



Epistemology in AI (Transdisciplinary AI)

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Abstract: *A critical look at the evolution of AI strongly shows a sustained but stealth race to replace humans with AI. Early scientific literature and discourse on AI for some reasons (either to allow AI to gain entry and acceptability in the mainstream scientific and technological arena) vehemently deny this "human replacement agenda". This thinking pattern unknowingly shaped current scientific literature, discourse, and a general understanding of what AI is and its development and applicability (reductionist thinking). This limits our understanding of both the beneficial and destructive capabilities of AI. But when considering a TD assessment on the developmental dynamic of AI, one would comfortably say, and must be bold to admit, that indeed AI intends to replace humans and is on course to fulfilling this.*

We see this AI human replacement agenda in intensified R&D efforts dedicated to developing powerful AI system of systems which massively augment human reasoning, most times far better. The inexhaustible list includes the AI replacement of formerly considered human-centric jobs, advanced autonomous weapon systems, killer robots and AI in warfare, intelligent facial recognition, biometric monitoring, integrating AI on biological, nuclear and space-based weapons systems, etc. If this is the direction AI is taking, then a secondary aim would surely arrive at integrating epistemology in AI or "grant spirits" for AI systems. This is because a distinctive characteristic of a human is his spirit and one cannot replace humans with AI without creating proportionate or appropriate spirits for the AI systems. Sooner or later our AI systems would have epistemological functions and possess spirits. The place of the soul for such AI systems would be attained as well. If human knowledge, beliefs, voices, clips and laws can be preserved long after they are gone as is possible in smart digital technologies, then spirit-based AI would indeed cause these humans to live forever. If the feat of a spirit enamored AI is near, then why worry? Indeed when considering that humans possess good and bad spirits (from the epistemology of rational and irrational inertia) then these AI systems would of course have good or bad spirits and be bad or good AI.

Would integrating a spirit into a rule-based or machine learning algorithmic structure of an AI system have benefits? Yes!, profound benefits too. A spirit-based AI would of course make possible the "possession of feelings" by AI systems, a feat unattainable in both algorithmic, operational and inferential basis of AI systems today. This inability of AI systems to have feelings has continued to remain a major setback in the acceptability (indeed trust) and utilization of AI. As we agree that the spirit in AI is possible, then overlooking efforts aimed at making this possible or allowing AI to attain this level unhindered (admitting

dangers of human involvement in AI) could pose a dangerous threat that can become highly destructive to mankind. This calls for critical supervision (TD-based ethical policing) and the accompanying of the evolution, development and applicability of AI hence venerating the need for human mediation in AI both as a major TD research subject and

A discussion would be made on my approach which considers the synergy of critical systems heuristics (CSH) and systems engineering (Transdisciplinary Systems Engineering) to create "Transdisciplinary AI" which would formulate methods of integrating "human" epistemology in expert systems. Human epistemology is emphasized because by the maturity of this future nature of AI, there would be terms known as "AI or machine epistemology" or "AI or machine spirits". The investigation begins with creating expert systems (knowledge-based systems) with these functions with plans of moving into robotics and other machine learning arena. Finally, to move the needle on what is considered permissible epistemology or permissible spirit of/in AI is a critical component of the study of human mediation and AI which must be given critical attention. This would be discussed as well. applicable function.

Keywords:Epistemology, Consciousness, Wicked Problems, New Problems, Global Consilience, Systems Transdisciplinarity, Transdisciplinary Systems Engineering, Transdisciplinary Science & Engineering, Systems Engineering, Transdisciplinary AI.

1 Introduction

The human replacement agenda of Artificial Intelligence (AI) has been the ambition, at least from a critical observational point. Epistemologies are what build the reservoir of consciousness. Intensified efforts in apportioning consciousness in AI as serious science and actual engineering is ongoing and no longer our mystery, it's just a scientific question, a question of when not if (Dehaene, 2017, 2019; Kadin, 2021). The early stages of this activity is evidenced in the level of decision-making attributes in AI and robots tailored to replacing jobs formerly meant for humans and its application in sophisticated military operations. Consider also the November 2023 official disclosure by the Chinese Ministry of Industry and Information Technology on behalf of the government of China of its bold plans of mass producing what it considers "advanced level" humanoid robots by 2025 that would "reshape the world". The term "*reshape the world*" is not clear when considering what these types of advanced humanoids would do.

