtues. A commitment to the truth is presupposed by any intellectual virtue. For example, logic is important to a community, and in particular to the intellectual community, not only because there are rules governing the activity of logic but also because there are those within the community who are trustworthy in following the activity and because there are publically accepted standards of accountability in the way the activity of logic is practiced.

Here is how we will proceed. In section 2, we sketch a metaphysics of natural purposes that supports the claim that there are objective goods that beings need *qua* the kinds of being they are in order to flourish. In section 3, we argue that flourishing includes the acquisition of virtues. We give a general account of virtue, roughly as a stable disposition to act upon a habit elevated to a skill of putting one's know-how into practice that springs from one's motivation to pursue what one perceives as good. In section 4, we give a general sketch of intellectual virtues as truth-seeking virtues that stem from a love of the truth that are the skills to flourish intellectually. In section 5, we discuss connaturality, namely those specific metaphysical accidents readily acquired by beings due to their first nature. We make an original distinction between *ontological connaturality*, namely the connaturality that belongs to animals *qua* beings of a certain kind, and *habitual connaturality*, namely our first natures suffused with virtues—or vices, although we will concentrate only on virtues. Habitual connaturality is acquired through the practice of virtue and involves perceptiveness awakened by the possession of the virtue in question. The knowledge arising from this form of connaturality may be a form of know-how. In section 6, we give an account of connatural apprehension and connatural propositional knowledge. In section 7, we discuss connatural know-how and argue that it makes certain virtues possible. At this point, we will have shown that intellectual and moral virtues are informed by know-how. In sections 8 and 9, we give analyses of know-how and skill in terms of counterfactual success. We show how skill is a refined form of know-how and how both know-how and skill are informed by moral and intellectual virtues. We conclude in section 10 that know-how informs intellectual and moral virtues in the sense that virtue is to be elucidated in terms of skill, which is in turn to be elucidated in terms of know-how. Moreover, virtues inform know-how in the sense that know-how is to be elucidated in terms of intellectual and moral virtues. No circularity arises because different virtues and different forms of know-how are involved.

Metaphysics of Natural Purposes

The natural world appears in the phenomenology of our lives as demarcated into kinds of things. A human being is a different kind of thing from a dolphin,

although both are kinds of sentient beings, as opposed to a thorn. What kind of thing it is depends upon its causal powers, in other words, how it effects and is effected by other things. For example, a rose thorn may prick a human finger. It is part of the nature of the rose that its thorn is sharp and hard. It is part of the nature of a human being that its flesh is pierceable by sharp hard objects. If one encountered a thorn that could not prick a human finger or a finger that could not be pricked by a thorn, one would not normally take these to be a *rose* thorn or a *human* finger.

Things that share a range of causal powers belong to a natural kind. Our demarcation of natural kinds may be revised by the discovery of ranges of causal powers. For example, jadeite and nephrite were thought to be both kinds of jade until it was discovered that they have different ranges of naturally necessary chemical reactions, thus revealing them as different kinds of substances. Since the nature of a thing determines its causal powers, it cannot lose change these powers without changing its nature. For example, if a piece of copper ceases to be ductile, we would have excellent reason to think that its nature has changed. And since the range of causal powers determines what kind of thing it is, a change in its range of causal powers constitutes a change in the kind of thing it is.

Our nature leads us to act in ways that promote human flourishing. This shows that teleological explanation is confirmed by experience of the world, since it is impossible to describe an action without appealing an end to which it is directed. The end to which a living thing is directed is its purpose. When explaining parts of organisms, we recognize that a hand is for grasping and teeth are for chewing. We also discover purposes of the whole organism in five ways.

First, one cannot describe adequately the subsidiary purposes of parts without appealing to purposes of the whole. One can recognize that teeth are for biting only by understanding that the ability of some animals to bite is on the whole, good for them.

Second, we know what counts as the holistic good of organisms because we know what is bad for them. For instance, we know that being bitten is bad for a dolphin only because we recognize what is good for it, namely the well-being of its body, which partly constitutes a good life for it.⁸

Third, recognizing the holistic good of organisms embedded in a way of life allows us to recognize what is needed for the purposes of organisms to be realized more or less fully. This provides the notion of a flourishing life. A well-fed dolphin is a more flourishing dolphin than a less-well fed one. But recognizing a dolphin as a

⁸ We owe this example to MacIntyre, A. (2001). *Dependent rational animals*. La Salle, IL: Open Court. ch. 3, which we embellish below.

more flourishing dolphin involves recognizing what is distinctive of a dolphin's way of life, for example, that they are sociable creatures.

Fourth, knowing what counts as a flourishing life for an organism allows us to give a normative description of what that organism needs, in other words what it *ought* to have if it is to flourish. *If* dolphins are to flourish *qua* dolphins, *then* they ought to have water to swim in.

Fifth, knowing what counts as a flourishing life for an organism allows us to identify what promotes or hinders its flourishing.

Learning to work with other members of the pod to herd schools of fish onto sandbars gives a dolphin more nutrition and thus promotes its flourishing. On the other hand, the release of immunotoxic ballast water from ships impairs its resistance to disease and so hinders its flourishing. As we will now argue, human flourishing includes the acquisition of virtues.

