

ARTICLES ON OTHER SUBJECTS

Framing the Virtue-Ethical Account in the Ethics of Technology

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ABSTRACT In recent years there has been growing interest in adapting virtue ethics to the ethics of technology. However, it has most typically been invoked to address some particular issue of moral importance, and there is only a limited range of works dealing with the methodological question of how virtue ethics may contribute to this field. My approach in this paper is threefold. I start with a brief discussion of Aristotelian virtue ethics, with a view to constructing a framework in which to then address at least some of the aspects of the growing technicization of life that call for scrutiny. I subsequently proceed further by outlining three possible models of virtue-theoretical analysis within the ethics of technology, giving special attention to those changes in human agency where technicization can be seen to exert a significant influence. Finally, I focus on the third such possibility, the extended virtue model, as a basis for calling for a more inclusive account of moral agency.

KEYWORDS ethics of technology; extended mind; phronesis; technology; technomoral virtue; virtue ethics

With the growing interest in applying virtue ethics to the ethics of technology, a question arises as to the proper method of analysis. Being a relative latecomer to the field and typically not recognized as one of the dominant traditions within it, virtue ethics has been thrown into the midst of well-developed discussions on a range of problems, without prior examination of the methodological challenges created by the new area of analysis, and it is only recently that more general accounts of its applicability to a technologically augmented environment have been developed (see Coeckelbergh 2021; Doherty 2021; Vică et al. 2021; Constantinescu and Crisp 2022).

With this in mind, it is important to note that these accounts reflect a rather interventionist attitude and, with a handful of exceptions, this attitude has not been based on any analysis that addresses the challenges and possible updates to the concept of virtuous agency presented by decades of research into technology's influence on human agency and flourishing. In what follows, I aim to address at least some aspects of these influences and possible virtue-ethical responses. I shall start with a brief discussion of the Neo-Aristotelian stance on virtuousness, pinpointing those aspects of the contemporary technologically augmented environment that call for ethical scrutiny. This will be followed by an outline of three possible models of virtue-theoretical research into both agency and practical conduct. These are: the phronesis-based agent-focused model, the technomoral virtue model as developed by Shannon Vallor, and the extended virtue model, which focuses on the role played by the agent's environment in shaping their capacities for moral acting. In endorsing the last of these, I shall argue for an inclusive account of virtuous agency as the best answer to the challenges of ongoing socio-technological change.

VIRTUE ETHICS AND TECHNOLOGY

According to Aristotle, ethics is devoted to finding the best way of achieving human good, which is the successful development of human potentialities in a meaningful life. As *eudaimonia* consists not in happiness (in the sense of a state of mind or feeling), but rather in a form of organisation of the human system that flourishes by sustaining the capacities of autonomous agency and developing forms of interaction with the environment, what is of foremost importance is the conduct of the agent, their mode of reflective self-consciousness, and their ability to make rightful choices. The kind of self-consciousness in question here is the agent's awareness of their motives and reasons for action, and control over their reactions to situations in life: i.e. their ability to define the kind of good that they should be and are able to obtain by reacting in a certain way. This makes virtues, dispositions, or

states of character, which are “concerned with choice, lying in a mean, i.e. the mean relative to us, this being determined by a rational principle, and by that principle by which the man of practical wisdom would determine it,” (Aristotle, *Nicomachean Ethics*, hereinafter abbreviated as *Nic. Ethics*, 1106b36–1107a2) the key elements of Aristotle’s moral theory. For, as the agent becomes accustomed to certain ways of understanding and imagining themselves and certain forms of acting, they succeed or fail in becoming the kind of human being that is capable of both expressing and developing their potential in the course of living a good and meaningful life and contributing to the good of a well-rounded community, where this enables them to attain their own good as a social animal.

Two aspects of this moral stance are of crucial importance. To act virtuously on the basis of a rational principle, the agent needs to be aware of all the relevant characteristics of the situation, in the sense of having knowledge about what kind of situation it is (*Nic. Ethics*, 1105a32), and they also need to be able to control their own emotions. These two needs are interconnected, for to justify a certain way of acting as proper in some circumstances, the agent not only must recognize it as belonging to the field of some particular virtue, recognizing the situation as of a kind that falls under the judgement of that virtue (e.g. justice, generosity, courage, etc.), but also must be emotionally involved in it (so that they operate as an engaged actor and not merely a spectator). Hence, choice and emotional control are two foundations on which virtuous acting rests.

Emotions, which make up the fabric, so to speak, of virtues, are reactions to some significant event or other. Yet as immediate reactions they may be affected by a limited recognition of all the important characteristics of the event. Thus, the agent needs to gather and process information not only about their immediate environment, but also about other human beings—both those with whom they are connected and those who may be a source of learning and comparison. This enables them to reason about various forms of acting and goods available in the given situation. At the same time, by being emotionally involved, they keep the knowledge practical, doing so with reference to their own engagement in life. The knowledge required by a virtuous agent is thus that of an embodied and engaged human being, who is defined by both their vulnerability and limitedness, and their ability to transcend their current condition. Therefore, Aristotle claims that virtuous acting requires certain knowledge, the choice to act in a certain way, and “a firm and unchangeable character” (*Nic. Ethics*, 1105a32–34). For it is only thanks to the conjunction of these conditions that knowledge may become a reason for moral acting and traits of character, when examined

and refined in mindful action, may become virtues (*Nic. Ethics*, 1106a14–23; see also Bloomfield 2022). What is crucial, then, is the choice (*prohairesis*), which is the determination of the agent's sustained way of acting relative to a given set of circumstances. Note that Aristotle precedes his discussion of choice with a consideration of voluntary and involuntary acts, in order to claim that choice does not fall straightforwardly under the former category. He continues by enumerating cases, such as opinion, wish and anger, in order to differentiate choice from them, and says that “choice is praised for being related to the right object rather than being rightly related to it . . . we choose what we best know to be good, but we opine what we do not quite know; and . . . it is not the same people that are thought to make the best choices and to have the best opinions” (*Nic. Ethics*, 1112a5–9). The voluntary part of choice comes from knowledge which is made practical (and thus limited) by being used by an agent to deal with the particularities of their situation, while the involuntary part is the effect of the agent being an embodied self, organised by its emotions and the practices of its social environment, and personally engaged in a certain situation.

