

## A PRAGMATIC APPROACH TO SETTLING THE DEBATE ON THE MORAL AGENCY OF TECHNOLOGY: DEWEY IN FOCUS

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**ABSTRACT:** In the contemporary debate on the moral status of technology, some scholars have categorized technological artifacts under the realm of means, attributing mere instrumental value, while others have positioned them in the realm of ends with moral agency. Both stances treat means and end categorically as if connections between them are only casual or instrumental. This discussion is becoming more complex as technology becomes more sophisticated, and its influence on normative values grows. To resolve this contention, this study suggests a middle ground from Dewey's pragmatic ethics, specifically his interpretation of the means-end continuum. Inspired by his treatment of the relation between means and ends as inclusive, temporal, and contingent, this paper asserts that in the digital age, ethical dilemmas are more effectively addressed by a pragmatic approach than by classical ethical theory.

**Keywords:** moral agency, technological artifacts, means-end, Dewey

### 1. Introduction

As beings capable of innovation and evaluation, humans have made remarkable advances in technology and ethics, from living in caves to walking on the moon, from hunting to gene editing, and from stone carvings to computer coding. Normatively, we have progressed from slavery and racism to the animal and plant rights movement. However, normative progression cannot keep up with technological advancement and has attempted to do so using a framework designed for a previous situation. Although mainstream ethical theories may have been suitable for norm-rich societies that lack complex technology, the current situation shows an opposite trend.

In our application of technological artifacts or systems to various aspects of life, our traditional moral principles are becoming less effective in addressing ethical dilemmas in the digital age. For instance, we are compelled to reexamine and fine-tune our moral principles

by the rapid growth of technologies such as artificial intelligence (AI) writing tools in education, surrogacy, and gender transition in medicine, genetically modified organisms in agriculture, online privacy and the digital divide on the Internet, algorithmic trading and market manipulation in trade, and social media manipulation in politics.

Innovators, technicians, and designers have been engaged in a misunderstanding with politicians, philosophers, and spiritual leaders regarding the moral agency and responsibilities of technology. According to Val Dusek (2006,p.34), stakeholders lack a shared understanding of technology. Whereas technologists often place less emphasis on the social and political implications of technology, politicians and social scientists have limited technical knowledge. Winner (1980, 2017, p. 3) suggests that artificial or technical boundaries continue to separate technology creators and users. John Dewey who believed that such a gap could be eliminated through science and technology democratization also observed this false demarcation between creators (scientists) and users of technology (1971). While creators consider themselves inventors, engineers, or designers tasked with the maintenance and operation of artifacts (machines and systems), users are often considered ignorant of the underlying material principles or techniques employed in these fields. Such exclusivity in technological perspective leads to a limited understanding of the moral or nontechnical dimension of artifacts. Modern technology continually produces artifacts and systems from which ethical dilemmas regarding moral agency and responsibility emerge.

Answers to questions pertaining to the moral agency of an unmanned aerial vehicle and whether it can be held responsible for killing innocent children at school, the moral responsibility of vending machines that sell expired foods and drinks, whether an AI language model software that generates full literature is neutral in value, and the role of AI language model software in diminishing

or preserving its users' intellectual honesty and integrity could stem from two incompatible evaluations of technological artifacts. While most engineers, innovators, and designers (Roeser, 2012) have advocated the instrumental assessment of technology, other thinkers from different disciplines have developed counterarguments asserting that technological products and systems are value-laden and can affect the ethical, societal, and spiritual dimensions of human beings. Hanson (2013), Sanders (2004), Brey (2013), Latour and Venn (2002), Mitcham (2013), and Verbeek (2013) argue that technological artifacts are not value-neutral and rather ascribe moral agency to artifacts immediately. Meanwhile, advocates of the conventional view—that artifacts are mere tools and are always in the realm of means—deny the possibility of artifacts having moral agency. For instance, Joseph C. Pitt suggests that technological artifacts neither contain nor embed values (2013).

