



## Research Article

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# A Compass for What Matters: Applying Virtue Ethics to Information Behavior

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**Abstract:** Out of the three major approaches to ethics, virtue ethics is uniquely well suited as a moral guide in the digital age, given the pace of sociotechnical change and the complexity of society. Virtue ethics focuses on the traits, situations and actions of moral agents, rather than on rules (as in deontology) or outcomes (consequentialism). Even as interest in ethics has grown within information behavior (IB), there has been little engagement with virtue ethics. To address this lacuna and demonstrate further research opportunities, this article provides an overview of virtue ethics for application in IB (broadly defined). It provides a primer on virtue ethics, gives examples of existing IB work that is compatible with virtue ethics, and suggests avenues for further virtue-oriented research in IB.

**Keywords:** virtue ethics, information ethics, information behavior, information literacy

## 1 Introduction

“My experience is what I agree to attend to” (James, 1890/1950, p. 402). With this observation, the pioneering psychologist William James observed that quality of life is tantamount to quality of attention. This observation also shows the fundamental connection between information and ethics.

Information is clearly linked to attention. We must attend to information in order to be informed – in order for it to be information at all. Some might say information consumes attention, but I would say that information and attention are two sides of the same coin. Information constitutes attention, and vice versa. Quality information enables a quality life. And ethics, if it is anything, is the search for a quality life both individually and in community.

Within information studies, information behavior (IB) is the field of research examining how people engage with information (Bates, 2017). Over the past few decades, the digital revolution has transformed people’s relationship with information. IB researchers have responded, of course, and information ethics also emerged as a field of study in this context. Still, IB and information ethics are not often connected. The special issue in which this article appears is a welcome exception and hopefully a precedent.

While information ethics tends to focus on digital information technologies, the field benefits from millennia of scholarly work in moral philosophy. Over the ages, ethicists have developed and discussed several different types of ethical theories. One of the first was what is now called virtue ethics. This approach centers its analysis on the qualities, skills, and habits of moral agents (i.e., people, though one might also consider other animals or even machines to be moral agents). Virtue ethics did not receive much attention in information ethics and related areas until fairly recently. Shannon Vallor’s (2016) book *Technology and the Virtues* is a major landmark in this regard, and much of my discussion in this article draws from her work.

Virtue ethics is about how individuals and communities conduct their lives to live well together. The aims of virtue ethics, such as helping people cultivate good character, are highly resonant with those of IB, which is

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ultimately about helping people cultivate good habits of mind. And as I pointed out earlier, our moral character and our habits of mind are fundamentally linked. In this article, I seek to harness and clarify the connection between virtue ethics and IB.

This article provides an overview of virtue ethics as relevant to IB and information literacy (IL). I begin by clarifying the distinction between IB and IL and how this relates to information ethics. Next, I introduce virtue ethics with an overview and a discussion of three key objections to virtue ethics made in the literature. As I will explain, a centerpiece of virtue ethics is the cultivation of certain qualities (virtues) within oneself; Vallor (2016) identifies seven interrelated practices for doing so. Building on her work, following the introduction to virtue ethics, I discuss how existing work in IB relates to these seven practices. Then, in the discussion, I reflect upon opportunities for further work at the juncture of IB and virtue ethics.

## 2 Disambiguating IB and IL in the Context of Ethics

In this article, I use “information behavior” as the umbrella term for all aspects of how people engage with information (needing, avoiding, using, creating, and on and on), embracing all paradigms and orientations in the field. In doing so, I follow the example of scholars such as Bates (2017).

This term certainly has its drawbacks, such as that to some readers it implies a narrow, behaviorist approach to these phenomena. But by this kind of reasoning, all terms are insufficient in one way or another, and at some point we have to get on with the work. That said, the question of distinguishing IB and IL warrants special comment in the context of this article.

For the most part, IB and IL developed independently; they have mostly distinct literature, journals and conferences, and their work deals with different models and theories. To some extent, this is understandable. While both IB and IL examine people and information, they have different goals: IB is about describing or explaining how people engage with information, while IL is about educating people to engage with information better and creating better systems (Shenton & Hay-Gibson, 2011).

But this analysis shows that IB and IL are both part of the same whole. If theories can be descriptive, explanatory, predictive, and prescriptive, it is evident that IB addresses the descriptive, explanatory, and to some extent predictive aspects of the overall theoretical space, while IL addresses the prescriptive aspect. When it comes to studying the ethics of how people engage with information, a challenge arises. Ethics also spans the descriptive, explanatory, predictive and prescriptive, even if it is primarily oriented toward prescription. Is it wise to further entrench the separation between IB and IL by assigning different aspects of information ethics to these different areas? Or is integration possible? If integration is possible, how might we navigate the profusion of terminology?

As an added wrinkle, though a happy one, over the past decade or so the boundaries of IB and IL have become permeable. IB research is increasingly presented at IL conferences, and vice versa. This trajectory points toward a future of integration, though terminology will likely continue to be a struggle.

In this article, I set aside these terminological challenges to focus on how virtue ethics relates to research on people’s engagement with information – spanning IB, practices, literacy, experience, and so on. For convenience as much as anything, I will use the term “information behavior” as an umbrella.

