

16th March, 2024

Opinion Article: That Matters

Humanizing the Humanoid: Have Biology in AI-Technology to handle its Frightful Phenomenology

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Abstract

Like any world-phenomenology, AI has an awesome and a frightful aspect. Apprehending that the latter might cause a slow but permanent injury to the cognitive, emotional and psychomotor evolution of humanity, the paper brings out how by adding five further disruptive innovations from the use of biology in this humanoid, frightful aspect of humanoid AI could be deftly handled before it slips out of hands.

Key Words: AI-Phenomenology, Protein-as-Information-Processor, Cytosol Fluidics hinting towards geometric algorithm, Incompleteness of ANN, Role of Interstellar satellite in AI, Ladder of Cognition.

Introduction

AI-Technology indicates a human-induced awakening of consciousness in matter, and it is out to replace the cognitive terms such as ‘mind’, ‘self’, ‘life’ and consciousness by controlled ‘operations’ (see Figure 2a below). That is its amazing aspect! The motivation, however, to write this article is the ‘concern’ recently published from responsible press^{1,2,3,4,5}, and the warning from none other than Open AI CEO, Sam Altman himself on the possibility of “societal misalignments” where things might go “horribly wrong” (Associated Press, 24th February, 2024).

Any World phenomenology has these two aspects; awesomeness of upholding almost every entity and event in unity, and frightfulness of Time-concentrated exhibition of devouring of almost all randomness, living or non-living. Lord Krishna, around 3150 BCE, exhibited within Himself both of these aspects to Arjuna in the *Bishwaroop Darshan yoga* (Exhibiting the Worldview of the Lord), the eleventh chapter of *Bhagavad Gita*, inducting an independent observer, Sanjay, the trusted secretary of the King of the opposition camp, as required for scientific substance and evidence. The description of the amazing aspect of the Worldview is made by Arjuna, while the Lord Himself draws attention of Arjuna and describes the frightful aspect.

AI-Phenomenology

The phenomenology of Generative AI, a disruptive innovation, broadly has these two aspects; awesomeness and frightfulness. The awesome aspect of AI is acknowledged by data scientists, trend-biologists⁶, medical scientists⁷, and also used by the business tycoons for its marketing, to expand its potential users. When AI's environmental costs are soaring⁸, and AI industry is bringing the US power grid to the brink⁹, several multi-billionaire industrialists maintain an utmost secrecy of the technology to keep the business concentrated, market the term 'machine learning' while in fact it is data training, designate it as an open AI while serving not natural but tap water from different tanks of cloud served by our peri-planetary satellite. The frightful aspect of AI is being recognized by conscious observers and its intelligent users. That the machine which is trained for good can also be trained for evil might take the AI industry for generation of fakes. Ideas are there to weaponize AI-designed proteins¹⁰. Humanity cries for regulatory bodies at national and global level. However, which is difficult to be regulated is that the humanoid, once trained, cannot easily wipe out the data fed, whether data is good or evil, true or false, a garbage of knowledge or substance, productive or counterproductive! Besides, chatbot AI is reported to make racist judgements due to algorithmic bias¹¹. The cognitive biases, that can be inadvertently or willfully introduced into its algorithms by a computer scientist, or machine-training experts having very narrow disciplinary expertise, leads to epistemic risk for a multidisciplinary science. Use of AI could be a trap for executives, since there is an exclusion of human ingenuity, oversight and judgement¹². The outsourcing of cognitive activity to such robots creates an epidemic of vacuous state of the brain, a personal loneliness, viciously compensated by open AI's GPT store with AI-girlfriends¹³ along with its emotional, interpersonal, and social consequences. Are we really heading towards a COVID-19-like pandemic phenomenology, when AI is drawing the susceptible towards cognitive and emotional traps, 'AI as Oracle', 'AI as Arbiter', 'AI as Quant' and 'AI as Surrogate' (Messerli and Crockett), also 'AI as girlfriend' with possibilities of derailing natural cognitive and its supportive emotional evolution of humanity as a whole slowly but permanently? The programmer has no control on its output, leaving every chance to make open AI a Frankenstein. A US State Department commissioned report warns that a rapidly evolving AI could pose a "catastrophic" risk to national security and even all of humanity (Time Magazine, March 11, 2024).

Preparation for Prevention of Frightful Aspect

Can the anticipated cognitive, emotional, psychomotor, and security disasters by AI phenomenology be prevented? Yes, should we change focus from the immediate gain to sustainable prosperity and take care of humanity and spirituality in the Worldview. Spirituality is the science that deals with the *nature* of consciousness. Posterior to quantum discontinuity, quantum void and zero-Point Energy (ZPE), begins the ground of consciousness (*Brahma-Bhumi* in Sanskrit) and extends up to the *Essence* where the cyclicity of several universe(s) ends and begins. Therefore, for the issue under discussion there is no quick-fix solution by incremental or even exploitive innovation. Science begs for distant and broad vision for more disruptive innovations. "...we need to overcome the idea, so prevalent in both academic and bureaucratic circles, that the only work worth taking seriously is highly detailed research in a speciality. We need to celebrate the equally vital contribution of those who dare to take what I call "a crude look at the whole" (Murray Gell-Mann, Nobel Laureate in Physics, 1994) (Figure 1).