The debate over whether the value of technology is determined by the ends it brings or the means it follows is becoming increasingly complex with ongoing technological advancements. "Emerging technologies, such as AI, biotechnology, and automation, often present ethical dilemmas that are not easily addressed by traditional ethical theories" (Florida & Sanders, 2004, p. 349). Floridi and Sanders observe that mainstream ethical theories cannot fully address such debates and other ethical dilemmas in the realm of technology. Deontology (duty-based ethics), consequentialism (e.g., utilitarianism), virtue ethics, and other mainstream ethical theories offer comprehensive, fixed, ideal principles rather than consider the dynamic nature of things. The gap between complex, rapidly evolving technology and the lack of ethical theories that can address novel ethical questions necessitates consideration of multiple factors in ethical evaluation instead of adopting a single approach to seek solutions. Philip Brey notices this gap in his examination of the "limitations of contemporary philosophy of technology" in which he contended that

there is a lack of comprehensive, workable principles in the ethics of technology, that is, the absence of methods and theories (a deficiency of a "single monograph in technology ethics," in Brey's terms), to approach issues such as how new technology can be designed, used, and innovated in a morally responsible manner. Simply put, technology ethics has no principles that prevent technology from influencing "accepted social values and norms" and conceptualizing technology-generated values and norms (Brey 2010, p. 44).

Thus, this paper aims to demonstrate that the incorporation of pragmatic ethics into the discussion addresses the lack of all-inclusive, case-sensitive, flexible, and situational principles in technology ethics. By exploring moral agency and responsibility regarding technological artifacts within the framework of Dewey's ethics, particularly his view of the means–end continuum, I contend that pragmatic ethics can facilitate the discussion and conceptualization of moral dilemmas posed by the design, application, and systems of modern technology.

This study also explains how Dewey's dynamic view of the means–end relation can offer insights to settle the debate on the moral status of technology, which is viewed as a means and morally neutral by some but is positioned under ends with the moral agency by others.

Thus, by examining Dewey's pragmatic ethics and his treatment of means and ends, this study provides a pragmatic account beyond the categorization of technological apparatuses as either means or ends.

## 2. Moral Agency and Technological Artifacts

Moral agency is a relevant subject to moral philosophy, psychology, and legal and medical literature. Its classical conception is often dominated by the Kantian formulation of the categorical imperative, which states that an autonomous agent is a crucial part of the equation. A rational moral agent possesses autonomy over their will, the capacity to set universal law, and a will to be governed

by it, that is, the “powers of self-determination,” and is independent of any authority except their self-imposed law (Reath, 2006, p. 208). Contemporary Kantian philosopher Christine Korsgaard defines a moral agent not only in terms of whether their actions are rationally willed but also as an integral part of the agent’s identity.

Korsgaard also identifies two forms of agency: “natural” and “normatively constituted.” Natural agency pertains to the causal link between actions guided by certain “mental states” (e.g., desire and intention), and the action is “attributed to the agent” as it is caused by the agent’s mental states, whereas normatively constituted agency presupposes the existence of norms, values, and laws that help evaluate or confirm the capacity of the agency (Korsgaard, 2014, p. 2). Korsgaard further argues that the agent’s decisions, the changes they cause, and their actions are carried out under the implicit “threat of disunity.” This perspective allows for an examination of the legitimacy, acceptance, and rightness or wrongness of the agent’s actions or behavior. Thus, Korsgaard concludes that the connection between an agent’s action or behavior and an evaluator’s reaction is not merely considered causal; rather, both the doer’s and evaluator’s actions show the participants’ essential identity. The person’s identity, their essential being, reveals itself “in some special way” in their actions (p. 15). This is the reason Monisha Pasupathi and Cecilia Wainryb associate moral agency with self-recognition and argued that moral agency can be understood as the moral agents’ awareness of themselves and their experience of other human individuals “whose morally relevant actions are based on goals, laws, and beliefs” (Pasupathi & Wainryb, 2010, p. 55). In this sense, causing harm to a moral patient (wronging) results from one’s forgiveness of oneself and others. Therefore, awareness of such moral facts enables agents to experience themselves as fundamentally moral beings.