## 3 An Overview of Virtue Ethics

In the briefest terms, ethics is the study of the good life. There are three main approaches to ethics – deontology, consequentialism, and virtue ethics – each of which separates good from bad actions by focusing on a different aspect of action: deontology focuses on rules and duties that guide action, consequentialism focuses on outcomes of the action, and virtue ethics focuses on certain qualities of the person doing the action (Rachels & Rachels, 2015).

Virtue ethics posits that people can achieve the good life through cultivating specific moral qualities, called virtues, within themselves (Hursthouse & Pettigrove, 2018). Examples of virtues include generosity, compassion, patience, and so on, each of which has been subject to extensive philosophical analysis. What qualities are considered virtues is socially local, rather than universal; still, some virtues are upheld across cultures and epochs, such as courage, justice, and honesty (MacIntyre, 1981).

The virtues do not exist in isolation. Virtue ethicists speak of a person's character, or their virtue writ large, beyond simply observing that a person exhibits this or that particular virtue (Homiak, 2019). Thus, according to most theorists, the virtues are united or integrated through a person's practical wisdom, i.e., the ability to act discerningly given the particulars of each situation (Barry et al., 2017). For example, a would-be courageous person who is lacking in practical wisdom may, in the end, simply be foolhardy (Aristotle, 2014). Additionally, virtue is not just about action, but also perception, motivation, and justification. Being virtuous is about doing the right thing for the right reasons (Wright, Warren, & Snow, 2021).

In other words, virtue ethics suggests that moral actors attend to the specific details of each situation to determine how best to act in that situation, using the virtues as a compass (rather than referring to generalized rules). For instance, we may regard honesty as a virtue, and certainly in general, it is morally better to tell the truth than to lie; yet there are sometimes situations when lying may be the moral thing to do, such as in the proverbial case of Nazi officers asking if there are any Jews hiding in your home. In this way, even though the virtues are united and broadly support each other, any given situation may call for the expression of some virtue or virtues over others.

Besides helping identify the virtues, virtue ethics contends that people can become more virtuous over time. That is, unlike certain human qualities such as height, the virtues are not inborn or fixed; rather, we must practice and grow them throughout life. In this way, virtue ethics is more about progress and growth, and balance along the way, rather than strict rules.

A recent and highly regarded account of how the virtues are cultivated is given by Shannon Vallor in *Technology and the Virtues* (Vallor, 2016). In this book, Vallor synthesizes a tremendous literature spanning the philosophy of technology and several other philosophical traditions, as well as case studies of several emerging technologies. In particular, she analyzes three distinct traditions of virtue ethics – Aristotelianism from Greece, Confucianism from China, and Buddhism from India – with the aim of developing the foundation of a global morality for the twenty-first century and beyond. As part of this work, she provides a framework of seven practices by which the virtues are cultivated:

- **Moral Habituation:** Learning by doing, not just theorizing, and improving gradually over time.
- **Relational Understanding:** Recognizing our roles and relationships with others.
- **Reflective Self-Examination:** Checking in on ourselves with respect to moral aspirations.
- **Self-Direction:** Choosing our goals and taking steps toward those goals.
- **Moral Attention:** Becoming aware of and tending to morally salient facts in the environment.
- **Prudential Judgment:** Choosing well among available options
- **Extension of Moral Concern:** Doing good for others as well as ourselves.

Like the virtues themselves, these practices are mutually reinforcing. Moreover, they are not just steps to unlock virtues, but rather they are “constitutive and enduring elements of virtue itself” (Vallor, 2016, p. 66).

Each practice will be discussed in further detail below, in connection with relevant existing work in IB. But first, the following sections present an argument for adopting virtue ethics as a guiding framework in the information field.

## 4 Why Virtue Ethics?

Virtue ethics is an approach to ethics with roots in ancient traditions from several cultures dating back millennia (Vallor, 2016). Over the last few centuries, it gradually fell out of favor, giving way to deontology (which resonated with the Judeo-Christian religions' focus on laws) and later consequentialism (growing out of

the Enlightenment ideals of calculated rationality and universality) (MacIntyre, 1981; Rachels & Rachels, 2015). But over the past half-century, there has been a renewed interest in and development of virtue ethics (MacIntyre, 1981; Rachels & Rachels, 2015; Vallor, 2016). Still, virtue ethics remains the least understood or applied approach in the information field. But there are good reasons to engage with virtue ethics.

Let us begin with a reflection on our sociotechnical situation. With today's technologies, humanity has unprecedented power, including the ability to annihilate our own existence. Our efforts have affected our lived environment, as manifested in the changing climate. Our institutions are capable of producing new socio-technical platforms that drastically change our way of life in a matter of years (e.g., smartphones, social media). Even individuals have further reach than ever before. These new technologies, which proliferate through the potency of network effects, introduce possibilities and dangers whose consequences are impossible to predict (large language models, genetic modification with CRISPR/Cas9, proposals for geo-engineering to curb climate change, social media policies intersecting with global politics, etc.). Moreover, our environment is also becoming less predictable (fires, droughts, and extreme storms). Given all this, the future is less predictable than ever before (Allenby & Sarewitz, 2011; Vallor, 2016).