Virtues

One has a virtue just in case one has a stable disposition to act, feel or perceive upon a habit elevated to a skill (ideally that one has reflectively appropriated) of putting one's know-how into practice, lying in a mean between a state of deficiency and a state of excess relative to oneself, which has as its standard the choices made by the *euphronimos*. One has this disposition because one is motivated to pursue what one perceives as individual and social goods. Thus, a person has the virtue of courage just in case she has the stable disposition to act in the face of danger upon a habit of so acting elevated to the level of a skill (which ideally she has reflectively appropriated) of putting her knowledge of how to so act into practice. Her disposition is a mean between what would count as her own timidity and her own foolhardiness in so acting, and which has as its standard the way the courageous *euphronimos* would act. She has this disposition because she is motivated to pursue what she perceives as individual and social goods. For convenience, we truncate this characterization of a virtue; one has a virtue just in case one has a stable disposition to act (or feel or perceive) upon a habit elevated to a skill of putting one's know-how into practice that springs from one's motivation towards perceived goods.

Moral virtues perfect our appetitive faculties, namely our will, desires and emotions, when viewed from the perspective of the moral faculties. Virtues allow their possessors to make appropriate and effective practical choices without requiring formal deliberation. They do so by inclining the virtuous individual both to perform actions of a certain type and to develop the sort of character that will be a font of actions of this desired type.⁹ A just individual is inclined to just acts, and a

⁹ See Aquinas, *Commentary on Aristotle's Nicomachean Ethics*, Bk. 2, lect. 2.

courageous individual is inclined to courageous acts. In turn, as we explain below, a skill is a refined form of know-how that is achieved by putting one's know-how into practice.

Thus, moral virtues school our sentiments, allowing us to act and react at the right time in the right way for the right reason and to the right degree. Moral virtues contribute to objective forms of human flourishing. Importantly, the possession of these habits contributes to our flourishing in that one knows how to do the right thing—and is skilled at doing it—because one is properly inclined to be a certain sort of person and to act accordingly. For example, the virtue of kindness is the habit of being kind, something that one knows how to do—and is skilled at doing—and that one acts as such because one desires to be kind. This habit helps us contribute to each other's flourishing. Similarly, it is good to be capable of anger, because we should be angry in the face of injustice, but it would be inappropriate to respond to provocation with an inordinate amount of anger. So we need to know how to be angry about the right things to the right degree at the right time in the right way for the right reasons.

Moral skill is a form of moral know-how, and includes prudential skill. We may know how to recognize morally salient features of circumstances and know how to think through our motivations and actions for appropriateness of fit with our flourishing as social beings. We may be skilled in recognizing conflicting demands that arise because of the multiple ways in which goods can be realized. The dedicated requirements of the professional musician may be at odds with the legitimate demands of family life. Both forms of life aim at genuine human goods and it is the task of the virtue of prudence to help mediate among these goods and how they are to be pursued within a holistic good life. Again, we may know how to give good advice to a friend who does not know the right thing to do. We need to be skilled in tempering or augmenting our emotional responses in trying circumstances to a degree that is appropriate.

Intellectual Virtues

As we have said, the intellectual virtues are truth-seeking virtues and stem from a love of the truth. Since love is itself a virtue, it may be seen as the virtue that motivates all other intellectual virtues. Thus intellectual courage is the stable disposition to skillfully act bravely when appropriate because one loves the truth. For example, to advance a bold conjecture in the face of the considerable doubt of one's peers in the intellectual community of investigators of the phenomenon under conjecture takes courage. A person well schooled in this community who advances such a bold conjecture must have the courage to face objection from those bearing a

defeasible right to be taken seriously. She does so because she desires to acquire and disseminate the truth.

Intellectual virtues perfect our intellectual faculties when viewed from the perspective of the intellectual faculties. They contribute to our flourishing because they assist us in our acquisition of truth and the avoidance of error. Intellectual virtues include those of accurate recollection, keen and careful observation and attentiveness. For example, the quality of the powers of memory we get from nature is a matter of luck, but transforming them into skills of recollection requires developing habits that include those of accurately recalling past experiences in circumstances in which it is appropriate to do so. Insofar as one is virtuous, one develops this habit because one is motivated to develop it from a desire to obtain and retain truth.

Intellectual perseverance helps us to develop our own arguments as best we can as well as understanding the arguments and objections of others. Perseverance demands intellectual courage in the face of obstacles and assists us in maintaining a rational belief in the face of dissent, objection, mockery and prejudice. Intellectual humility keeps us alive to the actuality of our own ignorance and fallibility, and thus provides us with the openness required to change our minds. Humility allies with fairness, which encourages us to pay attention to dissenting opinions, arguments and objections. We have a natural interest in cultivating these virtues, for doing so promotes our objective flourishing as humans. Anyone who possesses the intellectual virtues has in a literal sense the know-how—indeed the skill—to flourish intellectually.

Connaturality

Connaturality refers to those specific metaphysical accidents readily acquired by beings due to their nature—initially, their first nature, which is the kind of substantial being they are. Here, we introduce an original distinction between two kinds of connaturality. There is the connaturality that belongs to animals *qua* beings of a certain sort. We call this *ontological connaturality*. It is ontologically connatural to us as human beings to be inclined towards goods such as life itself and those conditions required to sustain it. We are also naturally inclined towards goods such as intellectual curiosity and sociability. These inclinations are ontologically connatural since they provide our reason with its premises and with criteria for making sense of experience.

