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Research Article

Technology as the Embodiment of the Personalized Essence of Nature and Its Evolution in Learning Machines

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Abstract
This article examines the philosophy of technology through the lens of the principle of personalization. It explores the terminology of technology, tracing its linguistic origins and the evolution of its concept from the classical era to modern and contemporary contexts. According to the principle of personalization, technology does not replicate the structure of nature but rather embodies its personalization. Consequently, technology does not carry the essence of nature itself but retains residual traces from the process of personalization. Within this perspective, learning machines are not designed based on the essence of human understanding, but on the personalization of its structure. Furthermore, the principle of personalization can be adapted into algorithms for programming learning machines. Ultimately, this article seeks to address the epistemological challenges posed by technological advancement, particularly in the development of learning machines, and offers a viable solution.
Keywords: Technology, Philosophy of Technology, Western Philosophy, Learning Machine, Personalization.

Introduction

In the history of Western philosophy, technology, or *technē*, has been understood through the lens of representationalism. This perspective often links technology to the organic structure of nature, leading to the belief that technology will ultimately replace it. Consequently, this view has shifted the purpose of technological advancement-from creating tools as a means to support human endeavors to positioning tools and systems as central to the essence of nature itself. For instance, the development of learning machines, or artificial intelligence, has increasingly been perceived as central to human life, superseding the natural intelligence inherent to humans.

This article, however, explores technology through the principle of personalization. In this context, technology is not viewed as a representation of nature but rather as an embodiment of the personalization of nature's essence. This is because humans continuously interpret and reframe the essence of nature into comprehensible concepts, which are expressed through actions and perspectives. Consequently, technology does not directly replicate nature but reflects the personalized interpretation of its essence. As a result, technology serves as a medium that bridges the human experience and the *traces* of nature's essence. In other words, technology will never replace nature, as it is not a representation of nature itself.

This article therefore will argue that the principle of personalization provides an appropriate foundation for the development of learning machines. This is because the principle effectively elucidates the structure of human understanding and its simulation within machines. In essence, the article aims to address the epistemological challenges associated with the development of learning machines and propose a viable solution. It begins by exploring the concept of technology and its advancement, particularly in the form of learning machines. Additionally, the structure of human understanding will be analyzed in conjunction with the framework of learning machines. The systematic structure of this article is as follows: (1) Technology and the principle of personalization, (2) Technology in the context of learning machines, and (3) Conclusion.

Technology and the Principle of Personalization

In Plato's philosophy, the concept of technology, or *technē*, is closely linked to science (*epistēmē*). Plato defined *technē* as a form of expertise that is essential for the advancement of society. For instance, the skills

required to heal the sick and the ability to uphold justice are the examples of such expertise [1]. Additionally, he illustrated this concept through the metaphor of a ship's captain. If society is linked to a ship, then the crucial skills needed are those of the captain and the crew to ensure its proper navigation (Ibid, Book VI). Thus, in Plato's theory, technology is not merely a practical skill but also an awareness and understanding of the collective contribution of individuals toward societal development.

In contrast to Plato, Aristotle defined *technē* as a human-made product that stands in opposition to nature. He illustrated this idea with the example of a bedstead, which is crafted by humans from wood. Since wood does not naturally possess the ability to form a bedstead, humans must actively shape it into that form. This indicates that there is a potential within nature that can be transformed into another form through human agency, functioning as an efficient cause [2]. In other words, Aristotle described *technē* as the capability to produce or create tools by transforming natural materials. Thus, in Aristotle's philosophy, the concept of technology reflects human understanding of nature's potential to produce artificial creations.

In the modern era, Heidegger expanded the concept of *technē* under the influence of Aristotle's philosophy. For Heidegger, *technē* is associated with *alētheuein* (unconcealment) rather than *epistēmē* (scientific knowledge). Within this framework, Heidegger defined technology as the act of bringing-forth the latent potential within nature [3]. This concept can be understood in two ways: (1) technology serves as a means of human exploration and interaction with nature, and (2) it involves the process of bringing-forth unnatural realities derived from nature. Thus, in Heidegger's philosophy, technology is not merely a tool derived from nature but as a process of uncovering and actualizing new forms inherent in it.

