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TECHNOLOGICAL PROGRESS, ARTIFICIAL INTELLIGENCE DEVELOPMENT AND ETHICAL PARADIGMS

Abstract

In the historical landscape, technological discovery and development have significantly impacted human life, individually and communally. The significant impact of technological development is positive or negative depending on the influence of human vision, plans, strategies, and implementation on the design of these technological developments. Given that human-technology relations are symbiotic in the sense that it is affecting each other, or furthermore along with human-nature relations which make triadic symbiosis, ethics has a crucial role in maintaining humanity level and the stability of life, including the anticipation that technology will not become a disaster in the future. This research seeks to analyze the artificial intelligence (AI) development in Indonesia, one of the developing countries with a high level of attention to technological development, by offering an ethical paradigm as its basis. This paradigm is based on three principles, namely, (1) responsibility, (2) awareness, and (3) sustainability. Against the historical-philosophical backdrop of the technological development in human life and its relationships and possibilities, the offer of the ethical paradigm is intended to be the basis for the design of AI vision, strategy, and implementation as management of all the impacts of AI development, including the positive potential.

Keywords: ethical paradigm, artificial intelligence, Indonesia, negative potential, positive potential.

Introduction

A landmark report released by the European Parliamentary Research Service-Scientific Foresight Unit (EPRS-STOA) shows the considerable impact of artificial intelligence (AI) across different sectors, raising ethical dilemmas and pressing moral questions. The AI development in the report affects the movement of change in society, human psychology, financial systems, legal systems, the natural environment, and trust. Therefore, ethical initiatives continue to be rolled out as solutions offered at local, regional, and international levels. Countries are encouraged to have clear regulatory standards and strategies in the face of this change (Bird et al., 2020).

Indonesia is indeed not separated from this impact. The increase in the use of the word “In-

dustry 4.0,” which is often buzzed by the government over the past two years, shows a significant flow of AI development. Quoting from IDC Asia/Pacific Enterprise Cognitive/AI’s annual survey, Bhaskara said that about 24.6% of companies/organizations in Indonesia adopt AI technology (502 companies in the Asia Pacific, 146 from Southeast Asia). Although AI is still weak or narrow, digital technology, including smartphones, plays a huge role in reshaping it. Specifically, the influence of weak AI on millennials and social psychology is huge (Bhaskara, 2018). One of the things that reinforces this influence is the IDN Research Institute Report. IDN Research Institute provides an idea that AI affects many factors, such as travel and tourism, Sustainable Development Goals, retail-consumer goods and lifestyle, media and entertainment,

education, government politics and public policy, family life and child development, digital economy and society, city and urbanization, capital market and banking, gender equality, and social inclusion. It indicates the importance of a strategy in developing proportional AI technology. Instead of simply floated in technical form, the strategy must be based on a solid philosophical paradigm to underlie and guarantee its proportionality. In this case, an ethical paradigm, considered crucial because of questions about conceptual and action values, becomes urgent. This research (1) seeks to answer how an ethical paradigm can be used as a basis for AI development in Indonesia and (2) finds the historical-philosophical roots of technological emergence and triadic relations between humans and nature (Efendi, 2019).

Theoretical Foundation

Human knowledge and culture are continuously developing surprisingly, which begins with understanding each human being using language as a means of communication. Interaction among individuals has an impact on the ability to accelerate the stage of human civilization development from the nomadic stage to becoming a settler creature and beginning to build social groups. The leap in human needs ultimately requires that humans create several facilities to meet their needs, and it is called technology. Technological development parallels human needs and even jumps on the “shadow” of future needs. On this side, human beings begin to have an imagination of needs and facilities. Man has the will and awareness of his creation. Human life has material and spiritual aspects. In the spiritual aspect, man uses his mind to presuppose or imagine many things about himself and the rest of the world. With his mind, man also has the will to attain truth, beauty, and goodness.