What we call *habitual connaturality* involves our second natures, in other words our first natures suffused with virtues—or vices, although we will only be concerned with virtues here. Habitual connaturality is acquired through the practice of virtue and involves perceptiveness awakened by the possession of the virtue

in question. The knowledge arising from this form of connaturality need not be propositional. It may be a form of *knowing how* to perceive the salient moral features of circumstances that demand the exercise of a virtue. For example, a friend may know how to perceive one's sadness that would be overlooked by a non-friend. The apprehension of one's sadness calls for moral judgment about what needs to be done.

Both types of connaturality are kinds of love. In ontological connaturality the objects of our connatural affectivity incline us towards them and make us receptive to their attraction.¹⁰ Habitual connaturality is also a kind of love. It involves an understanding that is embedded in the acquisition and practice of specific virtues. This understanding occurs because the subject identifies with the object of cognition. This identification is love in act. A virtuous person not only does the right thing but takes delight in—or *loves*—doing the right thing because it is the right thing to do.

Connatural knowledge, connatural apprehension and connatural propositional knowledge

Connatural knowledge is knowledge that is readily acquired by beings of a certain nature.¹¹ For instance, dogs have knowledge of a scent-world that exceeds our capacity, because dogs are by nature better suited to process olfaction. Such knowledge may be a sort of judgment or may be receptiveness to correct judgment, inclining us towards objects of desire and love. Thus connatural knowledge involves both apprehension and judgment and springs from the nature of the knower. For example, a dog has connatural apprehension of noises that we cannot hear. This metaphysical fact is reflected in epistemology. Since the ability to reliably discriminate an X—in this case a certain noise—from non-Xs entails possessing the concept of an X, then given Searle's observation that no subject can hold beliefs that embody concepts which that subject fails to have,¹² it follows that unlike us, the dog may form the judgment that the noise is present.

This judgment might even be partly constitutive of propositional knowledge. On a truth-tracking analysis of propositional knowledge, a subject *s* who holds a true belief that *p* also knows that *p* just in case two counterfactual conditionals are satisfied. These are *variance*: if it were not true that *p* then *s* would not believe that *p*;

¹⁰ Likewise our connatural anti-affectivity repulses us from its objects and makes us unreceptive to their attraction.

¹¹ See Aquinas, *Summa Theologica* I.13.1 *ad* 8; Anscombe G.E.M. (2005). *Human life, action and ethics: essays by G.E.M. Anscombe*, M. Geach and L. Gormally (Eds.). Charlottesville, VA: Imprint Academic. 59-66; Maritain, J. (1953). *The range of reason*. New York: Charles Scribner's Sons; and, Simon, Y. 1986. *The definition of moral virtue*, V. Kuic (Ed.) New York: Fordham University Press.

¹² Searle, J. (1992). *The rediscovery of the mind*. Cambridge, Massachusetts: MIT Press, 155-162.

and *adherence*: if it were still true that *p* under slightly changed circumstances then *s* would still believe that *p*.¹³ Thus you know that it is raining just in case you have a true belief that it is raining and if it were not raining then you would not believe that it was (variance), and if it were raining under slightly changed circumstances (say with a slightly higher ambient temperature than in your actual world) then you would still believe that it is raining (adherence). So animals may have connatural propositional knowledge that our natures preclude. For it might be true both that were the noise not present then the dog would not believe that it is present (satisfying variance) and also true that were the noise present under slightly changed circumstances (say with a slightly higher degree of humidity than in the actual world) then it would still believe that the noise is present (satisfying adherence). This is because of an underlying causal mechanism that springs from its first nature, one that human nature does not accommodate.

Connatural know-how and moral and intellectual virtue

Connatural know-how is know-how that is readily acquired by beings of a certain nature. An example is a pig knowing how to find truffles. This know-how may be ontological, springing from its first nature. Or it may be habitual, and thus part of its second nature, as when the pig is taught to refine its know-how into a skill. Human beings may connaturally know how to perceive the salient moral features in circumstances that demand the exercise of a virtue. For example, reconsider our example of a friend who knows how to perceive one's sadness that would be overlooked by a non-friend. The apprehension of one's sadness calls for moral judgment about what needs to be done. This know-how may be refined into a skill through habitual practice. Then the know-how may be transformed into the virtue of sensitivity at the level of our second natures. At the same time we have connatural inclinations to perform specific types of action in these recognized situations, such as providing comfort and advice. In short, we know what to do. And if we do so because we love to do so and if we have been schooled in doing so to the extent that we are skilled at doing so, then at the level of our second natures, we may possess the virtue of kindness.