It is important to note that just as a flourishing life demands a certain amount of external goods (*Nic. Ethics*, 1099a31–1099b9), this is also the case with respect to virtues. The example that suggest itself is that of generosity, for without access to some resources, and in fact without recognizing certain goods as resources, it is impossible to act in accordance with the demands of this virtue. For what makes an agent generous is a proper relation not only to the needs of some other human being, but also to their own. That is, it is not just that some goods are necessary to make generous acting possible: rather, interestingly, Aristotle connects their possession with agency, which makes prodigal acting “a sort of ruining of oneself, life being held to depend on possession of substance” (*Nic. Ethics*, 1120a3–4). The relation is crucial, for, as Aristotle explains, it is “more characteristic [of virtue] to do what is noble than not to do what is base” (*Nic. Ethics*, 1120a12–13). Thus, the relation of the internal states of the agent to their material environment, and especially to the resources they can make use of in developing rightful practical conduct (*hexis*), is, at least in the case of some of the virtues, crucial for and constitutive of their possibilities for striving for a good, flourishing life.

This relation extends beyond the agent-tool model. For to use a tool is to choose a way of achieving a certain aim by making use of a handy possibility offered by the environment, with the aim itself being defined prior to that choice and independently of the range of possibilities offered by the environment. Contrary to this, the relation under discussion consists

in acknowledging that the intellectual aspect of virtue is not limited to justification of the action and deciding what is good and fine in a certain situation. For both these need to be adjusted to the recognized field of virtue: that is, it must be decided whether a certain situation demands, e.g., just or generous acting, and what, on balance, the optimum way of acting for the agent is. This, however, means taking into account their experience as something that shapes their identity and so determines what is good for them and how they themselves construe their situation. In consequence, experience cannot be reduced to cognition, as it also makes the agent prone to acting in this rather than that way. This forces us to include those possibilities of acting furnished by the environment in our account of virtue.

To act virtuously is therefore not only to act rightfully, but also, and primarily, to be aware of all the significant characteristics of the situation in the above sense, to control one's emotions, and to be able to determine the proper way of acting both in the sense of respecting the best standards and of defining the significance of a certain situation for the agent. That is to say, virtues demand that we distribute our attention and time, the two most important resources for human beings' activity, so that the appropriate goods are realised and standards of rational agency and social connectedness sustained. This distribution, or attention economy (Davenport and Beck 2001), is always related to the agent and influenced by the environment, both in the sense of direct influence and in the broader sense of the social institutions, rites, customs, and material that surround the agent and provide them with what Richard H. Thaler and Cass R. Sunstein have called "choice architectures" organised by "nudges" (Thaler and Sunstein 2008)—that is, by impulses aimed at changing human behaviour "by taking advantage of predictable dispositions of human beings to make decisions in ways that are influenced by (apparently) irrelevant features of the environment in which they find themselves" (Levy 2019, 281).¹

Here is where technology comes on the scene. With the growth of everyday technology, such as smartphone applications and social media, it has become part of the daily routine, far beyond the role played by the infrastructure of the industrial society. Not only do important elements of our daily planning get outsourced to apps, but they can also monitor the

1. Here, I adopt this broader understanding of "choice architecture" so as to encompass the distribution of attention influenced by both environmental elements and agents themselves, departing from Thaler and Sunstein's original conceptualization within the framework of "libertarian paternalism," which construes it as a system of nudges orchestrated by a third-party architect. I wish to express my gratitude to an anonymous reviewer for highlighting this distinction.

agent's biological and emotional status, providing them with information on their level of hydration, medication routines, and dietary limitations, or supporting their physical activity. At the same time, research points to some potentially important distortions in attention economies caused by the influence of information chaos, the spread of fake news, and elevated emotionality, all exacerbated by the use of social media (Duke and Montag 2017; Bhargava and Velasquez 2021; Throuvala et al. 2021). Thus, both of the two crucial aspects of a virtuous life—choice and emotion control—are becoming endangered. Being flooded with unimportant items of information, the agent has to devote their resources of time and attention to filtering and fact-checking them, otherwise their choices will become less appropriate, as they will be misinformed about the goods they should aim at. And when immersed in a high-level emotional exchange, their capacity for self-scrutiny will be similarly limited. Moreover, their involvement with numerous apps and media demand special attention in order to manage them: that is, it requires a second-order distribution of time and attention, which makes effective navigation between the technological nudges an additional and demanding task.

Nevertheless, in the case of some areas of activity, and especially when it comes to moral actions expressing the agent's moral character, this influence might change the way of both acquiring and expressing the virtues. Consider again Aristotle's three conditions of virtuous action. At least two among them are influenced by the use of such everyday forms of technology. As the knowledge part of virtuous action consists, to a crucial degree, in interpreting the kind of situation the agent is in, in the sense of recognizing it as the field of a certain virtue, the presence of a watch on one's wrist and one's habit of consulting it may result in one giving priority to scheduled goals and virtuous decisions rather than those defined by one's immediate situation. Hence, for instance, nudges coming from the watch might be the reason for which the agent keeps to their schedule and refrains from being distracted by a casual talk with a friend in order to accomplish a task of a certain moral weight, e.g. being respectful to some other person by meeting her on time. Similarly, an easily distracted person might develop the habit of consulting the watch in order to develop resistance to the temptations of TV watching.

Note also that with the use of wearable computing devices monitoring one's activity and supporting one's decision-making processes and emotion control (Pedersen 2020), the self-understanding of the agent alters. This not only shifts the agent's attention toward themselves, but also provides them with extended knowledge of themselves: e.g. their physical condition,

which may reset the way in which their understanding of the situation as connecting up with the field of certain virtues is organised.