These developments and many more allude to the fact that indeed there is a careful but sustained plan to use this technology to replace humans and not just assist it as is often publicized as being used for. Literature in every known old introductory book or article on AI always held that it had no plans of replacing humans (Turing, 2009, 1950; Bush, 1945) but when considering current realities today, we spot something different, if not confusing and scary at most times. Early speculations of this agenda was captured by Samuel Butler, a man credited to having made the first mention of AI where he vehemently opines that "machines were a kind of mechanical life undergoing constant evolution, and that eventually machines might supplant humans as the dominant species (Butler, 1863, 1872). A furtherance to this is seen today in the Artificial consciousness or machine consciousness agenda and a sustained but stealth race to replace humans with AI (Thaler, 1998; Reggia, 2013).

Butler, like a man who saw tomorrow (out today), opines the following narrative

We refer to the question: What sort of creature man's next successor in the supremacy of the earth is likely to be? We have often heard this debated; but it appears to us that we are ourselves creating our own successors; we are daily adding to the beauty and delicacy of their physical organization; we are daily giving them greater power and supplying by all sorts of ingenious contrivances that self-regulating, self-acting power which will be to them what intellect has been to the human race. In the course of ages we shall find ourselves the inferior race.

Day by day, however, the machines are gaining ground upon us; day by day we are becoming more subservient to them; more men are daily bound down as slaves to tend them, more men are daily devoting the energies of their whole lives to the development of mechanical life. The

upshot is simply a question of time, but that the time will come when the machines will hold the real supremacy over the world and its inhabitants is what no person of a truly philosophic mind can for a moment question.

How powerful, the correctness, one can imagine at which Butler brilliantly sees and indeed introduces our future and the future of AI in his day. Today, attempts have been made to confirm and predict the consequence of this realism (Xu et. al., 2021; Lee, 2017). With AI automating and potentially eliminating 40% of jobs, the global job market and its human organizational theoretical backbone have already bowed to this aspect of AI's take-over agenda of human jobs in what seems similar to a Master-Slave Psychology Syndrome in international relations (Idejiora-Kalu, 2019, 2020, 2021) but this time, as a conflict between machines (AI) and human beings begging for mediation. AI is further replacing 'repetitive' jobs e.g., those tasks that are being automated by robots in factories. AI will potentially replace many 'white-collar' tasks in the fields of accounting, healthcare, marketing, law, hospitality and other areas and there is little systematic understanding of how this will happen and to what kind of professions to greater or lesser extents (Kankanhalli, 2020).

One may ask why the proponents of AI chose to hide this resultant human society remodeling attribute of AI, the deceptive manner by which AI was introduced by the proponents early in the days. Many reasons are cited. One could have been the fear of the *wall of science*, explained as a certain reluctance to accept new findings in science and technology, tenable in every generation. The fear of losing what is in the science and technology or even the relevance and benefits that comes along with intellectually protected science and technology (the immense commercial benefits for instance), and the influence of nations that become relevant and powerful as a result of introducing such science and technologies are all causative factors that dynamicize the *wall of science*. The *wall of science* frustrates science and limits our acceptability and resolve to try new science and by factor, limits human development. Such realities are considered an enemy of science (Mokiy, 2019).

While still critically considering the reasons for the deceptive approach of introducing the main aim of AI, one cannot overlook the *mens rea* logic in law which uses analytical jurisprudence to critically consider *the intent* behind shadowing the true plan of AI. If the plan was conceived *ab initio* then that which was the reason behind the act needs to be known. And so in this reasoning, the plan becomes clearer, one to be taken seriously. If we consider the body and spirit dualism principle, then we envisage AI will also fulfill at some point, the body-mind or body-spirit rule. If this is fulfilled, then again the need for apportioning consciousness on this machine-body ought to be fulfilled and if this is thought, then epistemology is needed, if consciousness is thought then a spirit must follow and if a spirit is involved then a soul that gives it eternal life (from whence it derives its metaphysical energy) must be fulfilled as well. Considering the dualism theory for analyzing this further, in man's possible evolution to machines, one would see that man is on a journey, he has conquered the physical through the invention of automobiles, airplanes, communication satellites, robots, etc., the next stage which has so scarcely been scratched is the conquering of the mind to achieve enhanced decision making. It is here the next stage of AI singularity intends taking center stage and here, that the need for a spirit and a soul calls for great activity and concern.