In turn, the possession of virtues inclines us towards salient moral features of what we connaturally know by acquaintance. This is why we develop habits, because human beings, who are by nature agents, necessarily express their first nature in

¹³ See Nozick, R. (1981). *Philosophical explanations*. Cambridge, MA: Harvard University Press. Nozick's final analysis proceeds in terms of methods of believing, but our discussion applies to it, *mutatis mutandis*. Truth-tracking analyses of propositional knowledge are still live options in the light of Adams and Clarke's defense of them against putative counterexamples, see Adams, F., and M. Clarke. (2005). Resurrecting the tracking theories. *Australasian Journal of Philosophy*, 83, 207–221.; also see, Adams, F. (2005). Tracking theories of knowledge. *Veritas*, 50, 11–35.

activity. Through action comes the development of a habit for that sort of action. As Aquinas sums up Aristotle, ‘like actions produce like habits.’¹⁴ Our second nature must be in line with our first nature for us to flourish. For example, as a matter of ontological connaturality, we are naturally inclined towards parenting, and there is a sense in which we naturally know how to be a parent. But there are degrees of know-how, because one person may know better than another how to be a parent, with ensuing degrees of human flourishing. This know-how constantly put in practice becomes a habit and ultimately a skill and will include virtues of attentiveness, care and concern at the level of our second natures. These in turn engender the capacity for perception of moral salience. A good parent is capable of perceiving potential dangers that may be overlooked by a non-parent, such as staples on the floor that a baby could swallow. It makes little sense to say that one is disposed to act in one way rather than another unless one is able to apprehend the salient features of situations that would trigger one’s acting upon that disposition.

The loving inclination found in connatural apprehension of moral salience is not an essential feature of propositional knowledge. A smoker who accepts the truth of the proposition that smoking is bad may still continue to smoke. But a person who accepts the truth of the proposition that she should act appropriately on her generosity would not be generous if she regularly fails to so act.

We have made a case for know-how as a component of virtue. But second-order know-know is also important. One might not know how to best bring up one’s children or recognize dangers to others. Nonetheless, one might know how to acquire the skills for doing such things. Or one might not know how to tell whether one’s moral judgments (say on capital punishment, suicide and abortion) are inconsistent. Nonetheless, one might know how to acquire the skill in detecting such inconsistency, perhaps because one has a reliable method of undertaking a reputable course in critical thinking. Likewise, one might not know how to accurately recall important events yet still know how to improve one’s powers of recollection because one has a reliable method of acquiring a reliable method of accurate recollection.

There are also external relations between know-how and virtue. For example, one may know how to curb or extinguish bad habits, just as one may know how to reinforce or engender good ones. These may be habits of our moral or intellectual lives. In sum, the habituated skill of acquiring virtues is itself a virtue.

Some virtue epistemologists distinguish intellectual virtues that are reliabilist from those that are responsibilist. Virtue reliabilists¹⁵ take intellectual virtues to

¹⁴ In *Nicomachean Ethics* II.1, 1103a14-b1 and Aquinas’ commentary.

¹⁵ Greco, J. (1993). Virtues and vices of virtue epistemology. *Canadian Journal of Philosophy*, 23, 413–432.

include faculties such as perception, and memory. Such faculties are part of one's first nature and should constitute reliable methods of acquiring true beliefs. Virtue responsibilists (such as Code,¹⁶ Hookway¹⁷ and Montmarquet¹⁸) take intellectual virtues to include refined character traits such as attentiveness and open-mindedness. Such refined character traits are part of one's second nature and are traits for which one is responsible.

We have not made this distinction. This is because it is not useful in the light of what we have said about connaturality and *phronesis*. At the level of ontological connaturality, reliabilist faculties—or virtues—such as accurate perception and good memory may be part of one's first nature, but at the level of second nature, these become responsibilist virtues. Moreover, the exercise of any virtue demands *phronesis*.

Thus someone might be born with good eyesight, which is good insofar as it is among other things a capacity for the acquisition of truth derived from perception. Such a person has acquired this good by luck. But she may still choose to try to improve her powers of observation, for example by training to become part of a mountain rescue team. She might learn techniques for improving her night vision, learn how to recognize indicative features of impending rock falls or develop the habit of using peripheral vision to scan for movement. This more-perfected capacity of observation may be seen as an intellectual virtue insofar as it is an improved capacity for the acquisition of truth derived from perception. Moreover, she must exercise practical judgment in deciding when to exercise these powers of observation and to what degree. Exercising them all to their fullest extent might be a waste of intellectual and physical resources in many circumstances, and carefully scrutinizing the features of all the passengers on a bus could well be a sign of paranoia.

Similarly, a person might be naturally alert to her environment, yet learns how to pay attention to the salient points of a philosophy paper in the face of growing drowsiness. Such a successful choice might partly constitute the intellectual virtue of attentiveness. Moreover, she must judge when to exercise the right degree of attentiveness. In most circumstances, she would be wiser to try to pay more attention to a hurricane warning that comes on the radio than to the music that precedes it.

The exercise of recollection likewise needs judgment. Someone who is painfully aware that certain periods of her childhood are painful may be wiser in not trying to recall them in detail.

¹⁶ Code, L. (1984). Toward a 'responsibilist' epistemology. *Philosophy and Phenomenological Research*, 45, 29–50.

¹⁷ Hookway, C. (1994). Cognitive virtues and epistemic evaluations. *International Journal of Philosophical Studies*, 2, 211–227.

¹⁸ Montmarquet, J. (1987). Epistemic virtue. *Mind*, 96, 482–497.

This point about judgement holds even for animals. A lion by nature may have the ability to stalk and kill its prey, but it still has to learn which kills are too dangerous to attempt, the degree of patience required and the optimal opportunities of attack.