How does this bear on morality? Recall that ethics is the search for the good life. Life, of course, depends on the material qualities of our lived environment as well as our technologies. Most ethical traditions rely on the moral landscape of the future being more or less as it is in the present, with technological change coming slowly enough for our moral faculties to evolve alongside it (Vallor, 2016). Mill, for example, wrote that his consequentialist theory would work "as long as foresight is a human quality" (Mill, 1861/2001, p. 25).

In this light, we can appreciate reasons deontology and consequentialism fall short of moral guides today. Deontology seeks to provide rules for moral action. It is, of course, impossible to list an exhaustive set of rules, and situations arise where rules conflict. In any case, with such an opaque future, we cannot know ahead of time what the moral rules should be (Vallor, 2016). Even systems with one or a few rules, such as Kant's categorical imperative (i.e., an action is good if we would want everyone to do it), fail us, as they require us to know relevant facts about life in the future while assessing each rule. Consider asking yourself in 2005 whether it would be good for everyone in the world to be on Facebook.

Consequentialism, on the other hand, does not rely on specified rules, but it does require that we be able to know and predict the consequences of our actions. At its worst, this lends itself to the perfectionism of endlessly seeking to optimize outcomes (Vallor, 2016). But moreover, given the vicissitudes of emerging technologies, we certainly cannot predict the long-term consequences of our actions; even in the short term, actions may have far-flung knock-on effects due to the affordances of networked digital technologies (Jasanoff, 2016).

In our sociotechnical environment, we cannot rely on fixed rules of conduct (we need to know when to bend the rules or even rewrite them) or on predicting outcomes. Virtue ethics provides a balanced, dynamic, and responsive framework for discerning and moving toward the good life using tools and concepts that have been with humanity for millennia and which are still relevant, even given the tremendous change of the last few centuries (Heersmink, 2018; Vallor, 2016). Vallor writes:

Virtue ethics is a uniquely attractive candidate for framing many of the broader normative implications of emerging technologies... Virtue ethics is ideally suited for adaptation to the open-ended and varied encounters with particular technologies that will shape the human condition in this and coming centuries. Virtue ethical traditions privilege the spontaneity and flexibility of practical wisdom over rigid adherence to fixed rules of conduct – a great advantage for those confronting complex, novel, and constantly evolving moral challenges such as those generated by the disruptive effects of new technologies. (Vallor, 2016, p. 33)

It bears mentioning that virtue-based approaches have already proven fruitful in the information field. First, there are some examples of work in information ethics that is resonant with virtue ethics even if they didn't use that term, such as Smith's (2001) work on global information justice. Beyond that, virtue ethics has guided some discussions in information ethics; Burgess (2016), for instance, demonstrates how virtue ethics can help librarians navigate the tension between the values of neutrality and social responsibility.

There are also a few examples of work applying virtue ethics in IB. Most of the existing work appeals to virtue epistemology rather than virtue ethics per se – virtue epistemology focuses on the qualities of mind

conducive to good thinking, rather than morality as a whole. For example, Bivens-Tatum (2022) recently published *Virtue Information Literacy*, which makes the case for adopting virtue epistemology within IL education. And in my own work, I have examined intellectual humility (an intellectual virtue) in IB (Gorichanaz, 2022a) as well as hope, which is both an intellectual virtue and a moral one (Gorichanaz, 2022b).

Though good thinking is certainly part of the good life (and so virtue epistemology and virtue ethics are, in the end, entangled), in this article, I intend to focus squarely on virtue ethics and how work in IB can relate to the good life in a deep and expansive sense.

## 5 Addressing Criticisms of Virtue Ethics

When considering any position or theory, it is indispensable to engage with arguments both for and against. As a millennia-old tradition, virtue ethics has seen a number of critiques. This section discusses three major critiques relevant to IB – situationism, scalability, and individualism – along with responses from virtue ethicists. Following that, I reflect more generally on some of the limitations of virtue ethics. In the end, I find virtue ethics to be a sound and applicable moral theory that is highly resonant with IB. Interested readers may find value in turning to Vallor's (2016) work for more detailed argumentation as well.

### 5.1 The Situationist Critique

Virtue ethics posits that we have virtues and vices that manifest in character and that these qualities are dynamically stable. For example, an honest person will tend to tell the truth. Starting in the 1960s, some psychologists began to cast doubt on whether people indeed have such qualities, suggesting instead that we respond much more locally to each particular situation – hence this became known as the “situationist” critique. For example, situationists would say there's no such thing as an honest person; a person simply lies or tells the truth in response to the pressures and opportunities of each particular situation. Situationists argue that the empirical data support situationism and refute both virtue ethics and personality psychology (e.g., Harman, 1999).