According to Nomy Arpaly, agency is the conjunction between an individual human being and their mental capability for self-control amid challenges or tempting

choices. He associated agency with a state of self-dependency and considered moral autonomy as “personal efficacy”—the independence to pass judgment, evaluate, hate, will, desire, praise, and blame in one’s own light. His account of autonomy seems to be based on the agent’s overall state. However, personal efficacy is not meant to refer to the agent’s non-normative actions. Arpaly referred to such normative efficacy as “agent autonomy,” which is not influenced by experience, power, and knowledge. People may become more autonomous or have different levels of autonomy if autonomy implies non-normative personal efficacy. Here, knowledge, power, wealth, and experience are critical. Nevertheless, agent autonomy (normative personal efficacy) “is the kind of thing the slave in chains has just as much as her master” (Arpaly, 2002, p. 120). It is based on the agent’s “capacity to be sensitive to moral considerations” and willingness to incorporate them in their actions and evaluation and not on the nonnormative personal efficacy for which they are morally blamed or praised (Vargas, 2023, p. 6). Vargas’s discussion of normative personal efficacy appears to capture H. G. Frankfurt’s perception of the freedom of will. Frankfurt adds more criteria for humans to be considered rational moral agents, arguing that the application of normative principles to evaluate actions or behaviors may not be enough. Rather, freedom of will (which distinguishes humans from primates) is a significant element for one to become a full-fledged moral agent (Frankfurt 2018). Frankfurt also distinguishes “an agent who acts freely” from one “whose will is free”; while the former represents freedom of action, the latter signifies freedom of will. The point here is that acting freely does not necessarily imply possessing free will, nor does one’s inability to act freely necessarily mean lacking free will, for freedom of will is not influenced by external factors. Understanding Frankfurt’s two orders of *desire* (first-order and second-order desires) may help us figure out the difference between freedom of action and freedom of will. First-order desire pertains to the condition

in which an agent (be it human or animal) desires to act on something or desires not to be involved in something. This can be exemplified by someone's desire to get married; there is only the desire and its object. Meanwhile, in second-order desires, the object of the desire becomes the desire to desire (I may desire to desire to get married). The rational moral agent falls under the second category. Frankfurt concludes that only humans have the capacity for "reflective self-evaluation manifested in the formation of second-order desires" (p. 76).

So far, we have briefly explored the classical view of moral agency, which attributes agency/responsibility exclusively to human beings, specifically adult, free, and reflective human beings. However, recent times have witnessed the prevalence of a counterargument that expanded the scope of moral agency to include technological artifacts. The belief that technology can be considered a moral agent arises from the recognition that it possesses both instrumental/technical and normative values. With the rise in technological advancements and more complex modes of innovation and internal and external operating systems, a new understanding of its nature and dimensions has been developed. I will now explore the counterarguments placing technology in the realm of ends beginning with Bruno Latour's arguments, which discard the instrumental view of technological artifacts. Because of their complex internal algorithms, some technological artifacts are not only automatic but also autonomous as they enter the realm of ends with their own logic and laws of domination, which lack the moral and ethical values inherent to humanity (Latour, 2002). The dual nature of technology (automatic and autonomous) has led Latour to doubt the possibility of clearly distinguishing their realm. Because humans' ability to create artifacts and their normative and biological capabilities (e.g., using language, developing social values, etc.) have been intertwined since antiquity, in terms of priority, "technical ability preceded the emergence of human language by several hundred thousand years" (p.