Design and philosophy certainly contribute to thinking about technological development. Philosophy and technology can synergize positively

and negatively, depending on man’s moral and ethical qualities. On the one hand, humans can master technology; on the other hand, technology could control humans, although it is still controversial.

Heidegger, a philosopher who had thoughts about technology, answered questions about technology in his work “*The Question Concerning Technology*”. First, almost the same as the general opinion about technology, Heidegger argued that technology is used as a means to achieve a goal. That is, technology is used as an instrumental value to achieve goals. Second, technology is a human activity (Heidegger & Lovitt, 1977, p. 4). It is undoubtedly loaded with human goals that will come into contact with ethical values. Of the four Heidegger’s concepts of technology (revealing, *Herausfordern* (challenging), *Zuhandenes* (Handy), and *Fürsorgen* (Caring)), the concept of challenging describes modern technology as challenging in nature. Humans have the freedom to interpret and use technology. They also need prudence in technology.

Technology research is extensive. Some categories that researchers explore are as follows: (1) technological developments (including AI) and their implications in general, (2) the impact of AI development from an ethical point of view, and (3) AI in the context of developing countries, including Indonesia. In the first category, several works have been conducted. First is Kotler and Diamandis’ *Future is Faster Than You Think: How Converging Technologies are Transforming Business, Industries, and Our Lives*. In this work, Kotler and Diamandis (2020) capture the massive change impact of technology, which can be converted into human activity. Converged technology even changes the landscape and targets of these activities.

Second is Pearson’s *You Tomorrow: The Future of Humanity, Gender, Everyday Life, Careers, Belongings and Surroundings*. His work predicts that the future faces from the point of view of technological development, including

AI. In Pearson's description, several technological developments will occur and impact people and humanity in the future. Since this work was written, some of Pearson's predictions have been proven (Pearson, 2013).

The third is Harari's, *Homo Deus*. Harari has a similar grand narrative to Pearson's, although they are different in some ways. *Homo Deus* is based on Harari's expertise as a history professor, so the book is a kind of prediction that has an intense atmosphere of history, things that Pearson does not so photograph. In *Homo Deus*, Harari emphasized that things that are considered surprising are not new. In fact, it has been recorded in the history of humankind, including their wildest imaginations, such as the obsession with immortality. *Homo Deus*, in Harari's idea of the future of man, raises questions about the existence and nature of man. The writing claims that technology and the rise of AI will control humans in the future, although it is still controversial. Regarding technological development, the XX-XXI century has become a large foundation to welcome these imaginations (Harari, 2015).

Fourth is Henning's *Gamechanger AI: How Artificial Intelligence is Transforming our World*. Henning specifically discussed AI as one of the vast parts of technological development and its impact. In addition to photographing the landscape of AI development, Henning also discussed its legal and ethical impacts. Henning asked if the ethical standards were desired, then what values are used in regulating industrial systems and society? Henning (2020) offered several values, including the values of trust, proficiency, and consciousness.

In the second category, a comprehensive report highlighting the ethical impact caused by AI development came from one of the European Union's research institutions, EPRS-STOA. The report entitled *The Ethics of Artificial Intelligence: Issues and Initiatives* (Bird et al., 2020) summarizes various ethical problems in various sectors caused by AI development in the present

and the future. In addition, this report contains a strategy model to deal with AI development at the national and international levels and contains several recommendations on ethical issues in response to AI development. Moreover, UNESCO has conducted a preliminary study entitled *Preliminary study on the Ethics of Artificial Intelligence* (2019). Others include an article titled *Ethics of AI: Benefits and Risks of Artificial Intelligence Systems* by Fourtané (2020) and an entry from the Stanford Encyclopedia of Philosophy written by Müller (2020) entitled *Ethics of Artificial Intelligence and Robotics*.

