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On the Edge of Cognitive Revolution:

The Impact of Neuro-Robotics on Mind and Singularity

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Abstract: The mind has always been a peculiar and elusive subject, sparking controversial theories throughout the history of philosophy. The initial theorization of the mind dates back to Orphism, which formulated a dualistic structure of soul and body (Johansen, 1999) [1], laying the foundation for Greek dualism, introspection, and the rise of metaphysical idealism. This ill-empirical stance, especially after Plato's idea of forms, led to inaccessible theoretical concepts concerning the investigation of the relationship between body and mind. Although diverse theories provide broader insights into such matters, they can also hinder progress if based on unsound methodological hypothesis. The present study aims to employ a rational reexamination of the potentiality of the concepts of mind, using abductive inspection to present a valid grasp through the lens of cognitive neuroscience, philosophy, and interdisciplinary fields. This paper speculates through empirical deduction by analyzing the literature and theories on the concept of mind and its possible implications for singularity via transhumanism.

In the contemporary world, humankind is on the edge of singularity due to the exponential growth predicted by Moore's law (Moore 1965) [2]. While many considered singularity an abstract akin to science fiction, significant projections indicate that the accelerationist change has already begun, irreversibly. This advancement occurs not only in the degree of semiconductors in electronics but also in the amplification of human cognition through external devices enabling compound information flow via the world wide web. However, the conjunction of robotics and AI may outdo humankind in the contest for sovereignty soon due to their advantageous architecture in process design, which increases the systemic risk of extinction for humankind. Achieving total control over AI is unrealistic, as it requires complete supervision over all computers and information processes across the world, rendering any regulatory efforts to foresee augmentation futile. Consequently, this paper proposes the adoption of a neuro-robotic approach, enriched with AI, and implementation through biomedical applications on the human body to augment human cognition and physicality. This study aims to raise awareness against existential risks, emphasizing that reliance solely on AI powered computers could lead to annihilation. It also aims to highlight that biological mind and body is lagging behind the modern science to compete against Artificial Intelligence. Moreover, the foundation of Artificial General Intelligence (AGI) is an epistemic foundation for cognitive machinery enhancement that cannot be reversed once it emergence become apparent, as with Pandora's Box. Technological singularity (Shanahan, 2015) [3], the point where technology is intelligently engineered to engineer its own sets by compounding all possible implementations of practical and theoretical information, is appearing on the horizon. Even if there is no human agency left on the soil of Earth, there is still no turning back at that point. Humankind must actively hold the key to bend this alteration in a way that aligns with its desires. Therefore, we propose, future for humankind lies with transhumanism.

Keywords -- neuroscience, artificial intelligence, cognitive robotics, cognitive science, transhumanism, philosophy, philosophy of mind, epistemology, emergence, singularity.

Methodology

Throughout the investigation, we have employed various fields to investigate the potentiality of mind and its implications for singularity via transhumanism. We will employ:
- Rational analysis over philosophical concepts and their consequences shaping the methodologies that we rely on today.
- Ethical comparison over new deal with technology.
- Investigation over neuro-robotic implementation and their connotations to singularity and cognitive enhancement.

Our motivation is to provide an alternative approach to the current manifestation of technological development. We will use mostly philosophical inquiry as a method and facilitate from external sources.

What Went Wrong?

I. The Historical Background

Philosophy is one of the most significant disciplines on the history of mankind, as it cultivated the scientific methodologies relied on today. Yet, it is somehow despised by others as if being based on solely hypothetic activity that provides no practical reliance for essential needs. This, however, does not correspond with the truth, as it omits the procedural reasoning for the inquiry, philosophy lays behind the questions but not answers: Philosophy is not after the gold, but after the wealth. That being said, even indirect implications of philosophy have enhanced **Cumulative Knowledge** (**CK**) to be facilitated in the direction of scientific progression in the margins of history. Nevertheless, there are still issues on the contemporary field of philosophy since it also allows cumulation of unconventional, sometimes ill-principled, studies that has affected the workshop of its heirs, especially after Platonic philosophy.