248). Thus, Latour considers technology not as a mere tool to increase human efficacy but rather as a "mode of existence"; that is, imagining human beings without their potential to be technological is impossible, implying that their technological and normative dimensions are inseparable. Whether this means we cannot mark the realm of technological artifacts as well as the region to which it neither belongs, if in the end nor the means, must be discussed. To explain the realm of technology, Latour proposes the concept of "fold"; that is, any technological artifact "folds heterogeneous temporalities," which can be explained in terms of time, space, and agents. His famous example, the hummer, shows how artifacts combine various aspects of reality. A single hummer can fold the planet's history because of the minerals it is made from; "the age of the oak" used for the "handle, and the age of the factory" that produces such account of technology assert that morality does not lie outside the folding of technology. This is why Latour argues that technological artifacts affect our everyday morality. "Of course, the moral law is in our hearts, but it is also in our apparatuses" (p. 254). This implies that technological artifacts can encode/carry moral values through their mode of operation and application although we have the moral consciousness or inner light to offer ethical appraisal. He concludes that technical apparatuses, despite not being technical tools, perform significantly more tasks in preserving humans' "ontological dignity." However, Heidegger firmly stands against the view that technology safeguards the "ontological dignity" of humanity, arguing that technology is neither a mere tool nor something with intrinsic value; rather, it has ontological tasks focusing on the "revealing" and "unconcealment" of being. "The essence of technology is by no means anything technological" (1977, xvi). Through this ambiguous phrase, Heidegger conveys that artifacts or devices never manifest the essence of technology, whose true nature is revealed in how it affects our relationship with the world. His fear of technology stems from its tendency to reduce everything to a

resource for human use, which conceals its true nature and transforms it into a “standing reserve.” Hence, technology reveals only a specific aspect of being and not its true nature, which technology cannot access. Heidegger insists that technology, like “ancient techne, science, and metaphysics,” exposes the essence of being; its persistent influence allows being to make itself known in all aspects of our existence, which implies that humans do not allow being to naturally show itself. As a result, by using technology, humans continually construct and manipulate their version of reality. Thus, Heidegger suggests that to understand our relationship with technology, we should not simply regard it as a tool to be accepted or rejected. An instrumental view of technology renders us ignorant of its true nature (1977, p. 3). However, Heidegger’s idea of the danger that technology could impose upon us or the issue that surrounds technology’s revealing task must be discussed. In sum, technology forcefully exposes being, challenging everything that exists and imposing a demand to grasp everything. Under the dominion of such challenging revelation, nothing is permitted to appear as it truly is in itself (1977, p. 17).

While Heidegger and Latour agree that technology is not a mere apparatus, they have different appreciations of it; the former sees technology as a threat to human ontology whereas the latter views it as an agent that preserves human beings’ ontological dignity. The question, then, is how we can establish a strong link between apparatuses and moral agency. To understand the moral agency of technological apparatuses, we must first explore intention as a significant concept in moral agency. Along with consequences and means of action, intention is a central issue for most moral theorists to pass ethical appraisal. Because “only intentional behavior constitutes action in the most serious sense.” Carl Mitcham (2013, p. 13) defines intention as constituting one’s desire, plane, and state of mind. The contending issue as regards artifact agency is the extent to which technical artifacts are moral agents. In their separate contributions to the book

*The Moral Status of Technical Artifacts*, Peter-Paul Verbeek and Allan Hanson explain and specify the level of an artifact’s status in moral agency.

Verbeek observes that in the digital age, most actions and technical apparatuses facilitate moral decisions, which is why he views moral agency as a “hybrid affair”; that is, agency is established by combining humans and nonhuman things (their artifacts). Human subjects cannot pass effective moral judgment in cases such as abortion, surrogacy, and euthanasia, nor are the artifacts used here moral agents in themselves. Verbeek attributes to technology a mediating role between humans and reality, because of which “technological artifacts should be located in the realm of moral agency. Morality is a hybrid affair; it should not be attributed exclusively to artifacts, but not in humans either” (Verbeek, 2013, p. 78). In this case, both human selves and artifacts play their own roles in creating moral agency. In the digital age, the exclusive allocation of moral agency to either humans or artifacts is practically and theoretically unjustified. Because isolated human selves and artifacts do not exist in practical life, practical moral actions and decisions take place in combination between people and things, from which moral agency emerges. Thus, in light of Verbeek’s idea, the account of mediating artifactual moral agency can help address the challenging notion that agency presupposes freedom and intention—qualities that are absent in artifacts. “Human intentions, including moral intentions, can be technologically mediated because technologies help to shape our intentional directedness at the world” (Verbeek 2013, p. 81). Verbeek adds that unintentional outcomes of certain technological artifacts (e.g., a car’s unintended contribution to global warming) demonstrate that generally, intention is not always within the control of the designer, innovator, or humans.