Furthermore, the demand that acting from virtue be the product of a firm and unchangeable character directs us to recognize not only those conditions of such acting involved in developing a lasting set of unified and stable dispositions, but also those which primarily contribute to the sustaining of certain kinds of conduct (*hexis*). Aristotle himself does not allow for any exception to the voluntariness of virtuous action. However, he claims that “that is compulsory of which the moving principle is outside, being a principle in which nothing is contributed by the person who is acting” (*Nic. Ethics*, 1110a1–3). This seems to exclude only those factors that influence the agent’s acting in a way that is independent of their awareness. And in Aristotle’s own era, the agent could not be affected by non-human nudges. Moreover, the technological regimes of pre-modern times typically consisted in agent-tool relations, in which the tools, as a rule, were dedicated to enabling action in certain defined domains. That is, they influenced the way in which agents would achieve certain goals (*ergon*) lying beyond the agents themselves. In contrast to this, a range of modern technologies, from wrist-watches to self-development apps, aim at altering the agent’s performance, and by choosing to use them agents are acting in ways directed towards themselves, where this satisfies Aristotle’s criterion for acting as opposed to making (*Nic. Ethics*, 1140a1–23). Thus, this reading seems to allow for an understanding of voluntary action in which the agent’s conduct is scaffolded by their use of external devices that enable them to exert choice concerning their way of acting. Viewed along such lines, the technology not only contributes to a “choice architecture,” in the sense of a system of nudges aimed at influencing their choices and behaviour, but might also be effective in supporting their ongoing, choice-based conduct.

In what follows, I will argue that the concept of choice architecture, combined with contributions from cognitive science and anthropology, enables us to broaden our perspective on agency and make moral analysis more comprehensive by including those aspects of the external relations of agents that are effective in shaping their moral conduct. That is, from the point of view of neo-Aristotelian virtue ethics, the focus should be put first on the relation of the agent to technology as being constitutive with respect to today’s moral ecology (Machura 2019), and only secondarily on the virtues themselves. The constitutive character of this relationship consists in the growing importance of technology as a source of nudges influencing the everyday routines and practical conduct of contemporary agents. There are, however, three ways in which these questions concerning

the relation to technology and moral ecology in general may be addressed. The virtue-ethical response may meet the challenge raised by such technology-induced architectures head on, seeking to respond to these with a new set of excellences, or go against them, redefining the classical catalogue of dispositions so as to be in a position to advocate some hardcore human moral expertise and explain how it can be saved from the flood of technology-generated nudges, or align itself with them by elaborating a new framework for technologically augmented virtuousness.

These three strategies are presented in the form of the three models for responding virtue-theoretically to the influence of modern technology discussed below. It should be noted from the start that they should not be considered competing comprehensive theories, but rather research programs. That is, they are conceived both as ways of analysing the relationship between the human and technological aspects of agency, i.e. as ontological models of (augmented) moral agency, and as normative stances on virtue development, human flourishing and social relations. Their explanatory power and range remain to be determined, as they each might be useful in addressing the agency of the same person at various stages of their life and in various spheres of their activity.

This discussion will be followed by some degree of closer scrutiny of the third model. Arguing for an inclusivist view of agency, I shall focus on two of its tenets with a view to determining the extent to which we are justified in seeing virtues as characteristics not only of human agents, but also of human-technological couplings.

THE PHRONETIC MODEL

The three models to be considered form a spectrum. At one end of this, what we encounter ascribes moral agency to humans only, addressing human moral capacities in a way that makes them a matter of second-order disposition to virtuous acting and thus making the agent, to an important degree, immune to the distortions of the technological environment and focused on setting limits on their involvement with it. At the opposite end, meanwhile, agency is viewed as spread between the human and technological parts of the agent. Thus construed, such a range of positions could be seen as stretching from a stance that is the most conservative one in respect of its commitment to protecting the uniqueness of human moral agency to one that is the most inclusive in that it extends agency outside of the human body.

According to the first model, moral agency can be ascribed to human agents only. As gathering and processing information is only a part of moral

decision-making, and the narrative unity of life is first-personal in that the embodiment of the agent is always primarily felt by the agent themselves (as being-in-the-world), it is a matter of human activity, human will and moral competence what moral decision and action the agent undertakes. As the environment in which such decisions are made and actions undertaken is a significant factor, whether it be of a social, organizational, or technological nature, what the agent needs for their moral autonomy is an ability to reflect on various aspects of their functioning and organize these into a coherent personal attitude. However, this attitude needs to be developed and sustained as separate from the agent's involvement in everyday practices and settings, and needs to furnish them with qualities of reasoning and character that may help them in navigating the distortions of competing practical involvements.

The paradigmatic account of this understanding of agency can be found in Harry Frankfurt's seminal paper (Frankfurt 1971). There he highlights the constitutive character of second-order volitions having the form of acts of a person (the moral agent) in which they build on their second-order desires and create an appetite for being a certain kind of person (i.e. for desiring some things rather than others and making this desire an effective one), such that they furnish the source of one's choice of identity. What is crucial here is that these kinds of volition are not reactions to impulses or nudges from the environment—that is, they are not instances of navigating between nudges coming from the outside world. Rather, they set a framework for general orientation—the backbone for practical conduct that will make the agent's first-order volitions what they are. In effect, by amounting to acts of will that are themselves prior to any engagement with real-world situations, they define the way in which the agent expresses their moral attitude towards their environment.

The set of distinctive features of a person as a bearer of moral status pointed out by Frankfurt call for elaboration in the face of the changing technological regime of moral practice—i.e. of the growing influence of technological nudges in shaping every-day decisions directed by first-order volitions. The raising of questions concerning the range of technological intrusions and distractions with respect to human possibilities for autonomous acting is something that has prompted recent calls to include a right to mental integrity amongst the broader set of human rights (Tran 2015; Chomanski 2023). In the face of this, virtue theory should also look for a similar kind of (attentional) integrity. However, contrary to the theory of human rights, it should rather treat this as an achievement of moral development and prerequisite of moral acting than as a straightforwardly

given feature or characteristic of the agent—the point being that as one develops within sets of relations with other agents, both living and technological, one acquires the possibility of autonomous agency by learning how to adopt a proper attitude towards those others. If the attitude is to be coherent and not reduced to simple reactions to situational stimuli, then maintaining a focus on the conditions under which it remains stable and oriented towards the agent's flourishing will require us to explain how it is that the agent is able to remain autonomous in their virtuous engagement with certain situations. Given that virtuous action always emerges from informed decisions rooted in the agent's character that concern certain practical situations, the interest of the model under discussion will therefore reside in the possibilities for sustaining coherent moral conduct across a variety of contexts.