However, the empirical claims of situationists have themselves been called into question. First, these claims rely on over-generalizations that are not supported by the findings that situationists cite (Wright et al., 2021, ch. 4). Moreover, the psychological studies that formed the basis of the situationist critique, such as those by Milgram and Zimbardo, have recently been revealed as dubious, if not fraudulent (Bregman, 2020; Le Texier, 2019; Singal, 2021). Next, more recent research demonstrates that even though there is situational variation in people's actions, there are stable qualities that emerge over longer periods of time, just as virtue ethics would predict (Vallor, 2016; Wright et al., 2021).

Indeed, in a recent review, Wright et al. (2021, p. 17) emphasize that even perfectly virtuous people need not be infallible, as humans are by definition limited (we run out of time, suffer migraines, experience setbacks, etc.). Considering all this, Wright et al. offer a model of virtue that accounts for both the dynamism and stability of human behavior. This model draws on Whole Trait Theory from psychology, in which a trait's expression is governed by three systems: inputs (occurrences in the environment and mind are interpreted as virtue-relevant or not); intermediate processing (inputs are interpreted with respect to virtue, including one's motivations to be virtuous, the activation of goals, etc.); and outputs (based on the intermediate processing, a virtue is expressed or not through actions). This model suggests that a complete picture of virtue is found not only in an agent's internal processing of events, but also in the correct perception of relevant stimuli and the expression of relevant thoughts and actions (Wright et al., 2021).

## 5.2 The Scalability Critique

Next, critics have observed that virtue ethics emerged in Antiquity, when the world was much different than it is today – societies were smaller, simpler, more closed, and more homogenous – and have suggested on these grounds that virtue ethics may no longer be actionable or useful. These critics, such as Luciano Floridi, suggest that virtue ethics doesn't *scale* (Floridi, 2013). For instance, virtue ethics claims that morality can spread from particular individuals to families, communities, and societies through the bonds of learning and caring. Regarding this claim, critics may be concerned that though learning about the virtues may help any given individual, its mechanisms are not sufficient to spread virtue among communities and societies in today's world, given the unpredictable emergent properties of complex and open societies (Floridi, 2013). This critique seems to overlook, first and foremost, the reality that human culture does spread, even in today's complex and open world (perhaps especially so). Consider creative works (Harry Potter, Pokémon, and artistic styles) and social movements (animal rights, free software, and Black Lives Matter). If other cultural components can scale and spread, why should morality be uniquely unscalable? Indeed, Vallor makes an extended case that the openness and complexity of today's world are precisely why virtue ethics is the best choice for guiding technology design compared to other ethical theories (Vallor, 2016).

As an outgrowth of the scalability critique, applied specifically to digital technology, we might make the observation that technology design and development today increasingly takes place at a few large companies within a corporate shareholder model, prioritizing short-term financial returns over the long-term social good. Observing this, adherents to the scalability critique of virtue ethics would suggest that cultivating virtue even among communities of consumers is not enough to ensure that emerging technologies will be conducive to virtue – that large-scale systemic change is necessary. Again, this critique may overlook the power of consumer choice in directing corporations' product development as we "vote with our wallets" and advocate publicly. The proliferation of organic food and electric automobiles may serve as examples where this has been successful; purchasing power among a powerful few consumers was followed by government incentive and regulation as well as further corporate innovation in an upward spiral. Moreover, business leaders such as Jacqueline Novogratz provide a model for corporations that can make positive moral changes in the world while also being competitive and profitable in the market (Novogratz, 2020). The rise of "B Corporations," which are certified for social and environmental performance, is also relevant along these lines (Kim, Karlesky, Myers, & Schifeling, 2016).

Related to the scalability critique is a concern about relativism. Given that virtue ethics has been developed in various civilizations and epochs, some touting different virtues as central, it may be impossible (or at least unjust) to expect the world to subscribe to one strand of virtue ethics (Floridi, 2013, p. 167). In response to this critique, Charles Ess has offered an analogy to technical standards. A global internet was only possible with shared protocols and other standards, even though local variation remains; in the same way, Ess argues, a globally interconnected humanity needs shared moral norms, local variation notwithstanding (Ess, 2006). Still, some may wonder if this is possible. On this point, Vallor writes:

Why should we think that [the global cultivation of shared virtues] is practically possible? Consider that the alternatives are to surrender any hope for continued human flourishing, to place all our hope in an extended string of dumb cosmic luck, or to pray for a divine salvation that we can do nothing to earn. ... Moreover, if Aristotle had even some success in fostering the cultivation of civic virtues, if Buddhism has encouraged any more compassion and tolerance, or Confucianism more filial care and loyalty, what is to prevent a new tradition from emerging around the technomoral virtues needed for human flourishing today? (Vallor, 2016, pp. 56–57)

## 5.3 The Individualist Critique

Finally, because virtue ethics begins with the cultivation and activity of individuals, it may not seem appropriate as a global ethic when the most pressing moral issues are more collective than individual. Floridi suggests that the "genuine vocation" of virtue ethics is the individual, and it cannot readily apply to societies



(but see the previous subsection); moreover, he suggests it is too Euro-centric to be appropriate for the whole world. Floridi worries that “if misapplied,” virtue ethics will foster narrow individualism, whereas what the world needs is broader moral cooperation and collaboration (Floridi, 2013, p. 167).