Philosophical inquiry is a methodological reasoning of CK, and thus, it cannot be comprehended outside of the boundaries of history since it establishes the connections between causes and results. There are historical tenets that caused philosophers to presume certain principles, such as Thales' theory of water lines back to Homerian view [3] (K. F. Johansen, 1999), or Plato's resemblance to Orphic tradition, and those have affected the early days of theory formations in science and methodology. The latecomers were influenced by forefathers' ideas, and hence, many philosophical studies have been established on the roots of mythological and metaphysical concepts, as Greek culture seeded in.

II. Effects of Philosophy and Plato

Plato has affected philosophical context by exemplifying significant studies in various fields. However, the temperament of his philosophy is mostly based on a metaphysical epistemology, exemplified by the ideas and forms, that also encounters formulation of the framework of natural reality and our sensory cognition. One example is Plato's *Allegory of the Cave* (Republic, Book VII) illustrates the limitations in the perception and knowledge, which indicates the impossibility of direct sensation. This has resulted a theoretical inquiry to distinguish outer and inner realities, and hence, development of a metaphysical idealism. Plato is not the only philosopher who led the foundations to be grounded as such, yet he decisively caused Cumulative Knowledge to be formulized in a certain approximation that encouraged metaphysical idealism to settle in a great dense. Nonetheless, this type of foundationalism has never been fully certified on the ground of epistemology. It also lacks potentiality to actualize scientific progression while disabling objective comprehension, as encouraging dualistic approach on mind and body. The binary approach to evaluate mind and its interaction to the body have never been resolved, which caused growth of obstacles to argue in circles, until neuroscientific methods become apparent to provide evidential deductions.

One another debate of metaphysical idealism can be observed in sensation and its skepticized reliance over scientific investigation. Since *The Cave Allegory* explicates the theory of forms and ideas, this sum is led to a concept called "sense-datum". It is used to express the condition that one's perception solely depends on the inner comprehension that would not guarantee the certainty of objects' real nature. That is to say, perception and sensation are not merely the same thing, sense-datum is the result of perceptive and mental processes. The outcome/sense-datum (that is what we seem to see) depends on the function (how our sensory organs and faculty of mind evaluate the external data), not on the essential nature of the object. Thus, we hardly acquire any objective truth through empirical analysis, according to this theory.

Although our study does not reject the importance of such investigations, it is to be believed that these problems should be resolved by using the most explanatory inferential models as abductive reasoning suggests. Aristotle also used an approximate approach to resolve the problem of sensation, by showing *ad infinitum* in the paradox of sensation [4] (Aristotle, *De Anima*, 1961). He concluded that relying on the idea of sense-datum is actually be reevaluated by cojoining multiple sense-datum one after another since one sense-datum can be derived from another sense-datum. This vicious loop must be broken at the first layer, Aristotle concludes.

It is, therefore, required for humankind to break the chains of metaphysical concepts in foundationalism, and acknowledge the philosophy of history as a formation of principles that are characterized through the epistemic coherence that can be functionable in alternative yet applicable organizational models. Therefore, if a different boundary for principles that can be applicated to the course of epistemology, which must grasp inductivity of laws within the contemporary goals to function on a coherent and dynamic-essential principle, then it can be possible to expend the scope of philosophy into a pragmatic course that would provide remarkable progression for scientific and cultural enhancement.