Hanson highlights the idea that moral agency is composed of human beings and their apparatuses, calling this interwoven relation “composite agency theory.” His point of departure for describing moral agency as con-

sisting of human beings and nonhumans is that the former cannot achieve anything in the absence of the latter. Thus, he argues that viewing artifacts as mere tools for the “deed” is wrong; if they are essential to perform the deed, “then they should be considered part of the agency itself, that which accomplishes the deed” (Hanson, 2013, p. 81). Similarly, Deborah G. Johnson and Merel Noorman (2013) emphasize the inseparability of human beings and artifacts in determining moral agency. Although they acknowledged artifacts’ instrumental role through their “causal efficacy” and “delegating intention,” they argue that humans and artifacts are inseparable. They also assert that human beings are an integral part of the natural world, which sets limits on human capabilities. Therefore, humans innovate artifacts by further manipulating nature (Johnson & Noorman, 2013). The point here is that humans, as part of nature and technology as their making, are inseparable at work.

### **3. Dewey’s Means–End Continuum: Addressing the Contention on Artifactual Moral Agency**

As discussed previously, scholars who attribute moral agency to artifacts categorize them under the realm of ends whereas those who deny them moral agency place them in the realm of means. However, both seem to fall into the trap of dualistic thinking in which the realms of end and means are examined separately to assess the moral status of technological apparatuses. This dualistic view was harshly criticized by Dewey, who situates the end–means continuum in the process of inquiry, application, and evaluation.

Dewey begins his deconstruction of the conventional view of means and ends by identifying its root cause. He associates this dualistic thinking with ancient philosophy or classical metaphysics, which categorizes natural objects with defined potentials that could culminate in “form” or “essences” supposed permanent, real, and universal. Thus, everything that is used to attain essence or form has instrumental value whereas the ideal end pos-

sesses intrinsic value. Epistemologically, Dewey argues that knowledge is considered the ability to contemplate and enjoy essences or forms (Dewey, 1971). Therefore, he raises the urgent need for “unpurposive changing processes” to replace this teleological view of nature and its end forms. He adds that knowledge or enjoyment of the essence or human-determined end of nature should evolve from an inactive, “quasi-aesthetic” appreciation of ends to an engaged exploration of causal relations that can help manage the natural world (Dewey 1971). Removing ideal ends from metaphysical and epistemological inquiry could help establish a direct link between means and ends. The traditional approach to the means-end relation has shaped the perception of both theory and the application of technical actions, implying that means are the subject of scientific inquiry. From this perspective, technical actions and means are understood as value-neutral apparatuses that are used to objectify predetermined ends. Simply put, technical actions determine the preconditions for value without possessing intrinsic value. Meanwhile, ends are out of the scope of scientific or technological evaluation; that is, values associated with ends are considered to exist either in a “transcendent realm beyond the scope of science or as directly intuited qualities of immediate experience ” (Waks, 1999, p. 597). Thus, I argue that such dualistic thinking is the root cause of moral philosophers’ debate on the moral agency of artifacts. Most of them place such moral agency either in the realm of the means or in that of ends categorically as if the two are separate states of things. However, Dewey’s analysis of means and ends highlights and rejects these categorical approaches.

In *Theory of Valuation*, Dewey uses “ends-in-view,” which is conceptualized as a plan, to replace the notion of an ideal, fixed, and predetermined end. By definition, a plan is neither final, fixed, nor ultimate. He further argues that a “plan functions more as a method” than an end. An example would be an architect’s plan/design for building a house, which functions as a tool to lead the construc-

tion phase. However, the act of building is a means to attain the actual house (Visalberghi 1953, p. 739). This scenario makes it explicit that the end-in-view is a potential, contemporary, and open-ended goal achieved by following various causal connections. Because it schematizes a series of causes, it will also serve as a beginning for a new series of causes to occur. In this case, the end-in-view is both a means and an end.