First, Jonas (1985) has noted that this critique stands for many ethical theories developed before the twenty-first century; such theories were meant to address moral questions that individuals face, not collectives, and in circumstances when that person’s actions would unfold within a foreseeable, stable present. More deeply, it seems that this critique is aimed at a straw-man version of virtue ethics. It is not the case that virtue ethics is narrowly concerned with a solipsistic individual, nor that it ignores systemic, situational, or environmental effects (MacIntyre, 1981). As Vallor writes, “virtue ethics treats persons not as atomistic individuals confronting narrowly circumscribed choices, but as beings whose actions are always informed by a particular social context of concrete roles, relationships, and responsibilities to others” (Vallor, 2016, p. 33). According to virtue ethics, we cannot cultivate virtue on our own; it takes a whole community, including parents, other family members, teachers, and friends – as well as designers, business and civic leaders, etc. Virtue ethics points to public morality just as much as to private morality, as “a civil person will have a strong interest in supporting and maintaining her fellow citizens’ capacities for excellence in public deliberation and action” (Vallor, 2016, p. 143). Critics such as Floridi ignore that virtue ethics flourished not only in ancient Greece; Confucian and Buddhist formulations of virtue ethics were always community-oriented. Even Aristotle, at the root of Western liberalism, described a virtue of civic friendship (Aristotle, 2014). As described in response to the scalability critique, virtue ethics is as much about infrastructure as it is about individuals’ character qualities.

## 5.4 Other Limitations of Virtue Ethics

As discussed earlier, virtue ethics calls for balance and prudence in navigating ambiguous moral situations. Following virtue ethics, moral agents must attend to the specifics of each situation – rather than, say, making decisions based on the type of situation. Moreover, virtue ethics suggests that people can become morally better over time through goal-setting, self-reflection, and practicing in the community. All this points to some inherent limitations to virtue ethics in addition to the challenges just discussed.

First, putting the virtues into practice may take time and deliberation. In a moral emergency, one may have to make a decision very quickly, without the luxury of time to reflect on every possibility. That said, virtue ethicists do acknowledge human limitations, such as finite time (Wright et al., 2021, p. 17). Virtue ethics asks us to do the best we can with the resources we have, rather than to take the objectively best course of action. Moreover, virtue ethics also suggests that our skills in applying the virtues grow over time, becoming more accurate and swift (Vallor, 2016).

Another limitation of virtue ethics is the absence of hard-and-fast rules, which may make it difficult to determine the right thing to do in any given situation. Virtue ethics discourages perfectionistic and broad-brush thinking, but it also may require deliberation (and therefore, as mentioned, time). Because of this characteristic, virtue ethics suggests that there is no single, best answer to what should be done in any given dilemma, just as there is no single, universal answer as to what qualities constitute virtues. Thus, uncertainties may arise – what if one’s reasoning is flawed? What if one is deluded into thinking something is moral when it is not? Still, other ethical theories may also not be ultimately satisfying; with consequentialism, for example, there may always be faraway domino effects that one does not see. In the end, I think, ethics always requires deliberation, and in the end, reasonable people may disagree.

A third limitation of virtue ethics is that it requires intrinsic motivation. Moral actors must desire to develop virtue within themselves. With other moral theories, it may be possible to enforce morality (e.g., a person could force others to follow a rule by threat of punishment), but virtue ethics requires that one’s motivations and justifications be in line with their actions. In short, people have to want to be good. Virtue ethics does suggest that morally good people also experience their lives to be better and therefore serve as exemplars to others, but others may not see these examples, or others may think what they are doing is good when it is not.

## 6 Connecting the Practices of Virtue Cultivation to Existing Research in IB

One aim of this article is to demonstrate how virtue ethics can be applied to IB research – and ultimately inform the design of information products and services that help people live better lives. To that end, this section identifies connections that already exist implicitly between IB and virtue ethics by using the seven practices of virtue cultivation as an analytical framework.

For each practice, I give an explanation drawing primarily from Vallor's (2016) work. Following that, I discuss an example of work from IB that exemplifies that practice. The discussion in this section is illustrative rather than exhaustive. This framework makes it possible for other work in IB to be discussed and classified with respect to its contribution to virtue cultivation.

For the most part, the work cited from IB in this section does not make reference to morality or acknowledge its contribution to information ethics. What this discussion shows is the wealth of work already being done in IB that is compatible with virtue ethics. It also shows how studies that are seemingly unrelated, such as McKenzie's (2021) work on keeping track in families and Ruthven's (2022) work on transitions, can be considered part of a shared mission.

The heuristic value of this section lies in drawing connections and pointing to further research opportunities. Others interested in virtue ethics and IB can build upon this strong but disparate foundation.

### 6.1 Moral Habituation

Virtue ethics contends that people become virtuous primarily through action, rather than thinking or reading about morality (Vallor, 2016). Over time, we get better at making moral decisions at the moment. The notion of moral habituation refers to this gradual improvement, as well as the ability to justify our decisions. With moral habituation, we have a reason for acting, the action is valued as good, and we repeat that action, which shapes our ongoing emotional states. This progress leads us to experience joy in performing moral actions, which in turn further strengthens our commitment to doing good (Vallor, 2016).