In the third category, there are several references in the form of journals that were obtained by the researchers: (1) Bunyamin's (2018) *Artificial General Intelligence (AGI): Peluang Indonesia Melompat Jauh ke Depan*, (2) Anto and Gunarso's *Kaji Terap Kecerdasan Buatan di Badan Pengkajian dan Penerapan Teknologi* (Riza, Nugroho, & Gunarso, 2020), (3) Hastini, Fahmi, and Lukito's (2020) *Apakah Pembelajaran Menggunakan Teknologi dapat Meningkatkan Literasi Manusia pada Generasi Z di Indonesia*, (4) Ririh, Laili, Wicaksono, and Tsurayya's (2020) *Studi Komparasi dan Analisis SWOT Pada Implementasi Kecerdasan Buatan (AI) di Indonesia*, and (5) Saidah's (2021) *Model Industri Bisnis Media Massa Pada Era Perkembangan Bisnis Media Massa Pada Era Artificial Intelligence (AI) di Indonesia*. Of these writings, no one has specifically studied from the philosophical side, especially in the ethical discourse.

Method

This study is literature research using philosophical hermeneutic methods to explore the ethical aspect of the impact of AI development on human life and methodical elements of analysis-synthesis (the text will be studied in the chosen theoretical foundation), such as historical (technological development from traditional to modern), heuristic (finding philosophical studies of the impact of technology in ethical studies), and

descriptive methods (conveying research results from ideas, analyses, to research findings by describing the results of revealing the ethical aspect of AI development).

Result and Discussion

A. Technological Development

Technology is a critical and potential entity in human life because it becomes a factor in human survival to help meet various needs. Potential causes become factors in human life development itself. The production-reproduction, distribution-redistribution, and consumption-reconsumption process frequently require technology, which plays an important role and, at a certain point, becomes one of the determining factors for the direction of development. Humans create technology, which rewards it by shaping the “future” for humans (Ayres, 2021, p. 5; Harari, 2015; Henning, 2020; Pearson, 2013).

Although technology can thus be said to be an outside entity that humans even create, the function of technology is not only trying to unveil human but also to explore it. Technology seeks to bridge and even usher humans into the worlds of mega-cosmos and micro-cosmos. It is based on needs, including a sense of gratitude. However, at some point these days, it becomes expected that technology is no longer just a ‘helper’ to meet human needs but has evolved into a ‘reaper’ of human desires, including the desire for ‘eternal’ life and the desire to conquer nature to avoid extinction (Ayres, 2021; Harari, 2015).

As for the process, technology has emerged as a part of man’s effort to adapt to nature (Dähler & Chandra, 1971). The term “technology” comes from the word *techne* (Greek, “ars” in Latin terms and “art” in English terms), which means art or skill, and *logos*, which means knowledge. Thus, technology can thus be said that it provides helps for humans in living their lives. It indicates that the technology “live in a long journey of humans who grow and develop from time to time” (Ayres, 2021; Singer, Hol-

myard, & Hall, 1954; Singer, Holmyard, Hall, & Williams, 1956, 1957, 1958a, 1958b). Even so, *techne* itself is conceptually different from what is understood from today’s technological terms (which we often position as devices). *Techne* is a social value category that refers to the specialization of expertise in several occupations in ancient civilisations’ contexts (Schatzberg, 2018, pp. 16-19).

Technology has undergone tremendous development when put in the context of the Great Revolution that changed man. Basic human needs, such as food, gave rise to a set of the earliest forms of technology, namely, hunting technology, to support the life model of nomadic society (Singer et al., 1956). Before the bronze and iron era, humans first utilized nature with simple processed stages (Ayres, 2021). After the Agrarian Revolution (1.0), agrarian technology started proliferating to support the establishment of a settled life (settlement lives) that not only meets needs but increases expectations and increases the desire for a highly advanced life (Harari, 2015).

Industrial Revolution (2.0), which began with the enlightenment period, especially after the invention of the steam engine and printing press, changed the face of technology significantly. In addition, the mad-production character of industrialization to meet the market demands makes technological capacity and capabilities even more impressive. The Information Technology (IT) Revolution (3.0) produced technology with a different look. The invention of electricity and the ability to manage energy on a large scale, for example, to generate electricity, resulting in electronic devices that far surpassed the previous two significant changes. Such a considerable benefit was obtained from these developments without any risk. Technological development produces new human desires or reproductions to surpass previous changes, where the criticality and potentiality of technology begins to shift (Ayres, 2021).