This response keeps the model agent-centred and widens the gap between morality and technology, for the latter must be meticulously examined with regard to the kind of behaviour and system of interactions it makes the agent become involved in. Viewed along such lines, any use of technology calls for prior enquiry into the possibility of adjusting a practically wise action to its influence, where this will render the agent (thus construed) sceptical towards and distanced from the technology. For any nudges coming from the technology-organised choice architecture will have to be first recognized, and then worked out through the agent's emotional control, practical reasoning and moral expertise. In effect, the question of the good towards which such nudges direct the agent, and of what kind of good a certain item of technology itself brings with it, will have to be answered not in terms of efficiency, power and adjustment to the technoeconomic regime, but rather in terms of individual flourishing, with any concessions made to matters of economy and organisation regarded as necessary compromises.

Thus conceived, this model may find relevant resources in some of the ways of arriving at proper, virtuous reactions to the excess of interactions and pleasures offered by the technologically augmented environment. By cherishing the virtues of limits, to use the title of David McPherson's book, and especially those of contentment and gratitude (McPherson 2022, 34–40), the agent can place constraints on how their preferences are exercised. After all, constant searching for new opportunities and efforts to satisfy momentary whims tie the agent to external "sources of movement" and, in fact, subject them to external control. Thus, for a virtuous way of facing these threats, the agent needs to be disposed to navigate between the external nudges prior to or independent of their occurrence.

Other resources for developing such a model might be found in recent works on *phronesis*, the virtue of practical reason, by Mario De Caro, Maria Silvia Vaccarezza and Ariele Niccoli (De Caro et al. 2018; De Caro and Vaccarezza 2020). Working partly outside the main stream of research into practical wisdom (see Miller 2021 for an overview and discussion of recent research on *phronesis*), they take *phronesis* to be not a second-order disposition for unifying various spheres of activity of the agent, but rather a general virtue, i.e. a moral disposition that involves an ability to recognize possibilities of moral conduct in specific areas. In fact, according to what DeCaro, Vaccarezza, and Niccoli call the “epistemic access thesis,” the ascription of a particular virtue to an agent is actually a recognition of their wisdom “conceived as unified ethical expertise, which implies the recognition of a dynamic tendency to integrity rather than of a static unity of the virtues” (De Caro, Vaccarezza, and Niccoli 2018, 94). What makes the agent moral is thus their ability to reason before acting, both with respect to the proper way to behave in certain circumstances and as regards the relationship between competing realms of their life. Note that what follows from this is that the agent defines their good and virtue by bringing a general moral character-trait to bear upon a specific domain, where it becomes a concrete act and—through repetition—a particular virtue. This allows them to sustain their moral core while maintaining flexibility in dealing with particular circumstances arising in life.

These resources might be used to develop a virtue-centred program of a kind that would seek to place both the practice of moral reasoning and character dispositions at a certain distance, so as to either make agents resistant to the temptations of excessive technology-use and limit technology to the role of tools, or lead them to pursue an intensive moral training oriented towards self-scrutiny and self-discipline in life. In each case, however, the approach in question would owe us an explanation of how the desires satisfied and goods attained in technology-augmented social practices might be compensated for. It would also have to develop a strong conception of moral education, both in the sense of training people in moral expertise (where this means teaching the skill of finding the proper way to act in given circumstances on the basis of a sound moral core) and in that of fostering self-conscious resilience in dealing with technology in practical life. In the latter area it might also be necessary to explain how the benefits of being involved in a technology-driven world could be compensated for: i.e. what skills and upgraded reasoning could replace the technology.

THE TECHNOMORAL VIRTUE MODEL

In contrast to the first model, that of technomoral virtue developed by Shannon Vallor focuses on the possibilities for human flourishing by seeking to adapt and adjust well-established concepts of virtuousness to new forms of practice. Working within a globally applicable framework reflecting three dominant moral traditions—Aristotelian, Confucian and Buddhist—she proposes a detailed account of moral dispositions that can be seen to now be operative in some new areas. This model differs from the first, however, in being grassroots-based: that is, its starting point is an examination of “a new kind of technosocial practice” (Vallor 2016, 51) that demands that we reflect on particular virtues being altered by a technology-augmented environment, and only then does it look for a unifying account in terms that involve positing a new form of moral agency.

In this case the research starts by addressing the main areas of human life as seen from the perspective of the three traditions, and proceeds with an examination of the changes introduced by new ways of acting. As Vallor notes, Aristotelian, Confucian and Buddhist traditions are all focused on cultivating the good, flourishing life and, despite the differences between them, offer not only significant moral and intellectual resources, but also a shared “frame of reference and a developmental scaffold” (Vallor 2016, 64) which enables human flourishing in changing technological environments. The framework consists of seven elements: moral habituation, relational understanding, reflective self-examination, intentional self-direction and moral development, perceptual attention to moral salience, prudential judgement, and appropriate extension of moral concern. This leads Vallor to describe the corresponding virtues as technomoral ones, defining the latter as those virtues of character “most likely to increase our chances of flourishing together” under the conditions corresponding to “global technosocial practices and their effects which increasingly bind the fate of the human family” (2016, 119). In other words, the project is aimed at addressing changes in human ways of acting rather than immediate interactions with technology. Consequently, the agent whose virtues are under scrutiny here is one that is embodied and embedded in a certain social, institutional and technological setting—and, as such, mediated in their experience of technology by fixed ways of acting, structures of social understanding and recognition, and economic goals and competition.

Vallor’s project is thus similar to the first of those being considered here in that it aims at cultivating the possibilities for human flourishing in the face of changing environments and the growing importance of technological practices and stimuli in human striving for a good life. It is based on

recognizing the importance of ongoing changes and the challenges they pose, however, and instead of seeking the source of moral expertise prior to any engagement with technology, it seeks to engage that technology by developing renewed forms of moral excellence and nesting these in a reshaped practice of moral self-cultivation derived from the classical frameworks. Cultivating such a renewed virtue should result in the fostering of a capacity for moral attention in the agent that will be sensitive to transitions in their moral environment, such that they will be able on the one hand to imagine—and aim for—the kind of life that is worth living in the world as it is, and on the other avoid the lure of anti-technological humanism (Vallor 2016, 12-13).