In the field of IB, the notion of habituation is best expressed with the information practice perspective. The practice perspective explains how social life is accomplished on an ongoing basis, and work in information practices suggests that much of our information-seeking and use is habitual in nature (Savolainen, 2008).

Information practices have not typically been connected to morality, but there are a few exceptions. For example, Potnis and Winberry (2022) use the information practice perspective to discuss information vulnerability, a lack of access to or inability to use high-quality information. Through a thematic analysis of the relevant literature, Potnis and Winberry identify seven information practices that people may use to alleviate information vulnerability, including becoming selective in choosing information sources and channels, building a support system, and sharing information. This work is not explicitly framed as information ethics, but it does show how through becoming habituated to these practices, people may better their lives and participate more meaningfully in community, ultimately becoming better moral actors. In that sense, it clearly resonates with the practice of moral habituation.

### 6.2 Relational Understanding

In virtue ethics, the human person is conceptualized as a fundamentally social being. We are formed through networks of relationships, and thus, we rely on others to help guide our actions. According to Vallor (2016), the practice of relational understanding is, first, the continual pursuit of a more precise and accurate view of our social relationships; and second, building the skill of acting upon this understanding in response to the moral exigencies of each particular relationship in each particular circumstance.



In IB, an exemplar of research demonstrating this perspective is Pam McKenzie's work on the phenomenon of "keeping track," which she and colleagues have explored in a series of publications. Most recently, McKenzie (2021) foregrounds the relational and moral components of keeping track of families. Through a multi-year empirical study of families, she finds that making and maintaining a family takes work that is supported by documents and information systems in many ways. "For example, physically distant family members may use text or phone calls to communicate in real time, and colocated family members may use notes, calendars, and lists in central locations like kitchens to share information over time" (McKenzie, 2021, p. 99). Family members are sometimes the objects of keeping track and sometimes collaborators in it, but they are eventually always beneficiaries of it. As McKenzie writes, systems for keeping track help create and communicate social relations within the family, and in turn, they also help family members choose actions with respect to those understandings that then strengthen the family.

### 6.3 Reflective Self-Examination

According to virtue ethics, moral principles are not one-size-fits-all. Rather, any moral decision must take into account our personal strengths and weaknesses. Assessing these accurately requires a habit of reflective self-examination. The goal of such examination is to discern how well we are conforming to the ideal moral self we aspire to be, taking into account our beliefs, thoughts, feelings, and actions. Reflective self-examination engenders within us a sense of responsibility to correct our shortcomings – and eventually stirs up a sense of joy when we do so (Vallor, 2016).

The relationship between information practices and reflective self-examination goes back to Antiquity; Foucault (1988, 1997) writes of personal notebooks in Ancient Greece and Rome that were used to collect fragments of information, serving as a locus for self-reflection and personal growth.

In IB, some work has examined reflective self-examination. A good example is Siracky's (2013) ethnographic study of spiritual journal keeping among Catholic students. She demonstrates how people's journals facilitate personal and spiritual growth through their material form and the practices people cultivate with them. The time and attention that goes into selecting a journal, crafting its entries, rereading past entries, and so on, all constitute reflective self-examination.

Resonant with this, in the secular realm, Tholander and Normark (2020) present a study of bullet-journaling as a form of mindful self-tracking. While self-tracking generally connotes a sort of productivity and efficiency that is not necessarily linked with virtue, Tholander and Normark show how users of bullet journals may engage in reflection and even resistance against prevailing notions of efficiency.

### 6.4 Self-Direction

As humans, our actions are generally goal-directed. These goals may be big or small, long-term or short-term, implicit or explicit. However, we seldom consider why we have particular goals or wonder if we should have different ones, especially in the moral realm. But ethics is about intention and justification as much as action; and virtue ethics in particular asks us to generate a vision of our ideal future moral self – as Vallor writes, "the type of being that is *worthy of my becoming in this world*" (Vallor, 2016, p. 97) – to provide direction to our moral efforts. Without such insight, all the moral intentions and actions in the world may be fruitlessly misdirected. Indeed, virtuous development is said to be motivated in the first place by our observing *moral exemplars* in the community – those people we admire for their morality and thus seek to emulate (Zagzebski, 2017). The practice of self-direction entails courageous movement down the path we have chosen for our life. Because this is difficult, Vallor says that we must follow this path not for social gain but out of a true desire to cultivate righteousness for its own sake (Vallor, 2016).

Just as human activity in general is often goal-directed, much of the work in IB is, implicitly or explicitly, centered around goals. For example, work on how people seek and use information to accomplish tasks (e.g., Byström & Hansen, 2002) is implicitly goal-oriented. It is a truism in the field that people don't want information per se, but they want to accomplish what they can do with that information.