So far, we have made a case for know-how, when elevated to a skill, as a component of virtue. Now it is time to give analyses of know-how and skill. We do so in the following two sections, in which we show how know-how and skill are both informed by moral and intellectual virtues.

An Analysis of Know-How

Contrary to previous writers, knowing how to do something is not just the ability to do it, as shown by cases in which someone still knows how to do something that he is newly unable to do.¹⁹ Consider Seth, the champion cyclist, who has just lost his leg in an accident. Evidence that he still knows how to ride a bike is that he has forgotten nothing about riding a bike. Moreover, he could teach others how to ride a bike, and it is plausible that just as you can teach others propositional knowledge if you have it yourself, so you can teach others how to do something when you know how to do it yourself.²⁰ A puzzling feature of this case is that although the loss of the ability to ride a bike does not prevent Seth from knowing how to ride one, it does seem to deprive him of skill in riding one. We capture this intuition in our analysis of skill in the next section.

An equivalent way of saying that *s* knows how to do so-and-so is that she knows how to perform the *task* of doing so-and-so. Although wordier, this formulation allows us to see that tasks come in loose families; loading a shotgun is a different task from loading a rifle, but both may be described as ‘loading a gun’. With this in mind, we propose,

s knows how to do so-and-so under circumstances *C*²¹ just in case

¹⁹ See Ryle, G. (1949). *The concept of mind*, London: Hutchinson, 33; Lewis, D. 1990. ‘What Experience Teaches’. In W. Lycan (Ed.), *Mind and Cognition: a Reader*, Oxford: Blackwell, 516; and von Wright G. (1963). *Norm and action. A logical enquiry*. London: Routledge & Kegan Paul, 48. We here modify the analysis of know-how defended by Williams, J. N. (2008). Propositional knowledge and know-how. *Synthese*, 165, 107–125, that is in turn inspired by Hawley’s partial analysis, Hawley, K. (2003). Success and knowledge-how. *American Philosophical Quarterly*, 40, 19–31.

²⁰ A case in which you do not know how to ride a bike, but only provide a bike, bandages and sympathy in order to get someone else to know how to ride a bike, is no counterexample because it is not a case of teaching, but only a case of providing opportunities to learn.

²¹ This should be distinguished from ‘*s* knows under circumstances *C* how to do so-and-so’. For *s* may know, when blindfolded, how to ride a bike, and could do so if she removed the blindfold. In that case she knows, under circumstances of wearing a blindfold, how to ride a bike. But she might not know how to ride a bike when still wearing the blindfold, in which case she does not know how to ride a bike under circumstances of wearing a blindfold.

(1) if *s* were to try to do so-and-so under *C*, then *s* would usually succeed in doing so-and-so

because

(2) *s* has a reliable method of doing so-and-so under *C*

that

(3) *s* is entitled to believe will usually result in doing so-and-so.

This analysis explains otherwise problematic cases. (1) explains why Stella may know how to change a car wheel although she has never tried to do so: the conditional may be true despite the actual falsehood of its antecedent. It also explains why Seth may still know how to ride a bike after the loss of his leg. When we judge that he is unable to ride, we are thinking of present circumstances in which Seth tries to ride a bike with only one leg. But when we judge that Seth still retains his know-how, we are thinking of circumstances in which Seth tries to ride a bike with both legs. It may still be true after the loss of his leg that,

if Seth were to try to ride a bike, under circumstances of having two legs, then he would usually succeed.

We might be entitled to think shortly after Seth has lost his leg that the closest possible worlds to the actual world in which Seth has both legs and tries to ride a bike are worlds in which he succeeds in riding it. Of course, he is physically unable to ride a bike after the loss of his leg. At that time it is false that,

if Seth were to try to ride a bike, under circumstances of having one leg, then he would usually succeed.

After losing his leg, Seth does not know how to ride a bike under the circumstance of having one leg. But neither did he know how to ride a bike under the circumstance of having one leg *before* he lost his leg. So his cycling know-how has not been changed at all by his sudden disability.

None of this means that losing his leg cannot make Seth lose his knowledge of how to ride a bike. Suppose that a sixth-month period of convalescence required by the amputation of his leg has caused his co-ordination to deteriorate dramatically. If we know that this is so, we might be entitled to think that he no longer knows how to ride a bike. But that is because we are entitled to think that if he still had both legs yet was otherwise just as uncoordinated as he is now, his trying to trying to ride a bike would not usually result in success.

The 'usually' in the consequent accommodates occasional failure: even the most expert cyclist may fall off once in a blue moon.

(2) accommodates cases in which (1) is insufficient for know-how. Consider Shelley, whose method of baking a cake is to take whatever ingredients are closest to hand, mix them and bake the resulting mixture. By lucky chance, the ingredients closest to hand are those that when mixed and baked, result in a cake. If, in these circumstances, she were to try to bake a cake, she would usually succeed. But she does not know how to make a cake. If the ingredients closest to hand were different then she would not usually succeed in making a cake. Although Shelley has the ability to make a cake, she does not know how to make one, because her method of making one is unreliable. A reliable method of doing something is a method that results in success at least more often than not when applied over time in a wide variety of circumstances. In contrast, in most circumstances Shelly's method would result in failure.