Thus, the research carried out in this model is in fact twofold. Its first part consists in scrutinizing the way in which new technologies alter social practices—both existing and emerging ones—and in seeking to evaluate the goods they bring into those practices. The starting point of analysis here is Alasdair MacIntyre's concept of practice, which incorporates into professionalized, socially established activity the Aristotelian notion of the good as a goal which not only satisfies certain needs, but also helps to develop human potentiality (MacIntyre 1984, 187).² It follows that the forms of acting within such a practice cannot be reduced to skills and their technological extensions explained in terms of their serving external, economy- or effectiveness-related aims, and so should not be conceived as tools only. As research shows (see, e.g., Robson 2019), despite its ability to obtain some of the goals of practices, the use of technology may decrease the range of goods obtained and objectify actions undertaken by its means, so that the internal goods of the practice, which it has been devoted to achieving as a socially established activity of interpersonal meaning, become simplified, hollowed out and routine. Hence, in the face of the pressure placed on human well-being by the economic gains issuing from the involvement of technology in virtually all key social practices, from the military to caregiving and the sustaining of social networks, the agent- and practice-centredness of this model directs the research towards keeping those practices devoted to their internal goods, which for each and every practice count as defining. And so, with new technologies changing the possible ways of

2. According to MacIntyre, practice is: "any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realised in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of that form of activity, with the result that human powers to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended" (MacIntyre 1984, 187).

acting and achieving goods, and making new forms of human interaction and good available, the model focuses on monitoring and evaluating these ongoing changes in order that they do not violate the human and social goals of the practices.

This brings to the table the second part of the model. For to keep the practices focused on their internal goods is not to refrain from updating them with possibilities of new forms of acting and interpersonal connection: rather, it is to keep them devoted to human flourishing as providing the key spaces for the expression of individual potential and character development. More precisely, the first part of the research undertaken as virtue-ethical theory aims at evaluating ongoing technology-driven changes not for their importance to the moral and social status quo, but as creating possibilities of individual and social development, well-being and meaningful life. Hence, the key issue for such research is not whether technological augmentation of a practice keeps it focused on certain goods, but rather whether the technological changes keep the practices conducive to the flourishing of all of the human beings involved. With this aim in mind, Vallor develops her project by examining the seven above-mentioned elements of the moral framework with reference to the main virtue traditions and, on the basis of this, outlining the core significance of each area for human development. She then addresses the changes that technology brings to each of these areas and the resulting new demands for virtuous responses to such changes.

On this basis, Vallor works out a list of twelve basic virtues, which she takes not to be significantly at odds with their classical counterparts. However, as their core meaning is fixed by reference to one of the listed domains of flourishing, their “thick” meaning is set by “the distinctive shape of that domain in our present cultural context, and what specific dispositions enable us to flourish there” (Vallor 2016, 119). Thus, the list consists of classical virtues which, with reference to the three classical traditions already mentioned, are rendered globally applicable: honesty, self-control, humility, justice, courage, empathy, care, civility, flexibility, perspective, magnanimity, and technomoral wisdom. This establishes a starting point for adapting and adjusting the classical catalogue of moral excellences to the new conditions of moral action, and helps develop appropriate conduct as a reaction to those nudges coming from technology that is such as cannot be framed within the standard fields of the virtues (Vallor 2016, 122–155).

What is of special importance is technomoral wisdom, which is the

general condition of well-cultivated and integrated moral expertise that expresses successfully . . . each of the other virtues of character that we,

individually and collectively, need in order to live well with emerging technologies (Vallor 2016, 154).

However, it should be noted that this account is at odds with the first model considered here, as it seeks not to define moral conduct prior to the agent's participation in technological practices, but instead to work it out on the basis of the agent's experience and only secondarily look for a unified account of moral excellence, where this keeps the model practice-oriented. Therefore, the goods of the technomoral practices are domain-specific, and their impact on agents' flourishing, if recognized by agents themselves, is mediated by their ability to integrate them reflectively into a coherent life-form. Thus understood, technomoral wisdom, supported by flexibility, helps the agent to navigate the changing environment in search of the good life.

Viewed along such lines, the technomoral virtue model differs from the phronetic one in two ways. First, it elaborates moral agency not as a feature of human beings themselves, as one which they bring into their environment, but rather as emerging in the interaction between the features of the human actor and the conditions of their acting, as well as from the social and cultural settings typical for particular social practices that enable them to develop certain traits of character. That is to say, the agent cannot be conceived as a moral entity outside the system of their practices, internal goods, standards of excellence and forms of cooperation. This makes any research within this model focused both on the flourishing of an individual *qua* human being and on the practices that shape their possibilities of development as a social, intellectual, and moral agent. It requires studies of new forms of organisation, in the sense of examining both institutional adaptations of technology-driven solutions and interpersonal communication and relationships (Vallor 2012; Ben-Ze'ev 2004), as well as the employment of the tools of micro-anthropology to address the significance of one's personal involvement with technology (e.g. Turkle 2011) in order to expose changes in forms of development of moral character.

Second, the model is a grassroots one in the sense of being focused primarily on individual practices and the virtues typical for them, and only secondarily on second-order virtues linking various spheres of experience and acting. Thus, instead of seeking a coherent form of moral expertise developed as a condition of moral acting in individualised social settings and practices, it aims at fostering an attitude exhibiting such coherence by uncovering a connection of sorts between the demands and opportunities of development offered by various, and sometimes competing, areas of life. Hence, what is at stake here is the way of integrating the new practices,

and the forms of interaction with “infrastructure” technologies (such as smartphones and social media), into a form of life pursuable in line with classical conceptions of what human flourishing consists in.

THE EXTENDED VIRTUE MODEL

The third model that I would like to focus on can be referred to as the “extended virtue model,” and the association with Andy Clark and David Chalmers’ Extended Mind Thesis (EMT) (Clark and Chalmers 1998) is no coincidence here. This model runs counter to the approach of the first, human-centred and *phronesis*-based model in highlighting the importance of affordances—the possibilities of acting provided by some item or by the material environment in general (Norman 1999). It does so by stressing their significance both for our agential capabilities and for the establishing of boundaries to the field of a given virtue and how it can be practised. It also differs from the technomoral virtue model in being primarily focused on virtuous agents themselves, and on addressing in detail technologically augmented forms of agency, rather than on social practices or forms of interaction with others.