Technology, which was made initially to ful-

fil human needs on a superficial level, began to undergo a change in orientation. “Simple needs” are no longer the focus because “new desires” seem urgent. Technology, as a manifestation of the art of knowledge management, significantly obtains enough insistence for fulfilling “new desires”. Technology develops into a symbol of progress, which can become a legacy, including the expansion of desire. This, for example, is strongly reflected in human mobility’s high frequency and speed (Riis et al., 2015, p. 159). The technological development motivation causes complex dynamics in humans internally with itself and externally to entities outside of it, including human treatment of nature, through geo-engineering.

B. Triadic Relationship: Human-Nature-Technology (Thing)

Ihde argued that humans are technological creatures, so they do not live their lives without the absence of technology. He added, “humans cannot lead a non-technological life in some garden state because on earth, they are inherently technological creatures”. Existentialists such as Heidegger added that most of human life is constructed by technology. Human labour related to specific technologies shows a part of its existence and identity. For example, a sewer is familiar with the technology of sewing tools and materials to be sewn. For most of his life journey, he will be known as a sewer who is active with sewing technology.

Concerning this construction, it is known that man’s relationship with the world is not limited to interaction but co-constitutive as well. This co-constitutive relationship is fundamentally mediated with technology as a mediator, which is mostly barely felt. In this case, technology is not only simply connecting but constitutionalizing, for example, glasses as a technology that helps vision. Thus, in many ways, the Human-Nature (HN) relationship is a Human-Nature-Technology (HNT) relationship.

Ihde divided the HNT relationship into four

categories, namely, (1) actual realization, (2) hermeneutic realization; (3) alternate realization; and (4) behind-the-scenes realization. Actual realization is transforming perception and sense, such as me-my glasses-the world. Hermeneutic realization is a direct reference to something that goes beyond reference but provides knowledge of the world, such as me-my map-the world. Alternate realization is in the form of interaction in the world outside the actual world, such as the me-a robot-the world. The behind-the-scenes realization means being the only HNT in everyday activities, such as me-the red light-the world (Ihde, 1990; Kiran et al., 2015).

The human-nature relationship through technology involves some consequences, one of which is humans losing their natural sense of things that have been facilitated by technology. To that end, those closed things often become beyond the reach of humans because of the convenience provided by technology. For instance, the closing of the human mind about being exposed to rain when driving a car or the closing thought of pollution as an effect of the use of fossil fuels (Ihde, 1990; Kiran et al., 2015).

From the model of these relations, at least three approaches can provide an in-depth explanation of the nature and position of technology toward humans, even to nature. First is the approach of tools (artefacts), in which technology is positioned as a tool for society to do things. The necessary analysis is about the consequences of these tools. Second, the social construction approach, namely, technology and society, construct each other. The critical analysis is more profound than the tool approach, for instance, the need to evaluate hidden assumptions in the technological construction. Third the phenomenological approach (also post-phenomenological), of which society and technology are positioned in co-constitutive relations. Further analysis to reveal the possibilities related to the evolution of technology may be performed (Ihde, 1990; Kiran et al., 2015).

C. Culture and Technology

Similar to technology, culture is inherent and develops with humans. As (limited) practitioners, humans produce, distribute, and consume culture and technology. However, not limited to being an object, man and his life are also formed by cultural and technological processes, so the relationship between the two is so close in a communal context, from a small to a large group of people. Finding a culture without technology and technology without culture is difficult. Repetitive cultures (traditions) almost always require technology in the abstract sense and objects. This happened in various major civilizations (Singer et al., 1956).