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- Murray Gell-Mann, Nobel Laureate in Physics, 1994

On Man: "the more he progresses technologically, seems the more to regress psychologically and socially, until he resembles his primate [tribal] ancestors in a state of high schizophrenia" – In, *The Crazy Ape*, 1970.
"I am a Dionysian and not an Apollonian"
- Albert Szent-Gyorgyi, Nobel Laureate (1937) in Physiology and Medicine in Letter to *Science*, 1972; 176 (4038):966

"Wilhelm Ostwald divided scientists in two groups; Classical and Romantic. Also be called, Systematic and Intuitive. John R. Platt calls them Apollonian and Dionysian. Apollonian tends to develop established lines to perfection, while the Dionysian rather relies on intuition and is more likely to open new, unexpected alleys for research."

Fig.1. Important and Relevant quotes from Murray Gell-Mann & Albert Szent-Gyorgyi

Also, for doing science, as suggested by Albert Szent-Gyorgyi (Nobel Laureate in Physiology and Medicine, 1937)¹⁴, we need to be a Dionysian (intuitive and romantic) and not merely an Apollonian (classical/systematic) using intuition and romanticism on the backdrop of the lessons from the past.

We have such contextual lessons, one from mythology, and two from nature/science. (i) Attributed to sage Valmiki (around 500 BC) as its author, *Yoga-Vasistha* describes how *Adityas* disabled three robot-warriors of *Sambarasura*, by introducing **sentiment** in those¹⁵. (ii) In the phenomenology of early universe, nature has supposedly tamed the menace of expansion (dark energy) and contraction (dark matter) of the universe by another epochal phenomenon of enclosing the wandering naked dark-DNAs and -RNAs within a membrane resulting in generation of life-form. (iii) Two apparently distant realms in nature, matter and life are kept in dynamic balance through Einstein's cosmological constant, ZPE, the value of energy of which is non-zero but not greater than 10^{-120} Ap, with a major discrepancy between the theorized and observed values. One Ap is equal to one Planck's mass per cubic Planck's length. In theoretical physics, it is said to be the most serious fine-tuning problem because of its inexplicable smallness as found by experiments¹⁶. This energy prevents the collapse of the universe and prevents inflation from being eternal, suggesting ZPE's relationship with dark matter and energy. Only a small fraction of the stable vacuum is hospitable to "life", signifying a possible communication between systems cosmology and systems biology.

Propositions

Mentioned myths and facts lead the author to five workable suggestions on how to *humanize* this humanoid by introducing biology in the AI technology¹⁷. "In biology, it is easy to get interesting answers to questions one didn't ask."¹⁸

1. Intracellular and inter-cellular communications happens in three tiers (Figure 2c); via signal, information and intention¹⁹. The cell uses proteins of different structure as carriers/processors of different information states (Figure 2b,d). The compelling circumstantial evidence tells us that while protein in its primary structure is a carrier/processor for a signal, the protein in its secondary structure behaves as an 'informed' protein (a receptor). Protein in its tertiary structure, e.g., an enzyme, is a 'knowledgeable' protein, while in its quaternary structure is an 'experienced' protein, e.g., a DNA-repairing enzyme, or perforin, experienced to make a hole on the immune targeted cell. Spherical proteins serve as 'wisdom' proteins, concentrated in the nucleus as histone, and wisdom distributed as spherical ribosomes! Histone operates as a driver of DNA²⁰. Intercellular communication by means of exosome is intentional and mediated by informed / knowledgeable

/ experienced proteins. Two or three-dimensional infrared, or near-infrared spectroscopy could help us to visualize the protein movement within cell²¹. Can we enter into R/D, for replacing the semiconductor chips in AI with differently structured cellular proteins in biological proportion? Biological proportional mix of cellular proteins is likely to take care of the proportionate involvement of information states with non-observable operations of different cognitive operators (Figure 2a).