Working within the framework of the so-called first wave of EMT,³ I shall focus on two of its basic tenets: active externalism and the parity principle. According to the former, external objects may work effectively as parts of the human mind and play active roles in cognitive processes, with the classic example provided by Clark and Chalmers being the notebook that for Otto, an agent suffering from Alzheimer’s disease, replaces some functions of his memory. However, in the case of moral reasoning and acting, it is important to note that it is not only the cognitive process that must be recognized as being supported by external factors, but also motivation, dispositions maintained over extended periods of time, and the coherence of one’s acting (Slaby 2022).

What is important to note is that in both of the previously discussed models, agency is construed as a property that marks certain forms of presence in the environment—a feature that indicates the difference between what is organized by the laws governing the environment itself and what can actively change the latter. However, the ability to introduce such change, as well as the range and significance of the changes in question, is set not only by the quality of being human, some features of the culture humans inhabit, or the system of social relations, but also by the range

3. For discussion of the differences between the three waves of EMT, see: Kirchhoff and Kiverstein 2019, 6–23.

of affordances. Thus understood, agency is a product of the interaction between the self and the way it is situated in, and partially constituted by, an environment, rather than something it brings into the environment (Malafouris 2013, 147). This point can be reinforced by noting the results of research in cognitive science according to which conscious agency shows up as a working space of different brain modules and systems, cooperating and competing with each other, where these are set to work in a certain way over the course of human biological and cultural development (Levy 2009). The self, which consists of several intracranial modules, may thus include some extracranial circuits which define the particularities of their way of acting. Viewed along such lines, EMT is not revolutionizing the concept of agency but rather broadening it—by adding the possibility of extracranial modules that extend the agent out into the world.

Thus understood, agency should be regarded as a feature of an embedded self worked out in a certain ecology, where we understand this to consist in all the elements, and interconnections between these, that make certain processes possible. And this is equally valid for cognition and for ethics. For to develop and express moral traits the agent needs to arrive at a grasp of their relatedness to other human beings, cultural phenomena, and those items that will enable them to function according to their understanding of what is good and best for them. Therefore, without a certain workplace, one cannot be industrious, one's courage might be strengthened or weakened by the availability of a weapon, and one's temperance might be informed by emotion-controlling mobile applications. That is, just as temperance may be developed by the agent's conscious efforts to control their emotions, it can also be partially outsourced to an application that would provide them with a diagnosis of their state and nudge them into necessary changes in behaviour, should the latter exceeds certain limits.

There seem to be two reasons why this dependence of a virtuous life on the environment, and technology in particular, remains relatively unnoticed. First, there is the default internalism of virtue ethical theories (Skorburg 2019, 2346). Because they are focused on human dispositions, they remain fixed on addressing the relation between the intellectual and affective aspects of virtuous agency, as distinct from the nature-derived forms of agency of other animals. Consider Aristotle's discussion of courage, where he points to death as "the most terrible of all things" (*Nic. Ethics*, 1115a27). He nevertheless denies the presence of courage in cases of someone facing death at sea or from disease, and limits it to cases of "noble circumstances"—death in battle in particular. Indeed, this is also restricted, as Aristotle denies the courage of seamen and professional soldiers on the

basis of the relationship in which their dispositions and their experience stand. In a surprising passage, he denigrates seamen's courage, which he contrasts to the landsman who "has given up hope of safety, and is disliking the thought of death in this shape, while they are hopeful because of their experience" (*Nic. Ethics*, 1115b2–4). That is, the way of acting of sailors in the face of danger at sea is not a matter of courage, as they are able to judge the risks of the situation properly, whereas their passengers need to resort to virtue in finding a noble, that is to say proper, way to deal with the circumstances. Thus, Aristotle seems to be saying that seamen do not exercise virtue because they do not need it. However, within the Aristotelian concept of virtue, a disposition consists of both an intellectual and an emotional element: it is doing "the right thing and from right motive, in the right way and in the right time," and feeling "confidence under the corresponding conditions" (*Nic. Ethics*, 1115b18–21). If, then, experience makes the agent's evaluation of an event different from an evaluation by someone less experienced, this does not negate their courage. It is rather that their disposition becomes informed and transformed by their experience, so that they may adjust their acting and redefine the bounds of the field where courage is relevant. What kind of experience is this? It is important to highlight the crucial relationship between the agent's memories and knowledge on the one hand, and the specific context and objects on the other. The banality of saying that it is their relationship to the ship and knowledge of the sea and weather that comprise the seamen's way of acting—that is, their choices (*prohairesis*) concerning their behaviour—conceals a far more profound process in which their initial disposition has been transformed by the ship, the sea, and the ecology of seafaring (see Hutchins 1996). This, however, seems to be neglected by Aristotle himself when he abruptly dismisses the possibility of the seamen's courage on the basis of their experience, without taking into account the way in which this experience was gathered and the influence it had on them. That is, the experience is taken as a differentiating factor in the evaluation of virtue, but not in explaining how the difference occurred and how it influences the motivation of the agent.

The second reason for the classical virtue theories' neglect of the role of cognitive ecology and technology is historical. It is not only that the main European virtue theories were derived from intellectualist Greek and Enlightenment environments and were developed in a cultural tradition that emphasizes suppressing the natural in human beings (Midgley 2006, 210, 223): rather, it is also that the kind of technology their founders had contact with was limited to tools and simple machines. Moreover, until the

start of the industrial era technological changes took place over multiple generations, which made the differences in human ways of acting, the kinds of choices (in the sense of *prohairesis*) made, and the forms of interpersonal relations developed as a result, difficult to notice. At the same time, according to research in archaeology, human development from early humans to late Neolithic cultures and early sedentary communities was strictly connected with the development of tool-use and the material environment generally (Malafouris 2013; Hodder 2012). As Hodder notes,

different forms of causation of behaviour, proximate and ultimate, short-term and long-term, historical and universal, can be applied to plants, animals and humans in terms of adaptation, survival and evolution (Hodder 2012, 74–75).