The practice of self-direction considers oneself as the goal; and in the context of IB, this practice invites us to consider how we may change through working with information. This has been little commented upon in IB, but that is beginning to change. One example of work on moral self-direction in IB is the research on information experience (Gorichanaz, 2020), which explicitly theorizes the moral dimensions of self-construction with information. More recently, Ian Ruthven's (2022) book *Dealing with Change Through Information Sculpting* theorizes how people engage with information amidst life's exigencies – challenges, transitions, trauma and so on. Ruthven articulates three phases (understanding the shift, negotiating one's change through that shift, and resolving one's direction for the future) and the various information activities that characterize each phase. For instance, the understanding phase entails determining causes, the negotiating phase includes evaluating options, and the resolving stage includes creating narratives.

## 6.5 Moral Attention

Next, becoming virtuous requires understanding when moral action is called for. To do so, we must sensitize ourselves to the features around us that are morally relevant, which Vallor (2016) calls moral attention. At our best, we will be able to say not only that some feature is morally salient, but also why it is and what to do about it. Vallor offers a simple example of a hungry coyote stalking toward a defenseless toddler. Observing this, any person would understand the danger for the child and be stirred into action. But most situations are not so clear-cut. If we encounter a person on the street studying a map, we read their body language and facial expressions to determine if they need help, or if they're just planning their route. If we see a bedraggled person watching us from a city bench, do we avert our eyes, cross the street, offer them some spare cash, bring them a new set of clothes, or invite them into our home for dinner and a wash? There are any number of subtle features of the situation that help us make these decisions. Indeed, we may make a decision that upon reflection we realize was the wrong one – hence the need for reflective self-examination. More difficult still are those encounters and situations that are protracted and dynamic: how best to act during an emerging pandemic, for example? Cultivating moral attention gradually helps us discern what each particular moral situation calls us to do; sometimes, this involves adapting or flouting social conventions or normative rules that otherwise would apply. In this way, we can respond flexibly to changing situations.

IB has long considered relevance a central concept. At heart, relevance is about attending to the various features of a document that make it suited or not to helping one achieve their goals. In the context of morality, the goals under consideration are moral ones – those related to getting along with each other well.

Recently, Haider and Sundin (2019) have proposed the concept of societal relevance to capture some of the moral aspects of relevance. As they write, societal relevance describes what information is beneficial to a community or society in a particular context. They argue for search systems that operationalize societal relevance as part of a strategy for strengthening the social fabric.

In addition to learning what to attend to, moral attention involves learning what to ignore. Anderson and Dourish (2005) described an information practice of “not noticing” as a moral issue. They studied seniors in an assisted care facility who were being tracked in various ways, ostensibly for their health and to aid communication with their family members. One of the findings of their study was that family members did not want to receive certain information that might damage the roles and relationships within the family – and how sometimes navigating this was challenging given the power dynamics and sociotechnical systems at play. When this navigation was successful, some information effectively became invisible. In terms of information, moral attention is about learning to find relevant and learning to render invisible information in ways appropriate to a given moral situation.

## 6.6 Prudential Judgment

Central to ethics is the question of making decisions and taking action, and likewise, Vallor argues that this list of practices would be incomplete without prudential judgment. This is “the ability to choose well, in particular situations, among the most appropriate and effective means available for achieving a noble or good end” (Vallor, 2016, p. 105), and having such an ability is necessary for acting in unanticipated or rapidly evolving situations. Prudential judgment involves interpreting our circumstances and emotions correctly, understanding our options and their possible consequences, and choosing the best among them. Prudential judgment thus unifies several of the practices listed above and focuses on the actions that one takes in response to those practices. For example, having clearly developed self-direction and moral attention, bolstered through reflective self-examination, equips a person to make the correct decisions in a difficult moral situation.

In IB, research on the outcomes of information seeking and the outcomes of information (often simply called information use; Kari, 2007) relate to this practice. Example of work in that area with a moral orientation is research by Mosier, Bartholomew, Meng, and Xavier (2007) on how people in an organization may use information seeking as part of their strategy to navigate an ambiguous moral situation, such as to help themselves become more sure of the situation.

## 6.7 Extension of Moral Concern

The final practice of cultivating virtue is extending a caring attitude beyond its initial scope. If the initial scope of our morality is to care for ourselves and our family, this practice asks us to care also for our neighbors, our fellow citizens, our fellow humans, our fellow creatures, and perhaps beyond (Floridi, 2013; Singer, 1981). This must be done appropriately, rather than indiscriminately – to the right degree, at the right time, to the right entities, and in the right way (Vallor, 2016). Vallor contends that this is the most powerful practice of these seven and also the most challenging.

In the information and computer sciences, Sukrit Venkatagiri and I have discussed the expanding circles of concern of IB an human–computer interaction (Gorichanaz & Venkatagiri, 2022). Our discussion shows how the scholarly concerns of these fields have expanded over the decades in terms of the human scale, social worlds, and phenomena under study, as well as in the diversity of methodologies used to study them and the ethical values implicit in the research. Across all these dimensions, IB research is becoming more diverse. Amidst this, many scholars are turning toward issues in justice (Jaeger, Shilton, & Koepfler, 2016), and morally laden concepts are beginning to have greater currency, such as information poverty (Britz, 2006) and information precarity (Wall, Campbell, & Janbek, 2017).