Contrary to the conventional view, Dewey asserts that the situation in which the end is situated is never fully revealed by the one from which it emerges. The end situation is always novel, dynamic, and indeterminate, and this fluid nature of the end-in-view highlights the need for a new investigation and assessment in terms of its practical effectiveness in the newly discovered conditions (Kaufmann 1959). Hence, for Dewey, the means and the end reciprocally determine each other. He also argues that one cannot understand the end or construct a full picture of it until one acquires a complete understanding of “the course of action that will take us there” (Anderson 2023), implying that any course of action taken as a means will not disappear in the end situation. In *Human Nature and Conduct*, Dewey elaborates on the impossibility of establishing a single and fixed end:

It is willful folly to fasten upon some single end or consequence is liked, and permit the view of that to blot from perception all other undesired and undesirable consequences. It is like supposing that when a finger held close to the eye covers up a distant mountain the finger is really larger than the mountain. Not the end—in the singular—justifies the means; for there is no such thing as the single all-important end. To suppose that there is such an end is like working over again, on behalf of our private wishes, the miracle of Joshua in arresting the course of nature (Dewey 2002, p. 229).

Here, Dewey warns against focusing only on a single desired end and ignoring all other undesired consequences. Narrow-mindedness or short-sightedness fails to anticipate new conditions that may produce new problems and challenges because nature is always in the flux of change through its disregard for our private wishes and assumptions.

Dewey’s analysis of means and ends can settle the debate among moral philosophers who view both distinctively to establish the moral status of technological artifacts. Moreover, his evaluation of ends and means helps us understand how he viewed science and technology. Although Dewey did not author books specifically titled “Technology,” Larry Hickman argues that in Dewey’s philosophical journey, it is evident that science and technology were not outside his insights. Dewey’s evaluation of science and technology can be found in some of his works, such as *The Public and Its Problems*, *Logic: The Theory of Inquiry*, and *Art as Experience*. He also considers the implications of science and technology through his pragmatic philosophy on education, democracy, and psychology. Unlike Heidegger and other technophobes, Dewey holds a positive account of technology.

Dewey starts his analysis of technology by categorizing it more as an experiential rather than a cognitive activity of human beings. Concurrently, he replaces the notion that “rationality is purely cognitive” with the view that it refers to one’s capacity (“intelligence”) to formulate and test ends that are proposed in the context of experimental activities (Hickman, 1990, p. 11). For Dewey, technology is the manifestation of intelligence at work and is not a mere tool to achieve certain goals, nor are human beings just tool users as they have various modes of living. Simply put, creating tools and using them for practical purposes constitute only one aspect of various human experiences. Dewey never considers artifacts as value-neutral but rather as “teeming with values and potentialities that form the basis for intelligent selection of ends-in-view, or things to be done” (Hickman, 1990 p. 13). Before Langdon Winner asserted the value-ladenness of artifacts in his article “Do Artifacts Have Politics?” (1980), Dewey argued that not only are artifacts value-laden, but they can also create their own social settings and contexts. For instance, Dewey argues that the political failure of the European fascists of the 1930s was a result of the “misunderstanding of the values implicit in the situations that

gave rise to their artifacts and in which they used them. Political inquiry, as a form of technological inquiry, requires successful instrumental investigation for it to produce satisfactory consequences" (Hickman 1990, p. 15). In other words, a political decision at a given time is influenced by the situation created by a certain use of technological artifacts; that is, political situation and technological inquiry are reciprocally determined. In *The Public and Its Problems*, Dewey demonstrates how technological artifacts are the main factor in setting new social interactions. "Only geographically did Columbus discover a new world. The actual new world has been generated in the last hundred years. Steam and electricity have done more to alter the conditions under which men associate together than all the agencies that affected human relationships before our time" (Dewey 2012, p. 141).