(3) accommodates cases in which the conjunction of (1) and (2) is insufficient for know-how. Consider Sally, whose method of surviving an avalanche is to make swimming motions. In fact, this is a reliable method of surviving an avalanche, and if Sally were to try to survive by using this method, she would usually succeed. However she derives her method from misreading a book that in fact gives bad advice about how to survive a flood—bad, because making swimming motions is a reliable method of *perishing* from a flood. Sally's success is lucky because it is a lucky coincidence that the unreliable method of surviving a flood is also a reliable method of surviving an avalanche. But given that the method that Sally would describe herself as using—making swimming motions—is the method she has, the method she has is reliable. (3) blocks this case because Sally is not entitled to believe that making swimming motions will result in surviving the avalanche; she obtained her reliable method of surviving an avalanche from an unreliable source.

Attributions of animal know-how are more problematic. On learning that Shep the sheepdog has been successfully trained to round up sheep, many would happily say that it now knows how to round up sheep. Can it be entitled to believe that its method of rounding up sheep will usually result in success? Beliefs about the usual success of a method seem far too sophisticated for Shep. The best response is to simply drop the third clause in cases of know-how possessed by creatures incapable of beliefs about methods. This marks a principled boundary of most human reflective know-how.

It might be objected that our analysis is vulnerable to 'finkishness'.²² Consider an analysis of the fragility of a vase in terms of the subjunctive conditional that it would shatter if dropped onto a hard surface. Now imagine a mischievous genie. For any occasion on which the vase is dropped onto a hard surface, the genie will change

²² Lewis, D. (1988). Finkish dispositions. *The Philosophical Quarterly*, 47, 143–158.

the constitution of the vase just before it hits the surface—with the result that it does not shatter—and then immediately restore the original constitution of the vase. We might say that before it is dropped, the vase is brittle, yet the subjunctive conditional that it would shatter if dropped onto a hard surface, is false. Likewise, it might said, a genie might intervene whenever two-legged Seth tries to ride a bike; for any occasion on he tries to ride a bike the genie will make sure that he falls off.

We have two replies to this objection. First, it is blocked by what we have said of natural kinds. A putative thorn that could not pierce human flesh is not an object we would normally take to be a thorn, since a thorn is the kind of thing that can pierce human flesh. Likewise, the putative vase is not an object we would normally take to be a vase, because it is not in its nature to switch back and forth between fragility and non-fragility.²³

Second, Seth's know-how still corresponds to his counterfactual success. We admit that he does not know how to ride a bike under the circumstances of being the object of the attentions of a mischievous genie. But he does how to ride one under circumstances that are ordinary for most cyclists and he also satisfies the condition (1) in those circumstances, since in those circumstances, if he were to try to ride a bike he would usually succeed.

An Analysis of Skill

Know-how is not simply identical to skill. One reason is that one may know how to do something that one has never done, as is the case with Stella who has never changed a car wheel. In contrast, a skill cannot be something that has never been put into practice. It must be the result of repeated practice. We learn how to swim by swimming, just as we learn how to ride a bike by riding one. We typically learn how to kick before learning how to perform arm strokes. After successfully practicing the necessary elements in sequence the student leaves the shallow end of the pool and reproduces all of these elements and the result is swimming. Skilled swimming would then involve consolidated know-how. Excellent swimmers, who are very skilled at swimming, practice more, and more often, than those who are less skilled.

Know-how may fall short of a skill in four ways. Compare Stella's know-how in changing a car wheel with that of a skilled mechanic. First, if a skilled mechanic were to try to change a wheel under normal circumstances, then she would almost invariably—not just usually—succeed. Second, the mechanic might know how to change a wheel in a wider range of demanding circumstances, say, in heavy rain, under stress or against a stop-watch. Third, although reliable, Stella's method of

²³ We are also unconvinced that such an enchanted vase is brittle before it is dropped. Knowing that the genie will always prevent it from shattering, we might just as well say that it is never brittle.

changing a wheel might include a lengthy and tiring process of trial and error and thus be inferior to one known to be foolproof and easiest. Fourth, Stella might usually succeed in changing a wheel if she tried very hard, whereas a skilled mechanic would usually succeed ‘almost without trying,’ although trying is still involved and there are tasks at which even the very skilled need to try very hard to succeed, such as walking a tightrope. This shows that know-how admits of degrees. Someone knows better or worse how to do something depending upon the frequency of her counterfactual success, the range of the circumstances of counterfactual success, the degree of superiority of her methods over rival methods, and the degree to which counterfactual trying is involved. We may now propose a definition of skill:

s is skilled in doing so-and-so just in case *for a wide variety* of circumstances *C*,

(1) *s* has the *ability* to do so-and-so under *C* *born of practice* in doing so-and-so

and

(2) if *s* were to try to do so-and-so under *C*, then *s* would *almost invariably succeed* in doing so-and-so (and, depending on the nature of the task, *she might not have to try very hard*)

because

(3) *s* has a reliable method of doing so-and-so under *C* *that is superior to rival methods* of doing so-and-so in *C*

that

(4) *s* is entitled to believe will almost invariably result in doing so-and-so.