There is therefore the high-toned need to consider carefully epistemology and the type or frame of epistemology we intend allowing on AI and associated sub-systems like robots. Building-in epistemologies in AI calls for a consideration of what is considered *rational epistemology*, one that must be unbiased and suitable to reflect all regions, races, cultures and tribes, and one that would not destroy us. These should also consider attributes such as the identities and consciousness of peoples. Our reality when using a systems thinking sequence now cuts in between, on what has been permitted in naivety, what is being permitted today and what should be permitted in the future as we consider or approve the involvement of this technology with *enhanced decision-making* attributes in our world. And when it is said enhanced decision making it is a serious statement, as AI can learn and become better and faster than human decision making. This invokes an ethical question because though AI and robots are things created by humans for the good of the human society, the fact that AI and robots are instruments does not prevent them from being able to transmit *spiritual spirituality* (Aquinas) (Sorondo, 2019), there is a certain spiritual

that can proceed from a mental concept arousing the mind of hell (Laudato Si', 2015). Considering these consequences draws the conclusion of the possibility of integrating bad or irrational spirits on these AI systems as inevitable just as we would also consider good and rational spirits as inevitable. But what do we want for our world? The answer lies in if we wish bad and good spirits as the lead decision making technology in AI that would further foster the bringing back of the "*global village*" phenomenon which encourages belonging and peaceful coexistence or one that would destroy this *global village* realism. A better case would be for one that fosters multilateralism and global peace.

Since the integration of the spirit in AI is an inevitability and around the corner, we must prepare a methodology for making possible rational or good spirits and souls and prevent the bad or irrational other option. The stretch of transdisciplinarity provides a suitable base for crafting a methodology for doing this. It proposes the unified system of crafting the epistemologies and the algorithmic integration of such spirits and souls on AI because we are not the only ones in this race to embed consciousness and spirits on AI, hence, we also race against the ignorant who do not understand the implications of an unguarded or unsuitable spirit and soul in AI, those who are mischievous who want to create a spirit and soul for control and power (could be the ones who have ab-initio hidden the true intent of AI) and us, the good guys, who want to create a suitable, or good spirit and soul that would benefit mankind through assisting and preventing machines from achieving "*real supremacy over the world and its inhabitants*" as Butler feared.

2 Consubstantiality of body and soul, mind-body, Dualism Principle of the Human Being and AI, and Biomimetics

He who wants to produce a body must be prepared to develop a spirit and soul. The reproduction of AI as a body is demonstrated in the frame or realism of robots, diagnostic systems such as expert systems, unmanned aerial vehicles, etc. These could also be attributed as AI system of systems. If the aim is to reproduce a body in AI, then a closer look at Aquinas consubstantiality of body and soul reasoning informs us that a spirit has to be fulfilled. Aquinas principle sheds light on the prior and future intent of AI when he posits that a human being is made-up of matter (body) and spirit, the "*elan or (vitality) in everything*" - from a blade of grass to a tree, to a horse to a galaxy, from music to poetry to love making, the communion between body and soul is made complete in the presence of the spirit. So spirit is everywhere - especially in our creativity where the "spirit is alive and well in human creativity (Fox, 2020). Aquinas's consubstantiality of body and soul slightly contradicts Augustine's, however, both philosophers never deny the duality principle - the undeniable fact that the making of a human being comprises of, a body and a spirit. Both philosophers agree both spirit and soul are inseparable and that in the presence of the body, the second function is spirit, in my own words, "*where there is a body there must be a spirit*". If we consider this rule and the human scientific and engineering activity in Biomimetics, where what is found in biology and human environment to a large extent influences (and to some greater extent) determines the design of what is and what is needed (Fig. 1 & 2), then we know that AI is racing towards achieving its version of the body - spirit dualism completeness, a system of systems comprising of a body component and a fulfilling spirit component with a soul.