As for traditions and culture languages, technology is required to transmit and transform the important older culture. In addition, the role of technology is absolute and vital for the continuity of written language, compared to the spoken language at which the function of its viability is relatively trivial. However, theoretically, spoken language is the technology itself. Phonemes, morphemes, and syntax are forms of managing symbols that indicate and refer to some meanings. The written and spoken language culture theories became solid when Ihde's conception of the technologist man was administrated as a foundation. To that end, language, as an essential and fundamental culture, can also be said as a form of technological symbolization by humans through ratios in their consciousness (Ong, 1982). At this point, it can simply be formulated that the relationship between language and culture is two-way, double motion, and complementary.

Referring to Ayres' writings, humans have arrived in the era of information that is certainly not a literal meaning but a form of the cultural revolution in which an unstoppable information release occurs. This era is supported by digital technology, which later produced a digital culture that brought about a profound change in every aspect of human life. Electrical energy allows digital technology to live and thrive admi-

rably. The emergence of computers and their development to the establishment of data storage (big data) allows humans to go further and beyond. Digital culture leads humans to make a difference rapidly in the future (Diamandis & Kotler, 2020; Pearson, 2013).

One of the most significant factors in the alteration is AI. This factor is based on the intelligent technology that can mimic (although not entirely the same) the "typical" ability of humans, namely, thinking. The term "artificial" confirms that it is the creation (which has continued to evolve) of a program designed in such a way. The presence of AI can also be positioned as a particular transition from human consciousness to artificial consciousness because thinking is based on consciousness through neural network relationships (Cardon, 2018). To that end, AI has significant development potential, mainly because of the support of big data, whose capacity continues to grow. As a digital technology in digital culture, AI has implications that need to be considered and examined, especially the ethical implications.

D. AI and Ethics

Many technical definitions of AI have emerged. One of them is from the European Commission, which states that AI is a system that displays intelligent behaviour by analyzing its environment and taking actions - with some degree of autonomy - to achieve specific goals (Bird et al., 2020). This kind of technical definition raises various philosophical questions that need to be addressed. The fog still covers the AI even if additional technologies can be listed and raised, such as robot, machine learning, artificial neural network, and deep learning. For example, specific goals raise questions, such as on what purpose and whose purpose? Other factors, such as "their environment", also raise questions, such as which human environment? Where are the boundaries, relations, and understanding of artificial objects to the corporeal environment? Let alone the actions taken by AI that are also con-

sidered as the system outputs.

As a cutting-edge technology that marks a new chapter in human life in triadic relationships, which significantly influences their lives, AI is similar to a “double-edged knife.” In the rapid development process, since the emergence of computers and digital technologies (screens) that soon followed, the metaphysical foundation of AI's birth, development, and existence are still both general and particular human motives. General is part of human society in general and special as an independent individual in particular. To that end, AI manifests human power born from ambitions, gratitude, and needs. Thus, instead of saying AI refers to value-free goods, it stores various potential impacts on human lives (Bird et al., 2020).

The conversation about AI implications has been relatively and recently resonated loudly in the past decade. Although some thinkers have warned about the risks posed by technology in digital culture, collective consciousness seems to have reached its tipping point in recent years. The European Union, the World Economic Forum, UNESCO, and other countries have begun to design their approaches to AI development and implementation primarily in anticipation of the adverse effects from an ethical perspective (Bird et al., 2020; Budman, Hurley, & Bhat, 2019; Groth, Nitzberg, Zehr, Straube, & Kaatsz-Dubberke, 2019; Preliminary study on the ethics of artificial intelligence, 2019). Some intellects gave their responses, and one of them is the response of Virginia Dignum. She discussed RAS (Responsible AI), which brought people into the digital world, especially technologists, to discuss technology properly, somewhat, and balanced manner (Dignum, 2019).