These comments are metatheoretical, in that they demonstrate the extension of moral concern occurring within the research community. However, there is an opportunity to examine whether and how everyday people and system users are undergoing extensions of moral concern as well, and how designers and developers might better help them to do so. This is particularly urgent as society continues to grapple with the unexpected consequences of new information technologies. To this end, Vallor poses a number of questions:

Are certain kinds of technology expanding or narrowing the scope of our moral concern, or do they exert no influence on this aspect of moral practice? Might some emerging technologies change *how* we express our moral concern for others? Might they allow some forms of care, compassion, and civility to be expressed more easily than others? Could some emerging technologies exacerbate moral tribalism, neglect, or incivility, shrinking the circle of our moral concern for others? Might other technologies have the opposite effect, encouraging the exercise of moral imagination and perspective-taking that enrich our capacities for moral extension? How can we drive more resources into development of the latter, rather than the former? What is the potential risk to human flourishing if we can't, or won't? (Vallor, 2016, p. 117)

## 7 Discussion: Toward Virtue-Oriented IB

This article has provided a guide to virtue ethics for IB. In particular, it detailed the seven practices of virtue cultivation as synthesized by Vallor (2016). Even if people may disagree on the definition and priority of particular virtues, Vallor demonstrates that these seven practices transcend those disagreements, characterizing virtue development at a fundamental level. Further, since virtue ethics is oriented toward personal growth and improvement over time, focusing on the practices for cultivating virtue may in the end be more fruitful than defining the virtues as static concepts.

The examples of IB research given above show that the field already has a corpus of work that may seem unrelated but which can be unified in terms of virtue cultivation. The discussion suggests opportunities for further integration of virtue ethics in the field.

First, given that the literature discussed in this article was selected for illustration rather than an exhaustive review, one next step would be to conduct a more systematic review of the literature to identify as much existing research as possible that contributes to each of the seven practices. Beyond that, there may be value in considering how the different practices interrelate. According to virtue ethics, the practices can be fruitfully undertaken one at a time, but it is even more powerful to engage several of them in tandem, seeing as the practices are intertwined and mutually supporting (Vallor, 2016). If part of the value of the work discussed in this article is in showing the previously unseen connections between different lines of IB research, then doing a cross-cutting analysis of these practices could show even more connections and more impactful work.

Next, outside of the work surveyed here, there is a lot of research in IB that nearly addresses the practices of virtue cultivation but lacks a moral component. For example, virtually all the work on information practices addresses habituation but not moral habituation. McKenzie's (2021) work does have a moral component as it centers on family formation and maintenance as part of living well. The discussion in this article suggests how other researchers working on information practices can easily contribute to information ethics through a slight change in their research focus, highlighting the moral aspect of the habituation they already study. Something similar can be said about research relating to the other six practices as well.

In the past few years, IB researchers have become increasingly interested in the implications of their work for the design of information systems, products, and services (Makri, 2020). Regarding design, Vallor's own work in *Technology and the Virtues* demonstrates how virtue ethics can play an indispensable role in the design of digital technologies. The final chapters of the book present several case studies on how emerging technologies such as social media platforms could be further developed toward the good (by attending to the virtues) or not (by ignoring them, or perhaps by attending to vices). As Vallor shows, such case studies may spark critical and creative thinking in designers. For example, she asks how social media platforms might cultivate a shared respect for truth beyond "just handing everybody a louder microphone" (Vallor, 2016, p. 179). Amidst these case studies, Vallor offers a conceptual methodology for ensuring designed systems are conducive to human virtue, and this could serve as a starting point for virtue-oriented design work in IB (Reijers & Gordijn, 2019).

Additionally, there are empirical opportunities for moving IB work in a moral direction by engaging with virtue ethics. For example, to determine whether and how well information helps users cultivate virtue, researchers could conduct longitudinal studies using psychological measurements of virtue (see Wright et al., 2021) before and after a person's engagement with a document or system.

As well, there are opportunities for virtue ethics to shed new light on moral dilemmas within IB, such as Burgess (2016) showed with library professionals; tensions between other professional values could be explored through virtue ethics, as well as questions of IL (Bivens-Tatum, 2022).

Finally, though my focus here has been on virtue ethics specifically, it would also be worthwhile for further work in IB to compare other ethical theories, such as deontology and consequentialism, with virtue ethics. In what situations do the suggestions of these theories coincide? Where do they diverge? And what lessons might be drawn from such analyses?

## 8 Conclusion

Information ethics arose from the challenges posed by digital computing. Though it may seem like an emerging or even trendy research area today, its concerns have been with us for some time. As Norman Cousins observed, in an essay originally published in 1966: “The question persists and indeed grows whether the computer makes it easier or harder for human beings to know who they really are, to identify their real problems, to respond more fully to beauty, to place adequate value on life, and to make their world safer than it now is” (Cousins, 1989). That essay has been reprinted numerous times, showing its perennial relevance.

As we continue to seek moral guidance in the age of digital information, I would suggest that we not overlook virtue ethics. This moral theory is about orienting oneself and one’s community in the world, moving toward growth and betterment. Virtue ethics provides a compass, in other words; and in the context of navigating the information environment – which is all about matter and mattering – virtue ethics provides us with a compass for what matters.

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