Talking to Gods

I. Beyond Our Limits

The new way of doing philosophy based on dynamic principles, hence, would alter our cultural leans to a fruitful progression. This is where the study introduces transhumanism since it is a matter of ethical concern to

redesign human mind and body. In this case, our ethical leaning will be based on Nietzsche's apprehension: Humankind must overcome its annihilation, since God is dead [5] (F. Nietzsche, 1882), by grabbing a vision above good and evil, or else humankind will be trapped in a nihilistic headlock. This is because, while humankind seems becoming more productive and joyful in the current system, it is actually standing on top of the ecstasy of climax of parabola, to fall along the downside is a matter of time. It is explicable that humankind will be more depended on the AI and robotics to perform on even basic tasks in daily life as efficient market hypothesis [6] (Fama, 1970) (EMH) would point out, since machines are capable to be programmed in multi-environmental dimensions which increases the potentiality of full automation in the near future; let alone there are neurocognitive aspects for CR that is gathering more human-like nature, which is an aposematic sign of losing control against machinery. Uninterrupted markets, which we assume it as a place for natural selection to function within a chaotic socio-integrational environment, will always promotes the most efficient systems. In the short run, there might be countries that will try to keep the balance between automation and job opportunities. However, they will be compromised by countries who embodied such an efficient way to produce. Thus, conventional moral obligations and orthodox way of understanding will only do a harm.

Therefore, societies have to evolve over the upcoming changes, by restructuring their moral and ethical obligations in a way to cooperate within the new standards. One example could be provided in alterations in bodily parts for the betterment of overall condition. Biomedical applications have already taken place for necessary interaction. However, we have not established clear standards for one to change his body in a way he desires.

The developments in AGI are highly dangerous since humans would become less needed and skilled, as merits would be less likely required to live a decent life, as Universal Basic Income (UBI) and full automation of production become widespread. The sustainability of human progression lays down within the urge to overcome. If automation of creation and production within a total control of AGI become prominent across the globe, then there will be no desire for oneself to push its limits forward, no tendency to compete, and therefore, no goals to achieve. In the long run, it could even result for AGI to achieve complete hegemony over knowledge. Henceforth, it should be noted that the power that cannot be controlled, controls thyself.

II. Artificial Evolution

Transhumanism stands for transitioning bodily parts from biologically designated structure to machinery complexity. Although there has been a greater pace in the marathon of science steamed over so far, there are still basic concepts that are not comprehended and lack explanations. For example, Theaetetus Ship, in the field of Ontology, exemplified one of the most essential questions: what is a being? Although, it seems a very basic question that has a straightforward answer, it is actually highly complicated subject even to determine the lines of discussion, let alone providing a clear-cut answer. If we cannot provide transparent answers to explain the concepts of "being" in the philosophy of science and ontology, since the tools to reason that we aware of are mostly conventional which hardly provide an alternative segment for logical modulation to function on, then it is possible for one to comprehend neither the analytic approach to discuss these concepts on ontology, nor to establish an investigational process to become transhumanists, as this type of medical transformation would require selective and complicated theoretical processes. Without a well-established theory, no process would be sustainable. Nevertheless, if there is a will, then there is a way. Thus, the alteration we propose should be pursued even if there is no systemic risk by AGI since it is necessary for humankind improving its mental faculty to achieve universal truth. Until then, we will continue to be a man stretched between an animal and a overmen – "a rope over an abyss" (*Thus Spoke Zarathustra*, prologue 2). Then, how are we going to achieve to be overmen?

Neurons are cells that function in the brain via electro-chemical signaling. When a neuron stands on a "background" pose, it spikes approximately at 5 Hertz (a hertz is a spike of neuron per second). On an active operation, firing rates can increase up to 100-500 Hertz (Crick, 1995). On the other hand, computers are able to perform at around 10 million clock-time per second. This huge in-gap between processor and neural activity have been evidential almost for a century since first computers was designed to encrypt messages, or decode them, which is impossible for a human to realize in a given time. Brain is a poor organ to function in areas that require tremendous processing power. However, what brain is capable of is its complex interfacial neural network, and hence, it is capable of gathering and recalling information in complex and creative ways. This is the reason how human brain paved the way creating AGI, but not the other way around (at least for now).

Evolution is almost always assumed to be a natural process. This anaphoric phrase, however, is poorly evaluated in most cases. Our theory assumes humankind has always been a part of the natural evolutionary process, and the point where he is able to design of self by self should still be considered as the natural role of evolution.