AI implications are not trivial. Developed countries where AI is used massively are starting to report ethical dilemmas and moral questions regarding its development and implementation. For instance, the EPRS-STOA Report, which also represents the findings of other reports, shows a broad spectrum of the impact of AI im-

plementation, which is undoubtedly closely related to its initial conception. At least six areas are affected, namely, (1) social: labour market inequality, privacy, human rights and dignity, bias, democracy; (2) human psychology: relationships, personhood; (3) financial system; (4) legal system: criminal law, tort law; (5) environment: use of natural resources, pollution, and waste; and (6) trust: fairness, transparency, accountability, control (Bird et al., 2020).

Specific examples can easily be found in available reports; some are stated in this article (the first two points). Firstly, for the social area, the case of community data deprivation in the social sphere. Data leaks and trades are common; the worst part is that victims are unaware. People lose control of their privacy data. Although the inevitability of the emergence of the Internet is a data-sharing activity, AI facilitates the exchange, modification, manipulation, and utilization of data in an “extreme” way, although it does not simply eliminate its positive potential. Havens claimed that humans would not have agency and control [over their data] if they were not given the tools to make it happen. State and private institution data collectors (servers), especially multinational companies (Amazon, Google, Metaverse, and Apple), can take advantage of the enormous potential of the data collected (Bird et al., 2020).

Secondly, for the psychological area, AI's potential to touch humans' psychic side has both good and bad sides. The human-robot relationship has both implications, as in a two-sided coin. On the one hand, humans feel that their work is facilitated, but on the other hand, it can have a negative impact on humans, including deception and manipulation. Social robots, which are loved and trusted, as shown by Schetz, can be misused to manipulate other humans, for example, a hacker who can take control of the robot to exploit its owner. This exploitation results in humans being held hostage concerning robots, relying on robots to carry out their activities. According to Borenstein and Arkin, this can

even result in individual mental development and the social mentality of the user. No wonder Havens claimed that the most significant risk (of AI) that anyone faces is the loss of ability to think for yourself. We are already seeing people forget how to read maps and forget other skills. If we have lost the ability to be introspective, we have lost human agency and are spinning around in circles” (Bird et al., 2020).

AI certainly reaps comprehensive pros and cons because it becomes inevitable since it contains positive and negative potentials all at once. This fact clearly requires human speculative thinking to sharpen its reading ability of obtained empirical data, but beyond that, the initial phase of the creation of AI technology is the most determinant factor. The old saying goes that it is better to anticipate (prevent) than treat. For instance, the experience of the creation, development, and massive usage of nuclear as a weapon is a helpful afterthought. A world in the middle of negative nuclear potential is terrifying. It is where an ethical paradigm shows its crucial position.

E. AI in Indonesia

From the perspective of the latest technology usage, Indonesia is not a top country. Nevertheless, looking at the number of *users* (196.7 million active Internet and smartphone users) (Bayu, 2020), Indonesia has potential in terms of economy as a market, including manufacturers in the future, under certain conditions. Indonesia Ministry of Communication and Information Technology confirmed this potential six years earlier, which users recorded at that time had not reached 100 million people. Today, the potential of using cutting-edge technology is increasingly visible, including the use of AI, which, as stated earlier, undoubtedly contains two sides of the coin (positive-negative) that need appropriate overcome.

AI, introduced in 1956, received quite a wide reception in the international community. However, it experienced a winter period (1987-2008),

which was when the study was considered “quite dim” (Big data, artificial intelligence, blockchain and financial technology in Indonesia, 2018). This period calls for a debate because of the rapid development of big data and the increasing computing capabilities since 2008, making the explosion of AI development extraordinary. In Indonesia, BBPT started AI development and implementation in 1987 and produced several products, such as translation tools. However, even though it has passed about three decades of AI development and usage, it is still quite limited, let alone the great potential of Indonesia. Only 14 companies have adopted AI-based technology (Ririh et al., 2020; Riza et al., 2020). This result is unsurprising because three fundamental supporting factors are still lacking, such as the limited number of human resources, uneven infrastructure, and data consolidation that has not been maximized (Big data, artificial intelligence, blockchain and financial technology in Indonesia, 2018). Even so, Indonesia’s potential to be advanced through AI, especially AGI (Artificial General Intelligence), is quite prominent in the future (Bunyamin, 2018; Ririh et al., 2020). In business, opportunities are wide open, primarily when supported by well-consolidated data (Ririh et al., 2020; Saidah, 2021). In other fields, such as law and education, AI technology is also beginning to appear to be implemented (Hastini et al., 2020; Yudoprakoso, 2019).