Dewey emphasizes here that technology's impact on society is influenced not only by the tools themselves but also by the ideas, beliefs, and societal structures in which they are embedded. Hence, technological artifacts function as primary components for determining an undetermined situation through inquiry, which Dewey defines as "the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole" (Dewey 1954, 2007, p. 181). As a systematic and organized search for knowledge, inquiry enables a situation to transform from being indeterminate or disorganized to determined and measurable. For Dewey, a situation affected or determined by inquiry is not a single end or isolated experience and is rather a result of a combination of different experiences. In addition, the technology used during this process is not meant to discover a single termination. This is why Dewey developed a "non-straight-line instrumentality" view of technology. The conventional view of technology is described by a linear instrumentalism that presupposes or establishes fixed ends and then organizes means to achieve those ends. Dewey boldly crit-

icizes this linear instrumentalism as it "works toward fixed goals, heedless of the collateral problems and opportunities that arise during the thick of deliberation" (Hickman 1990, p.137). Contrary to this mechanical instrumentality, Dewey proposes a kind of end or goal considered as an end-in-view that is active and engages in internal and external interactions with the means. Mechanical instrumentalism clearly delineates the used means from the anticipated ends, taking means and ends categorically as though no multidimensional interaction exists between them. Dewey objects to mechanical instrumentalism because of its potential to disregard the complexity of interactions between various means and ends, overlooking the dynamic nature of the processes involved. Simply put, mechanical instrumentalism, in light of Dewey's view, conceptualizes the relation between means and ends as linear and straightforward.

We must then discuss how Dewey's dynamic view of the means-end relation can offer insights into the resolution of the debate on the moral status of technology, which is viewed as a means and morally neutral by some but positioned in the realm of ends with moral agency by others. Dewey's understanding of tools challenges the collective view that regards technological instruments as objects external to users, asserting that tools and artifacts do not neatly fit into rigid internal and external categories relative to an organism. Demarcating the internal and external aspects of being is difficult as it is "highly flexible and permeable" (Hickman 1990, p. 12). From this, we can deduce that viewing artifacts merely as external instruments and denying them normative value are challenging as artifacts, as a means, are agents that help shape experience, creating a context for many aspects of human life or situations. To pass moral judgment on the function and system of technological artifacts, we must heed Dewey's suggestion that tools or technological artifacts are active agents for both the quantitative and qualitative parts of the context. Dewey's pragmatic perspective holds that technology's quantitative, qualitative,



normative, and descriptive impacts are assessed based on its capacity to effectively resolve practical problems

In this context, we can claim that artifactual moral status or agency cannot be determined distinctively by either their instrumental or normative effects; rather, the whole context must be assessed. Inquiry, which must also include technology, is not a mere descriptive enterprise but is also conditioned by cultural and social values, for these normative values will shape the problems that inquiry intends to resolve. Dewey believes that “every inquiry grows out of a background of culture and takes effect in greater or less modification of the conditions out of which it arises” (Dewey 1938, p. 20). That is, every inquiry, whether scientific, philosophical, or otherwise, is not a detached or isolated endeavor but instead emerges from and is shaped by the cultural background in which it unfolds. The cultural or practical setting influences the questions raised, the methodology employed, and the perspective adopted. The nature of inquiry is neither static nor directed toward a single goal and instead dynamically interacts with the conditions and values inherent in the cultural environment. In addition, Dewey highlights that the outcomes of any inquiry reciprocally affect the cultural conditions from which they emerge.

In the process of the reciprocal determination of inquiry and situation, Dewey argues that means and ends are not treated categorically or separately. In *Democracy and Education*, he deconstructs the categorical accounts of means and ends and loosens the rigid categories between the two courses of action. Dewey believes that means and ends have no mechanically interconnected causal connection but rather exchange roles in the process and application of inquiry. That is, an end that serves as a directive plan for activity “is always both ends and means”, and “every means is a temporary end until we have attained it” (Dewey 2001, p. 110). He attributes the temporal differences between them, referring to an action or state of affairs as an “end” when it signifies future directions and as a “means” when it directs the current

course. Considering ends as foreign to activities and as something discovered out of nowhere not only constitutes a logical error but also “limits intelligence” to the given circumstances alone as well as prevents the mind from testing alternatives.