III. Cogito Nova, Ergo Nova Sum[1]

If humankind can implement processors (which we call it neurorobotic implementations) to his bodily parts to function with a degree of computational power, any activity would bring enormous amount of creation in an inventive way. Singularity would be achieved in a matter of time in this case since implementation of micro-conductors to brain would accelerate the communication and recalling which significantly advances cognitive abilities and possibly purifies mental disorders. This poses contra-stance to AGI's human resemblance, as it intends to create machines by teaching or programming them to function humanly. However, this would still possess risk factors even if there are certain regulations whilst the designation of such machines take place. Control is illusory effect, and putting fences around the area of production and design would only cause a greater degree of asymmetric power relations in the society. In a good scenario, corrupt powerful people would secretly develop their own AGIs and use them in their own advantage. In the bad scenario, AGIs can be used for total control by politicians, terrorists, corporates, or military-industrial complex. To prevent such a scenario to take place, both information and intelligence (Cumulative Knowledge as we described) must be condensed in terms of accessibility for everyone.

As forth, we propose humankind to embrace the change via transhumanism by affirming the process of alteration, since repulsive resistance to a change is also nihilistic dead-end, and improbable stopping it overall. Loading all the responsibilities to AGI, and passivizing humankind in the inner gap of hedonistic fantasy by providing every need and desire through fully automated and augmented AGI is the advocate of devil's work. It is the mistake Faust has done. Singularity, under the transhumanistic reality, would lead humankind to become more interconnected with each other and everything else. As it is being mentioned in EMH (efficient market hypothesis), which is believed to be an extension of evolutionary selection in economics, the efficient models prevail in the game of natural selection, not the strongest one, as Darwin (1869) characterized in the theory of *Origin of Species*: "survival of the fittest". Therefore, there is no one way to live our destiny. We are still longing to the singularity, yet it is up to us in which way we are going to reach there through.

IV. Prometheus

In the face of upcoming singularity, reminiscent of Prometheus stealing fire from the gods to empower human race, we state that transhumanist approach is crucial for our survival. As the physical limitations of the mind and body which struggles to compete with AI's rapid advancement, it is to be proposed that integration of neuro-robotics and AI into human biology is decisive, akin to Prometheus fire. By augmenting cognitive and physical capabilities, this transhumanist perspective seeks to mitigate existential risks tied to unregulated AI development and ensure that, like Prometheus, we can adapt and co-evolve with technology, remaining significant players in an exponentially advancing world.

[1] I think new, therefore I am new.

Conclusion

This study has aimed to explore historical and philosophical foundations of human thought and the potential future for our species in the light of AI and transhumanism. We have observed that conventional cumulation of philosophy and knowledge has shaped our understanding, and that it sometimes lacks guiding us through the complex ethical and existential questions that arise as technology continues to advance. This is why we proposed to overcome our conventional moralities and rediscover the truth according to our aims and times. By that, we can change the landscape and harness the power of technological advancements to improve our cognitive abilities and foster a more equitable and prosperous future. As we stand at the precipice of a new era, it is crucial that we carefully consider the implications of our actions and strive to make responsible choices that will guard the well-being of humankind and ensure our continued growth.

References:

[1] K. F. Johansen, "A history of Ancient Philosophy – From the Beginning Augustine", NY: Routledge, 1999, p. 556, ¶2

[2] H. Huff "Into the Nano Era – Moore's Law Beyond Planar Silicon CMOS", Springer Series, 2009, p. 12

[3] Shanahan, M. (2015). The Technological Singularity. The MIT Press Essential Knowledge Series. P. xvii.

[4] K. F. Johansen, "A history of Ancient Philosophy – From the Beginning Augustine", NY: Routledge, 1999, p. 19, ¶2

[5] Aristotle. De Anima. Translated by J. A. Smith, edited by W. D. Ross, Loeb Classical Library, Harvard University Press, 1961

[6] Nietzsche, F. (1882). Die Fröhliche Wissenschaft [The Gay Science], Section 125.

[7] Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. The Journal of Finance, 25(2), 383-417.

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