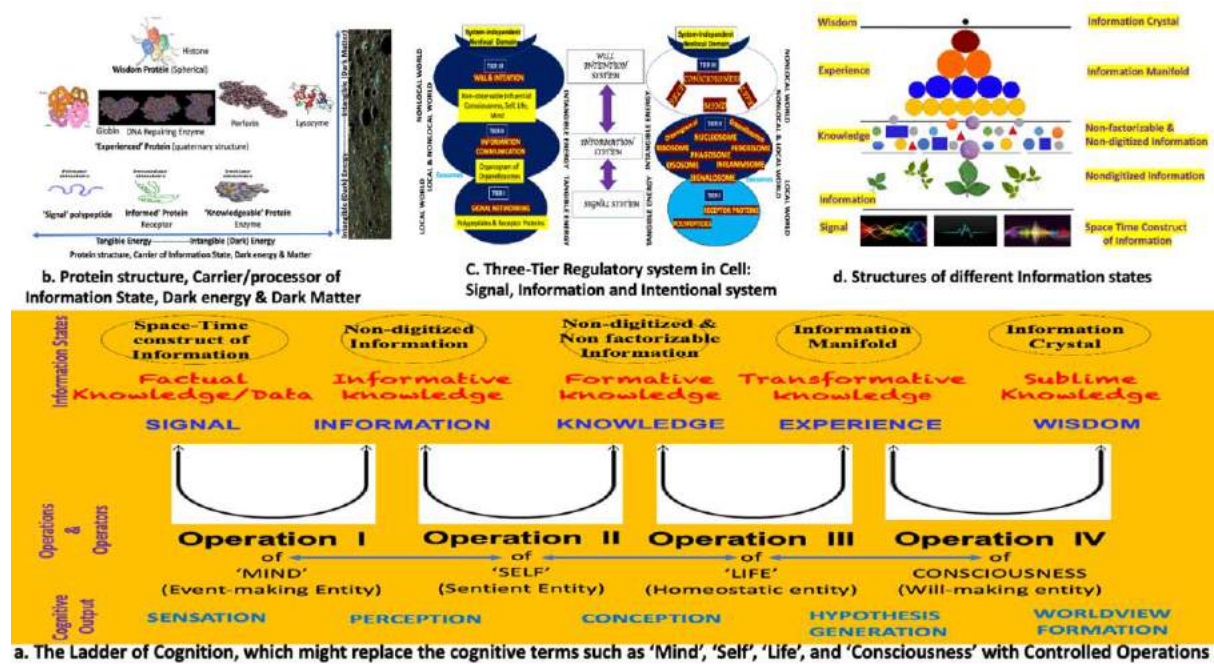


Fig.2. (a) The ladder of cognition with different information states are shown at the bottom, with operations and operators and their cognitive outputs. Upper left corner, (b), shows the relationship of protein structure as carrier of information states, dark energy and dark matter. (c) Three tier regulation in a cell, by Signal, Information and Intentional system, is shown in the upper central area. (d) Upper right corner shows the possible structures of different Information states.

2. Is cell signaling run by an algebraic algorithm? No one has researched this. Changing spatiotemporal fluidics of cytosol, cell organelles exchange 'information' making 'personalized' contact. Is this dynamic change of the spatiotemporal fluidics of cytosol (visualized by CellScape²²) a version of an unexplored geometric algorithm in cell biology? Can we shift our focus from the present use of algebraic algorithms in AI, which is meant for signals to evoke 'sensation', to the use of geometric algorithms for use of information that evokes perception (Fig.2 a, b, c)?

3. The operational base of AI is an artificial neural network (ANN), where astrocyte functions in a tripartite synapse in the real brain have not been

taken care of. Is it possible to introduce glial functions in the artificial neural network, or can we use brain-organoid, 3-D printed brain instead of ANN in AI as another disruptive innovation?

4. Brainless oceanic creatures such as octopus, jellyfish, starfish and corals sense different information states from the environment. As another major disruption, instead of using material sensors, can we experiment with the bio-substance from the flesh of these creatures as bio-sensors? Small live brains grown in culture media might also be tried as a 'sensor' of different information states.

5. Functions of a cell do not depend on any server cloud. A single cell operates in natural clouds. There is evidence that a unicellular slime mold can produce patterns in its slime similar to patterns in the intergalactic space²³. How the artificial device for intelligence, following incorporation of biosensor, biochips, brain organoid could be made open to infinite natural clouds across ZPE would likely be the frontier in cloud research! We may be needing to aid an interstellar satellite instead of a peri-planetary satellite to serve the AI-servers! Space X is already in the Mars Mission, and is likely to go interstellar!

Conclusions:

Introduction of biology in humanoid AI will lead to a trade-off between energy consumption and output, speed and quality, automation and autonomy; energy consumption would be reduced with an increase of quality output, stupidity would decrease with slowing down of its speed, and its autonomous outbursts might decrease with the prevailing sense of holonomy.

The article projects a broad vision, and offers a wide series of advances that might interest a vast group of researchers for engagement in science and technology on a long term basis. There is no dearth of Funding Agency to offer funds for the humanization of AI-humanoid. The Article is timely in the sense of taking early prevention measures to handle AI's potential harm on the emotional and cognitive evolution of humanity, its effect on science, 'societal misalignments', and where things might undergo 'horribly wrong'.

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Declaration: It is to declare that no AI technology of any kind is used in the preparation of this manuscript. No funding agency has funded this work. There is no conflict of interest with anyone, or any agency in publication of the manuscript.

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