For instance, the domestication of cereals led to people investing increasing labour in some defined area, and by tying their efforts closely with crop productivity increased their tendency to choose a sedentary life, which led to the development of more hierarchical forms of social relationship and to a change in their attitude towards nature (Tattersall 2008). Similarly, it is only recently that the influence of new technologies on everyday life and the attention economy of ordinary people have become apparent, and as an ongoing process this is open to interpretation. Hence, the third model considered here should be taken not only as a tentative proposal for dealing with currently emerging moral phenomena, but also as a framework for addressing the developing process of platformization of the human body and, consequently, of agency itself (Pedersen 2020).

According to the second component of the EMT, the parity principle, there is no effective difference between the work of external and internal aspects of cognition; that is, if the external function were fulfilled intracranially, we would take it as an obvious part of the operation of one's mind. It seems, however, that the same applies to virtuous action as well. Setting systems of alarms in a mobile calendar or deciding to start using an emotion controlling application is, in fact, equivalent to remembering important dates and things to do, or exerting self-control, so these actions contribute just as much to practising the virtues of diligence and temperance.

This, though, would seem to pose two important questions where this model is concerned. Firstly, a decision to outsource a certain activity—for example, to an app—may seem similar to choosing a tool rather than making a decision regarding one's behaviour. Secondly, the parity principle appears to demand the ascription of the same amount of accountability to both the human and the technological part of the assemblage.

It should nevertheless be noted that in choosing a tool, a craftsperson takes into account a particular action, a certain task that he or she is trying to perform, aimed—as Aristotle points out with his distinction between acting and producing—at a concrete object other than the agent themselves. Even so, the choice being discussed here is rather that of determining a way of acting over time, and what is at stake is the way in which the agent will be present in their environment and not just some single interaction with some object. In this respect, just as the agent decides on what is good and best for them—that is, what the proper way of acting is in a certain kind of situation—their decision may also include outsourcing some of the activity to an item or app, where this also involves their being willing to act according to the impulses coming from it (or, as I shall argue below, the development of a second-order virtue that pertains to the sustaining and operating of such an extended form of agency). At the same time, the fact that some of these decisions (such as wearing a smartwatch, setting an alarm clock, or using Google Calendar) are not recognized as morally meaningful is a result of the persistence of the classical, agent-centred vocabulary of virtue ethics, as well as of the heterogeneity of the technological regimes involved—that is, their being implemented by the demands of professional (economic) or institutional life rather than because of individual decisions aimed at one’s own flourishing, such as are only responsible for shaping some parts of our daily routine.

Addressing the role and accountability of the technological dimension of a coupling calls for us to reframe the concept of acting. According to the 4E (embodied, embedded, extended and enactive) conception of mind, and within what is known as Material Engagement Theory, cognition, and consequently action, is possible, to quote Malafouris, “through, with, and about things, bodies, and others” (Malafouris 2013, 77). Just as it is some kind of interaction with others that sets the boundaries of the domain of relevance of certain virtue, it is also the form of interaction with objects that makes them part of the coupling (Heersmink 2017, 435). Thus, it is not the mere use of some app or object by the agent, but rather the function it has in sustaining and developing their prolonged character traits, that makes the difference. And just as the situationist critique drew the attention of virtue ethicists to the role played by the changing social circumstances of acting, a generalisation can be made to the effect that along with the affordances of a certain object, one’s skills and the forms of expression of one’s character reconfigure the moral ecology in respect of both its boundaries and its connectivity by stimulating emotions, affording certain goods, and establishing the scope of the agent’s activity.

Thus, for an item to become an active part of a virtuous assemblage, a complex human-technological agent, it is not enough that it be used as a tool. As, according to Aristotle, in order to act virtuously the agent needs to have a certain kind of knowledge, and choose to act in a certain way, and their actions must “proceed from a firm and unchangeable character” (*Nic. Ethics*, 1105a32–34), an application, smartwatch, smartphone or any other piece of technology needs to be involved in all three aspects of such an act in order to be recognized as an active part of this coupling. The piece of technology in question should therefore furnish information enabling the agent to become aware of their facing a spectrum of possible actions that bring with them a susceptibility to certain potential vices, and should contribute to motivation building (by providing stimuli or supporting the agent’s conduct), and its use should be part of the agent’s habitual routine. So, for instance, on the basis of thought experiments concerning the possibility of the use of Augmented Reality (AR) interfaces by police officers, Skorburg (2019, 2341–2343) points to the likelihood that they will become personalized for, transparent to, and trusted by their users. This would seem to offer a general framework for addressing such extended activity, consisting of three conditions for virtuous human-technological coupling: personalization, transparency and trust.⁴

Personalization, or wide-scale customization, of the technological part of the coupling will satisfy virtue theory’s requirement of agent-centredness. Bearing in mind that a virtue is a disposition to right choice “lying in a mean, i.e. the mean relative to us” (*Nic. Ethics*, 1106b6–1107a1), the use of a certain default setting of the technological part would put the coupling, and consequently the human part of it, on a trajectory leading to standardization rather than individual flourishing. Given that the technology itself is manufactured as standardized, then, this requires the agent whose virtuousness is to be considered as extended not only to outsource some of their activities to technology, but to choose those pieces of it which enable them to personalize their performance, and also to consciously choose from among the solutions available.

This leads to the second element of the framework. Transparency might be considered an ambiguous demand, in that transparent technologies might be those that work without the agent’s agreement. However, it will be crucial, for an extended virtue to work, to develop a link with the

4. Richard Heersmink (2015, 579) has developed an alternative—yet in some respects similar—framework consisting of information flow, reliability, durability, trust, procedural transparency, informational transparency, individualization, and transformation.

technological part of the assemblage that is such that it will be taken as a “natural” part of the decision-making and routine way of acting of the agent. Thus, the transparency in question must be of a kind that is informed: not one resting on bodily, intracranial circuit activity, the transparency of which comes from the subconscious structure behind human agency, but rather one following on from a conscious decision to make a certain item or app express in part the agent’s disposition. Given that virtues are dispositions, prolonged over time, an extended virtue will require a kind of second-order virtue—a kind of updated *phronesis* oriented towards controlling the routine use of the technological part of the coupling and also occasionally supervising its performance.