Furthermore, Heidegger's philosophy emphasizes the negative impact of technology on human understanding and interaction with nature. He illustrates this impact through the inventions of the ship and the house [3]. In this context, Heidegger characterized technology as the actualization of a new understanding of nature. For example, the invention of the ship altered human perspectives on the nature of the seas, while the construction of houses redefined human interactions with the land. Essentially, technology continuously brings forth and actualizes new actions and perspectives toward nature. This indicates that technology transforms the physical form of nature as a result of the evolving human understanding of nature itself.

Heidegger elaborates his philosophy of technology through the German term *Gestell*, intentionally written as *Ge-stell*, which translates to "enframing" [3]. In this context, Heidegger aims to illustrate how technology functions as an act of "enframing" (*stellen*)-structuring and shaping human understanding of nature. This concept implies that technology not only influences but also determines human actions and perspectives toward nature. Accordingly, Heidegger identifies technology as a force that frames human understanding, prompting the exploration and actualization of nature's potential. Consequently, Heidegger perceives the advancement of technology as leading to the exploitation of nature, driven by this framework of human understanding.

Similar to Heidegger, Baudrillard argued that technological advancements have profoundly altered human actions and perspectives toward nature. Baudrillard elaborated on this idea through the concept of "hyperreality" [4]. According to him, the initial role of technology as a simulation of nature has evolved into the creation of simulacra, wherein technology replaces the very existence of nature. As a result, humans no longer interact directly with nature but instead engage with its technological representation. Consequently, technology has shifted human perspectives toward a hyperreal understanding of nature, as it effectively replaces the natural world.

This article, however, argues that the core issue with technology does not lie in the perception of its existence but rather in the principles guiding its development. If technology is developed based on the principle of representing nature, its advancements are aimed at replacing nature. However, this replacement is predicated on the assumption that humans fully comprehend the essence of nature. The article demonstrates that humans never perceive nature's essence as it truly is; instead, they personalize it into comprehensible concepts. Therefore, this article advocates for the principle of personalization as the foundational guideline for the development of technology.

The principle of personalization reveals how the essence of nature manifests in human understanding as phenomena or unfamiliar symbols. Consequently, humans must personalize these symbols into comprehensible concepts to embody them in actions and perspectives. This suggests that the concept of

technē pertains to how humans interpret and personalize the essence of nature. In this context, human understanding does not directly mirror the essence of nature, either by replicating or constructing what is in nature [5]. Instead, the principle of personalization highlights humanity's ability to adapt or engineer the essence of nature, embedding it within artificial tools or systems.

Thus, in line with the principle of personalization, technology does not represent the essence of nature but instead embodies its personalization. Accordingly, the development of technology aims to translate the essence of nature into personal actions and perspectives. This principle suggests that technological advancements simulate how humans personalize the essence of nature, transforming it into comprehensible and practical tools or systems. As Andy Clark has observed, technology is designed to adapt to the mechanisms of the human body [6]. While Clark did not explicitly frame his views within the principle of personalization, it is clear that technology has always been inherently personal.

Technology in the Context of Learning Machines

The development of learning machines, from Turing's era to the present, has been rooted in the principle of representationalism. These machines are fundamentally designed to simulate human understanding and are thus commonly referred to as "artificial intelligence." However, they continue to fall short of replicating the true nature of human cognition. At best, such machines can be described as "Situated-AI," a term used by Jack Copeland to refer to systems designed for specific tasks [7]. In other words, learning machines are often perceived as simplifying or reducing the complexity inherent in human understanding.

John Searle, through his "Chinese Room" thought experiment, underscores the fundamental distinction between human understanding and learning machines. Searle argues that in the development of learning machines, understanding is confined entirely to the program itself. He illustrates this with the example of a person who does not speak Mandarin but is able to answer questions in the language by following instructions written in English. This analogy demonstrates that machines are simply programmed to execute tasks and lack any genuine, personal understanding that is characteristic of humans [8]. Consequently, learning machines are often regarded as diminishing the role of personal experience in understanding, as though the cognitive domain operates independently of personal experience.