However, when referring to the EPRS-STOA Report on AI implications, Indonesia has felt the impacts of *weak* AI, such as widely smartphone usage, in the social, economic, educational, and political sectors. In the sociopolitical sector, for example, the events of significant demonstrations in Indonesia were begun by releasing information on social media that had an impact on the democratic climate. Cases against fellow citizens, such as the case of blasphemy by Ahok, caused a significant mass movement and adorned the deadlines of various media for months, including those against the government by the community, as in large demonstrations related to

Omnibus Law, started by the spread of information in digital technology; not to mention small-scale cases that occur sporadically, such as fraud through *fintech*, privacy data misuse, and low literacy. In the end, the emergence of various *startups* which utilize AI and other cutting-edge technologies (e.g., Gojek and Grab) as *disruptors* changes traditional societal patterns, both in the daily corporeal and the ecosystem of the digital world. Although not yet as complex as in developed countries, negative impacts continue to emerge. Such impacts demand appropriate responses before increasingly thorny problems arise in the powerlessness of managing technological development and implementation broadly.

F. Making an Ethical Paradigm on Indonesia AI Development

Dealing with technology means dealing with the human history and culture shaped by human endeavours based on the encouragement of various distinctive motives. It demands an appropriate response, and accuracy is an inevitability that arises not only from technical understanding but also from philosophical understanding that guides the technical implementation of some things. Similar to the construction of a house, its conception in physical and nonphysical terms becomes crucial to determine how a house exists and functions. In the case of AI, where the human intelligence model is mimicked in a synthetic form, even to the point of being accommodated in a shell (as in a robot) to carry out a specific act of motion, the phase of AI creation is the most decisive in the long run. Similar to automatization, which looks so “simple” and can be described as a repetition of a specific activity, it also has a particular impact that should be read in-depth and carefully. In the technological context, including AI, the role of an ethical paradigm becomes crucial.

As one of the biggest challenges in digital culture, the need for a well-thought-out national strategy in response to AI development is indis-

pensable. In recent years, the international community has responded to this challenge, both at the country- and regional-level organizations, starting from the United Kingdom, Germany, Canada, France, the United States, South Korea, China, to Finland (Dignum, 2019; Groth et al., 2019). In the Indonesian context, CIPG, in collaboration with Kominfo, has released research reports and policy recommendations addressed to the Ministry of Communication and Informatics about the elements that underpin the latest digital culture, namely, big data, AI, blockchain, and financial technology. These reports capture the opportunities and challenges of developing the four cutting-edge technologies in various real sectors. However, the foundation that is precisely the core of community sustainability through its relationship with technology does not seem to have received a sufficient portion, namely, the ethical foundation (*ethical base*). Ethics, as a form of guarding human values, must be presented proportionally and even become a foundation of a national strategy. In addition, with the presence of an ethical foundation, the reading and technical response improve and vice versa. The absence or lack of attention to the ethical foundation makes technological development shallow and less anticipatory.

The experience of other countries developing AI (some have felt the negative impacts) must be used as an urgent consideration to formulate the national strategy in question. Anticipation should be done as soon as possible. Indonesia needs to formulate its ethics in digital culture, reflecting the initiatives of international institutions or the national strategies of various countries in AI development and implementation. In fact, it is done quite massively through campaigns. However, the intended scope feels narrow. Ethics seems to only work at the level of users who consume technology. Ideally, ethics should be a framework of view in the layers of technology culture, from the levels of producers, distributors, consumers (*users*), and regulators.