Finally, there must be a degree of trust that the technological part of the coupling’s performance will both fulfil its function and be devoted to contributing to the agent’s flourishing. That is, technological standards of performance should reflect the gadget’s moral significance, and the reliability of the nudges coming from the technological part of the coupling need to find their place within the habitual economy of the agent’s moral activity. Viewed along such lines, standards of performance cannot be treated as merely a matter of relations between a producer and a customer: rather, their significance makes much higher demands of designers and producers. In fact, from the Aristotelian point of view, the role of their work in the agent’s flourishing gives them the status of the agent’s friend (*Nic. Ethics*, 1155b17–1157b4). This not only sets out new perspectives for the ethics of engineering and brings to the table the debate on the socio-economic environment of both innovations and today’s agents’ flourishing, but also calls for importing at least some elements of the hypothesis of the socially extended mind (see, e.g., Gallagher 2013) into the extended virtue model.

As for the latter, the integration of external nudges into the agent’s practical conduct (*hexis*) should be on a par with the activity of the agent’s intracranial mechanisms. A model for research in this instance might be that of skilled action (see, e.g., Christensen et al. 2016; Gallagher et al. 2019), in which we encounter local forms of reliance on tools and a material environment forming specialized assemblages. As for morally virtuous acting, such research might start by identifying changes (or, indeed, the lack of any change) in respect of certain virtuous actions related to the agent’s reliance on a given piece of technology: e.g., smartwatches in sport.

The aforementioned raises the question of the kinds of activity that could be outsourced so that the coupling would remain virtuous. As was noted above, for an act to be a virtuous one it should appropriately address a situation that is acknowledged as falling within the field of relevance of

a given virtue: i.e. as being characterized by interpersonally recognizable features that call for the agent to make a decision as to how to deal with it in a manner that involves exercising a stable measure of self-discipline—primarily in regard to emotional regulation. Outlined in these terms, three aspects of virtuous acting would seem to allow for external support: the agent’s self-awareness pertaining to their emotional state, their recognition of the kind of situation they are in, and their effort to carry through their decision about the kind of attitude (*hexis*) they are to maintain in this situation.

Thanks to the mindfulness apps and programs currently available (Bruder 2022; Guyard and Kaun 2018; Mrazek et al. 2019), individuals can work on their ability to focus and acquire emotional stability together with a sense of their own state of mind. Similarly, smartwatches and apps monitor the bodily markers of stress, providing their users not only with real-time information on their status, but also with nudges instructing them about the steps needed to sustain their emotional balance—and thus giving them tools to assess the short-term emotional responses to their actions. Thanks to these tools, the agent can obtain extended knowledge about what actually goes to make up their virtuous agency, and so is in a position to adapt to the situation and determine a proper response to it. Reference to datafied feedback concerning their emotions enables them to avoid false consciousness and construct a more accurate picture of themselves—one which will enable them to more reliably evaluate their starting point in developing a virtuous attitude towards the situation they find themselves in.

It is worth noting that the situation itself may be recognized on the basis of information coming from an external part of the coupling. In Skorburg’s experiment referred to above, the AR sets could help police officers recognize possible threats to public safety, and hence situations demanding a professional response. Similarly, the friend-or-foe identification systems (IFF) in fighter jets help pilots distinguish regular patrol situations from those potentially demanding action of the sort that may require courage. In other words, just as a plane cannot fulfil a mission’s objectives by itself, so also cannot its pilot, and on the modern battlefield the jet-pilot coupling will in fact amount to a complex agent capable of both recognizing a situation correctly and responding to it virtuously.

Finally, given that Aristotle points to the decision (*prohairesis*) as the very core of virtue, the feedback loops between the human and technological parts of the coupling represent the clearest example of extended virtue. So, for instance, the decision to maintain good temper (*Nic. Ethics*, 1125b26–1126b9) may involve delegating to a smartwatch the role of monitoring

one's emotional state and using the nudges coming from it to develop and sustain self-control. That is, the decision to use such a support is not limited to that of choosing a tool: by developing a routine of measuring one's emotional markers and obeying the nudges given by the smartwatch, a feedback loop is formed that extends the human capacity for acting and enables its development as virtue (Palermos 2014). As the information coming from the smartwatch is beyond any amount the human agent might get from immediate, short-term introspection, their coupling with the smartwatch allows them to develop their disposition faster and results in it being more precisely aligned with the kind of person they are. At the same time, as the loop between the human and the technological parts of the coupling develops in the context of daily routines, the efficiency of such a virtuous activity is maintained by the coupling itself. On the other hand, were the latter connection to decrease then it would diminish.

Thus conceived, this third model seeks to integrate our extended attention economies into a coherent account capable of doing justice to the role played by extracranial modules of agency. It is important to note, however, that it rests on a certain form of techno-determinism, according to which the influence of technology on human behaviour is expected to grow with time. At a certain point, at least in some areas of life, it might then prove almost impossible for the individual to keep up with the rest of the society without forming some human-technology couplings—i.e. developing routines for outsourcing certain activities to technology and thus forming an extended agent. It should be noted that the model does not require that we reframe virtuous human agency as such: rather, it allows us to include extended local forms of agency in certain areas and so reshape how some particular virtues are fostered or developed—though not necessarily all of them at once. In consequence, agents may differ both in respect of their specific areas of extended agency and in terms of the influence exerted by these on the remaining aspects of how they conduct their lives.

CONCLUSION

The distinction between the three models considered here is not confined to being a strictly technical and methodological issue. It also carries important normative implications that hinge on the question of what kind of flourishing technology enables—in short, what kind of human beings we become when conducting our lives within the moral ecologies and choice architectures that reflect the ubiquitous presence of technology in our time. Given that it is beyond doubt that technology brings with it more effective ways of acting, and methods of interacting with and operating on the

human environment (taken both as social surroundings and as the natural world), than skilful action alone affords, the choice of which of these three models we adopt has great moral, political and economic weight.

Virtue ethics, in recognizing the complexity of technologically augmented agency, focuses on the human agent as nested in a moral ecology, and does not deal with non-human actors. By adapting the results of material engagement theory and the 4E model of cognition, its agent-centredness becomes broadened, but is not neglected. As contemporary virtue ethics builds on Elizabeth Anscombe's call to ground ethics in a sound "philosophy of psychology," and with the growing volume of knowledge issuing from cognitive science and other areas of research, this broadening of our field of vision seems advisable.

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