Additionally, in the context of learning machines development, Floridi identifies the fundamental challenge as the material difference between the human brain and the machine brain. This issue specifically stems from the distinction between organic material and silicone material. As a result, this disparity is regarded as an unsolved problem [9]. Human understanding, in this context, is considered inherently personal, shaped by the organic composition of the peripheral nervous systems and neuronal networks. In contrast, learning machines are constructed from silicone materials. Consequently, this material difference is often seen as the Achilles' heel in the development of learning machines.

This article identifies the primary challenge in the development of learning machines as rooted in the principle used to define the structure of human understanding. To address this, the article advocates for the principle of personalization. Within this perspective, human understanding is characterized as the capacity to interpret and adapt the essence of nature into personal actions and perspectives. Understanding, therefore, highlights the intrinsic connection between the mind and body, suggesting that "thinking," as a bodily function, is inherently integrated within its conceptual framework of "thought." Furthermore, this mind-body mechanism has been personalized and embodied in the distinct form of "I am who thinks."

Understanding, as interpreted through the principle of personalization, reveals the irrelevance of dualism as proposed in Descartes philosophy, which perceives the mind and body as separate entities [10]. However, this does not imply that understanding can be fully explained within the framework of monism, as monism remains insufficient in addressing the abstract dimensions of human existence. Consequently, the principle of personalization builds upon the concept of duality to elucidate the mind-body mechanism that generates the abstract dimensions of human identity, referred to as personae. The framework of personalization defined human understanding as the mind-body mechanism that adapts the essence of nature into personae, which are expressed through actions and perspectives. Consequently, personae only carry *traces* of nature's essence. This implies that what exists in nature is not identical to what is embodied in human actions and perspectives. However, as human actions and perspectives retain *traces* of nature's essence, they are regarded as equal to and parallel with the phenomena of nature's essence as it appears in human understanding. Therefore, technology is not identical to the essence of nature but is equal to and parallel with it, as it carries the residual *traces* of the personalized essence of nature.

Thus, while the structure of a learning machine is not identical to human understanding, the two are equal and parallel. This is because learning machines simulate the personalization of human understanding. In other words, a learning machine is developed based on the personalization of the manifestation of "I am who thinks," rather than the replication of the structure of thinking and thought. Additionally, the principle of personalization provides a framework for designing algorithms for learning machines, grounded in the syllogism of "equal to and parallel with," symbolized by "♯." This framework equips machines with the ability to personalize data and information, enabling them to learn independently beyond their initial training data.

Table 1. The operation of "equal and parallel" syllogism.

Example: "Tree" as initial training data reading an "Apple Tree" as "equal to and parallel with," so that machines can learn new data independently. Trained data: Tree New data: Apple-tree {Tree}≠{Apple-tree} R(The Essence of Tree)♯R(The Essence of Apple-Tree) Tree♯Apple-Tree

Conclusion

In conclusion, this article has explored the evolution of the concept of technology within the context of Western philosophy. Initially regarded as expertise tied to science and later as an understanding of nature's potential, this article has redefined technology as the embodiment of the personalization of nature's essence. This interpretation highlights human understanding as the capacity to personalize or transform nature's essence into comprehensible and feasible concepts, realized through human actions and perspectives. Consequently, technology functions as a medium that connects humanity with the dynamic process of personalization.

Ultimately, within the framework of personalization, the development of learning machines is understood as the simulation of the personalization process inherent in human understanding. This implies that learning machines do not replicate human understanding but instead carry its residual essence through the process of personalization. As a result, the structure of learning machines is equal to and parallel with the human capability to personalize the essence of nature. In essence, the mechanism of learning machines is not identical to the mechanism of the peripheral nervous systems and neuronal networks. However, the learning machines have been developed based on the personalization of the fundamental nature of these systems.

Therefore, the syllogism of "equal and parallel" can be translated into an algorithm for developing learning machines. This algorithm equips machines with the capability to process and comprehend new data and instructions. It does so by enabling machines to analyze data and instruction through equivalence and parallelism with existing data, rather than relying solely on identical trained data. For instance, an actual apple tree is understood by its equivalence and parallelism to the existing data of trees, rather than through identical trained data of trees. So that machines are not solely dependent to human's training, but able to learn new data and instruction independently or beyond the initial trained data.

Declarations

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