In this case, ethics through the RAS frame-

work initiated by Dignum can provide an overview of the placement of the ethical framework in question so that it becomes a proportional grand strategy. The placement of ethics in RAS consists of (1) *ethics in design*, (2) *ethics by design*, and (3) *ethics for design(ers)*. Thus, the benefits of sustainable technology can be formulated because the existence of technology as a human “helper” to meet its needs can be achieved (Dignum, 2019). Dignum precisely spoke of the ideal ethical role in an ethical paradigm in a design strategy. At least four ethical principles should be proposed as a form of detailing and affirming the principles that should exist in ethics.

Firstly, *the principle of responsibility* must exist in the design, by design, and for design(ers). The responsibility in question is the complete attachment of the maker to his work. That is, when work in the form of AI is raised, transparency, calculation, and accountability

must be conveyed clearly to the extent that AI is still used. Secondly, *the principle of consciousness* should also exist in all three factors. The awareness in question is that development does not occur under pressure and must be done consciously that the developed AI is not based on mere desires but has broad benefits with the minimum possible risk. Thirdly, *the principle of sustainability* means, from the beginning, all negative potentials should be eliminated starting from ethical dilemmas that may be present from the development of related technologies, let alone the possible moral questions. To that end, (a) fewer moral questions arise, especially about the status of human security or (b) all moral questions that arise can be addressed proportionally so that the AI may be developed.

From these descriptions, nine parts of an ethical paradigm, which should exist and underlie AI creation and development, are presented below.

Table 1.

Nine Parts of an Ethical Paradigm

X	Ethics in Design	Ethics by Design	Ethics for Design(ers)
Responsibility	Ethics in Design by Responsibility	Ethics by Design for Responsibility	Ethics for Design(ers) in Responsibility
Consciousness	Ethics in Design by Consciousness	Ethics by Design for Consciousness	Ethics for Design(ers) in Consciousness
Sustainability	Ethics in Design by Sustainability	Ethics by Design for Sustainability	Ethics for Design(ers) in Sustainability

These nine frameworks certainly require challenges to be realized, especially from the challenges of ambitions in political and economic contexts. However, an ethical criterion must be affirmed and enforced seriously and strictly in anticipation of all the impacts on human lives from AI development while maximizing its positive potential. After all, technology is a tool for humans and nonhumans themselves. Thus, the vision of technology should be a vision of benefit for humans.

These frameworks do not discuss in detail (1)

the resources of technologists or (2) the possible research development, and (3) benefits beyond the humanitarian aspect because the focus is on revamping the AI development paradigm. The next question that may be asked is where the ethical sources will be used as standards in the paradigm. To provide adequate answers, an in-depth study is needed. However, sources can be traced from religious and cultural ethics that live as wisdom in the Indonesian society, in addition to considering ethical resources that develop and are referred to by the international community. In

the end, the presence of ethics is expected to be a measurable preventive speculative foundation so that the direction of technological development has the values of responsibility, awareness, and sustainability, rather than inhibiting its development.

Conclusion

The human-technology-nature triadic relationship is eternal and plundering along with humankind. The balance among the three factors is a necessary inevitability. Therefore, technological development, including AI development, absolutely requires a paradigm that maintains the value of balance: ethics. At the state level, an ethical paradigm needs to be translated into a technical strategy; thus, the ethical paradigm is philosophical. Indonesia has a potential for AI development. Therefore a comprehensive strategy is needed, considering that its digital technology users continue to proliferate. National strategy recommendations dwell around technical matters, and an ethical paradigm needs to be proposed as a comprehensive AI development base comprising indicators that can be a tested stone against the creation of national strategies, namely, (1) *Ethics in Design by Responsibility*, (2) *Ethics by Design for Responsibility*, (3) *Ethics for Design(ers) in Responsibility*, (4) *Ethics in Design by Consciousness*, (5) *Ethics by Design for Consciousness*, (6) *Ethics for Design(ers) in Consciousness*, (7) *Ethics in Design by Sustainability*, (8) *Ethics by Design for Sustainability*, and (9) *Ethics for Design(ers) in Sustainability*.

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