We may again drop (4) for non-reflective, animal, or bodily skills. Condition (1) is required to track ordinary linguistic usage. On learning that Seth has recently lost a leg we would say that he is no longer a skilled cyclist even though he still knows how to ride a bicycle. As we have already shown, know-how and ability can come apart, so there is no redundancy in making actual ability a necessary condition for skill in condition (1). From a metaphysical perspective, our epistemological analysis tracks the gradual consolidation of a habit within second nature. Skills exist as refined metaphysical accidents that are habitually connatural to us. Thus, in condition (3) we would say that *s* is more or less skilled according to the relative superiority of her method over others. A more skilled performance would employ a method that has a greater range of inferior rivals. Furthermore, the relevant range of rival methods is determined by reference to the individual performer and to other expert performers

of that sort. A skilled child actor will probably not have the dramatic range of a skilled adult actor, but it would be correct to say that the child is skilled in acting and employs methods of acting that are superior to a range of other methods used by other child actors.

Both our analyses of know-how and of skill may be enriched in terms of virtues. Stella might usually succeed in changing a wheel if she persevered enough. Perseverance is certainly a virtue (traditionally thought of as a moral virtue since it perfects the will), although the degree to which she would have to exercise this virtue corresponds to the degree to which she knows *less* well how to change a wheel. In contrast, the skilled mechanic has less need of perseverance in mundane circumstances, although she will need it in more trying circumstances. She will also need to be able to judge accurately the degree of perseverance she needs in varying circumstances. She needs perseverance to the right degree at the right time for the right reason.

She must also be wary of over-thinking her attempts to do something when her methods of doing it are unreflective. For example, an expert tennis player skilled in making a drop-shot may over-think the performance and fluff it. Once over-thinking becomes ingrained as a habit, she may lose the skill or even the know-how. Reflectively directing one's attention to the method may cause it to become unreliable. As long as the method remains unconsciously coded as a habit of the body, its unreflective exercise almost invariably results in a successful drop-shot, but once the tennis-player reflects upon it, it almost invariably results in failure. Hence, although she is entitled to adopt the belief that she has some highly successful method of making the shot, that entitlement is destroyed once she holds the belief consciously whilst trying to make the shot. Metaphysically speaking, by over-thinking, her inclination to think things through propositionally interferes with her inclination towards performance. If this interference becomes habitual, the original habit corresponding to the skill in performance becomes attenuated.

Both one's skill and know-how *per se* in doing something require one to have a reliable method of doing it. The possession of reliable methods may also be seen as a virtue, either intellectual or moral, depending upon whether it is intellectually appropriated. We value a reliable method of achieving goods that contribute to our flourishing more than unreliable ones. We value certain methods over others inferior in terms of the effort, perseverance and efficiency they require. Such methods are praiseworthy when their reliability is the result of habitual practice. However, one may have a reliable method of doing something even as a result of habitual practice that is not open to reflective appropriation. For example, consider Sid, who knows how to tell the sex of a day-old chick. In other words, if he were to try to tell the sex of a day-old chick then he would usually succeed because he has a reliable method

of telling its sex that he is entitled to believe will usually tell him its sex. But Sid doesn't know how he tells its sex. He looks at the rear of the chick and reliably 'sees' what sex it is but has no idea how he makes that decision. It is plausible that there is a reliable method that Sid uses, based on his unconscious recognition of many complex patterns of genital features, but that method is inaccessible to introspection. Sid's record of success gives him an inductive entitlement for thinking that whatever he's doing usually works. Yet he is unable to formulate a description of his method.²⁴

Finally, one's entitlement to belief may be elucidated in terms of intellectual virtue. One is entitled to believe that p — in this case that one's method of doing do-and-so will usually or almost certainly result in success — just in case this is what a person who is an exemplar of intellectual virtues would believe in the same circumstances. In turn, the relevant intellectual virtues might be cashed out in terms of adherence to norms of belief, especially norms of justification for belief. There must also be a disposition to adhere to, reflect upon, and revise such norms.

The cultivation of inclinations and attachments over time to truth-seeking intellectual and moral habits will themselves be part of skilled intellectual and moral know-how and thus they will also be components of virtue. Know-how when elevated to skill is excellent know-how. In the moral realm, know-how elevated to skill is moral virtue; in the intellectual realm, know-how elevated to skill is intellectual virtue. Each of these interpenetrating and mutually reinforcing forms of know-how requires a dynamic orientation towards (respectively) what is good and what is true, an orientation that demands openness to reflective revision and prescribes provision of those conditions under which the pursuit of goodness and truth flourish. This active, dynamic orientation, illuminated by the notion of connaturality, is what is missing from most contemporary epistemology, and even virtue epistemology.

Conclusion

We argued that the notion of connaturality connects the metaphysics of purposes with the purposes exemplified in human knowing. These purposes involve our directedness towards objective goods.²⁵ In turn, these goods require virtues which help us participate in such goods. Thus our connatural knowledge makes certain moral virtues possible. Virtue is roughly a stable disposition to act upon a

²⁴ Or, for another example, consider expert Scrabble players who cannot explain how they are able to reliably discern words within the same soup of letters that others would miss. For an accessible psychological analysis of expert intuition, see Kahneman, D. (2011). *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.