Dewey observes the integrated and flexible relations between means and ends in scientific inquiry, allowing him to assign non-instrumental value to technological artifacts. Understanding this fact is an important step in his effort to humanize or democratize science. Dewey’s idea of a humanized science and technology begins with an aestheticization of the process and production of art. That is, an innovation is considered truly artistic if it possesses aesthetic qualities designed to be appreciated through “receptive perception.” Without this aesthetic nature, the task becomes emotionless and merely serves as a prompt for the next mechanical step in the process (Dewey, 2008, p. 34). He highlights the importance of combining artistic experience and aesthetic appreciation in creating meaningful and truly artistic works that are less mechanical. “In a work of art, different acts, episodes, occurrences melt and fuse into unity, and yet do not disappear and lose their own character as they do so” (Dewey 2008, p. 34). Simply put, the components (whether on the side of the end or means) strengthen the unity of the artwork or the establishment of a harmonious synthesis, yet each part maintains its unique features within the larger context of the composition. Dewey’s judgment of science and technology is not only limited to the end they produce but also considers their normative and aesthetic influences. His non-instrumental evaluation of technology makes him a “powerful ally today in the fight against deadening efficiency, narrow means–end calculation, frantic exploitation, and the industrialization of everything” (Fesmire 2016, p. 1).

Dewey is neither an instrumentalist nor an idealist in his assessment of science and technology. Rather, he attempts to democratize technology by reconciling its instrumental and normative values. He strives to strike

a balance between “practical science” (the instrumental parts) with “contemplative esthetic appreciation” (the normative aspect). Technological knowledge and skill enable us to overcome natural limitations. However, without normative values, “mankind might move into a race of economic monsters, relentlessly driving hard bargains with nature and each other” (Dewey 1920, p. 127). Indeed, whereas the former is crucial when navigating and mitigating natural challenges, the latter prevents humanity from becoming excessively consumed by economic pursuits, ensuring a balanced and meaningful existence.

Dewey’s treatment of ends and means captures the essence of Hanson’s composite agency theory and resonates with Latour’s conceptualization of the “fold.” Hanson and Latour attribute moral agency to technological artifacts by categorically locating them at both realms of end and means. They regard technological artifacts not merely as instruments for achieving predetermined ends but also as integral components of moral agents carrying normative values. However, their perspective on ends is marked by a perception of fixed, final, and determined goals, which Dewey challenges. Dewey’s stance differs in that he views ends not as rigid endpoints but rather as temporal and directive plans, recognizing that they could function as means for other or future circumstances. Thus, I argue that Dewey’s dynamic and evolving understanding of means and ends can significantly help address the ongoing ethical challenges surrounding the application and creation of technological artifacts. Specifically, determining the status of artifacts in terms of their moral agency requires a comprehensive examination of the holistic situation, which considers elements such as the self, the tool or artifact, the nature of the problem, the proposed solution, and the overall context. In this sense, one cannot ensure moral agency through a singular criterion, such as will or freedom, as conventional ethics often maintains. The ever-increasing complexity of technological contexts necessitates a more practical, contextual approach to the establishment of artifactual moral agency.

## Conclusion

Rapid technological advancements and their application in most spheres of life demand normative check-ups. A close investigation and conceptualization of new technological innovations and systems require the development of evolving normative principles as classical moral principles cannot fully address the moral dilemma resulting from the application of new technological artifacts and systems. Therefore, I argue that pragmatic ethics can address this gap by providing case-sensitive, contextual, flexible, and practical guidelines for passing and evaluating moral judgments in the digital age. Drawing on Dewey’s treatment of means and ends as a continuum and his pragmatic and aesthetic evaluation of technology, I assert that a pragmatic approach can address ethical dilemmas far more effectively than conventional ethical theories. The core effort in technology ethics involves determining artifactual moral status. Scholars who attribute moral agency to artifacts position them in the realm of ends, while those who deny them moral agency place artifacts under the realm of means. Rejecting this dualistic view, Dewey situates the end–means continuum in the process of inquiry, application, and evaluation of artifacts and asserts that means and ends are reciprocally determined and are engaged in a temporal relation contingent on the time and situation. In other contexts, an end can be a means, with a possibility for the means to be an end-in-view. The establishment of artefactual moral agency requires not only the instrumental or causal connections between means and ends but also context, applicability, and situation. Hence, Dewey’s analysis of means and ends and evaluation of technology as pragmatic and aesthetic inquiries allow us to humanize or democratize technology.

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