²⁵ Our metaphysical account of objective goods in section 2 does not prejudge the question of whether some of these objective goods might not be incommensurable. Finnis, J. (1980). *Natural Law and Natural Rights*. Oxford: Oxford University Press, seems to defend such a view.

habit elevated to a skill of putting one's know-how into practice that springs from one's motivation towards perceived goods. Our analyses of know-how and skill are elucidated partly in terms of moral and intellectual virtues. Thus, virtue is informed by know-how, and know-how is informed by virtue, although no circularity is involved. In arguing for this conclusion, we noted three other points of connections between virtue and know-how. Firstly, what know-how and skills we have is indicative of what virtues and vices we have. Secondly, the possession of moral virtues requires one to know how to recognize morally salient features of circumstances and to know how to think through our motivations and actions for appropriateness of fit with our flourishing as social beings. Thirdly, the habituated skill of acquiring virtues—itsself a virtue—requires knowing how to curb bad habits and engender good ones.²⁶ ■

References

- Adams, F. (2005). Tracking theories of knowledge. *Veritas*, 50, 11-35.
- Adams, F., and M. Clarke. (2005). Resurrecting the tracking theories. *Australasian Journal of Philosophy*, 83, 207–221.
- Anscombe G.E.M. (2005). *Human life, action and ethics: essays by G.E.M. Anscombe*, M. Geach and L. Gormally (Eds.). Charlottesville, VA: Imprint Academic.
- Aquinas, T. (2008). *Disputed questions on virtue*, trans. J. Hause and C. Eisen Murphy. Indianapolis: Hackett Publishing Co.
- Aquinas, T. (1993). *Commentary on Aristotle's Nicomachean Ethics*, trans. C.I. Litzinger. O.P. Notre Dame, IN: Dumb Ox Books.
- Aquinas, T. (1981). *Summa Theologica*, trans. Fathers of the English Dominican Province. Allen, TX: Christian Classics.
- Code, L. (1984). Toward a 'responsibilist' epistemology. *Philosophy and Phenomenological Research*, 45, 29-50.
- Craig, E. (1990). *Knowledge and the state of nature*. Oxford: Oxford University Press.
- Finnis, J. (1980). *Natural Law and Natural Rights*. Oxford: Oxford University Press.
- Greco, J. (1993). Virtues and vices of virtue epistemology. *Canadian Journal of Philosophy*, 23, 413–432.
- Greco, J. (1994). Virtue epistemology and the relevant sense of 'relevant' possibility. *Southern Journal of Philosophy*, 32, 61–77.

²⁶ The authors would here like to acknowledge the extremely generous and numerous contributions of John N. Williams to this paper, most especially in sections 6, 8 and 9, which bear the indelible stamp of his distinctive philosophical acumen. He commented on and contributed substantially to the entire paper.

- Hawley, K. (2003). Success and knowledge-how. *American Philosophical Quarterly*, 40, 19-31.
- Hetherington, S. (2006). 'How to know that knowledge-that is knowledge-how'. In S. Hetherington (Ed.) *Epistemology futures*, Oxford: Oxford University Press.
- Hookway, C. (1994). Cognitive virtues and epistemic evaluations. *International Journal of Philosophical Studies*, 2, 211–227.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.
- Koethe, J. (2001). Stanley and Williamson on knowing how. *Journal of Philosophy*, 99, 325-328.
- Lewis, D. (1988). Finkish dispositions. *The Philosophical Quarterly*, 47, 143-158.
- Lewis, D. 1990. 'What Experience Teaches'. In W. Lycan (Ed.), *Mind and Cognition: a Reader*, Oxford: Blackwell.
- MacIntyre, A. (1988). *Whose justice? Which rationality?* London: Duckworth.
- MacIntyre, A. (2001). *Dependent rational animals*. La Salle, IL: Open Court.
- Maritain, J. (1953). *The range of reason*. New York: Charles Scribner's Sons.
- Montmarquet, J. (1987). Epistemic virtue. *Mind*, 96, 482-497.
- Naus, J. (1959). *The nature of the practical intellect according to Saint Thomas Aquinas*. Rome: Libreria Editrice Dell'Università Gregoriana.
- Nozick, R. (1981). *Philosophical explanations*. Cambridge, MA: Harvard University Press.
- Ryle, G. (1949). *The concept of mind*, London: Hutchinson.
- Searle, J. (1992). *The rediscovery of the mind*. Cambridge, Massachusetts: MIT Press.
- Simon, Y. 1986. *The definition of moral virtue*, V. Kuic (Ed.) New York: Fordham University Press.
- Snowden, P. (2003). Knowing how and knowing that: A distinction reconsidered, *Proceedings of the Aristotelian Society*, 104, 1-29.
- Sosa, E. (1980). The raft and the pyramid: Coherence versus foundations in the theory of knowledge. *Midwest Studies in Philosophy*, 5, 3-25.
- Stanley, J. and Williamson, T. (2001). Knowing how. *Journal of Philosophy*, 98, 411-444.
- von Wright, G. (1963). *Norm and action. A logical enquiry*. London: Routledge & Kegan Paul.
- Williams, J. N. (2008). Propositional knowledge and know-how. *Synthese*, 165, 107-125.
- Zagzebski, L. (1999). What is Knowledge? In J. Greco and E. Sosa (Eds.) *The Blackwell Guide to Epistemology*, Oxford: Blackwell.