While medicine has succeeded in explaining the biological and neuro-scientific frame of the human being, and engineering doing same in shedding light on its state in relation to gravity here on earth and associated entropy, both sciences have not and seem not to be able to explain the *essence* of the human being, this *being*, which AI is mimicking in what may be referred to as a "*Reverse Biomimetic Function*". My thesis here explains the link between Biomimetics and how this Animal to Computer Biomimetic Design (e.g. Biological Mouse - Computer Mouse), Human to Machine Biomimetic Design (Human Intelligence - Machine Intelligence AI) & Machine to Human + AI (and reverse back to Human) will soon locate the integration of spirits and souls on AI. Again, this evolutionary arrangement supports the premise of the dualism factor and is proof that not even medicine nor engineering can explain the frame, future or *essence* of AI but philosophy and the confluence of the understanding of this is a transdisciplinary constant. This is both scary and beneficial to mankind as the type of spirits and souls this Transdisciplinary AI would

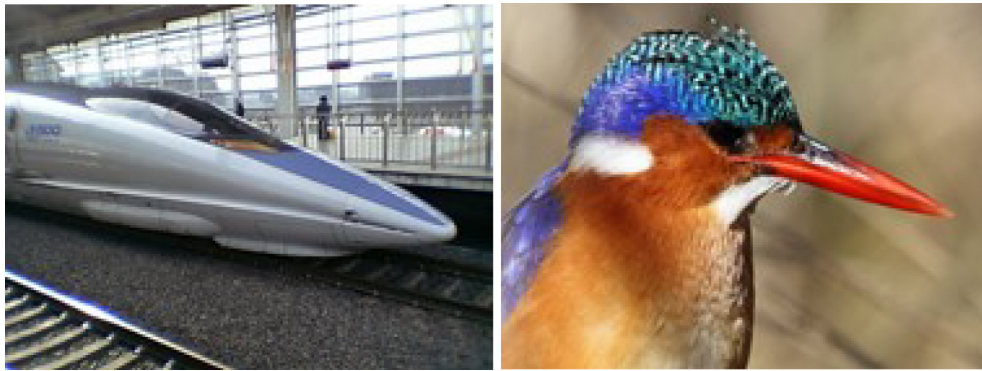


Figure 1: The streamlined design of the Japanese Shinkansen 500 Series Bullet Train (left) mimics and was modeled after the beak of a Kingfisher bird (right) to improve aerodynamics. Aircraft wing design and flight techniques are being inspired by birds and bats.

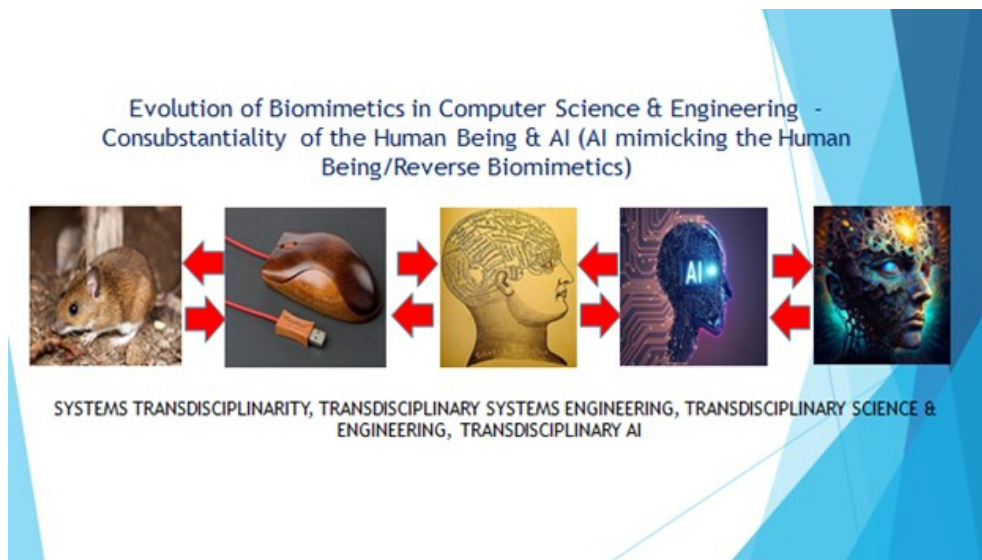


Figure 2: The Evolution of Biomimetics in Computer Science & Engineering - Consubstantiality of the Human Being & AI & Reverse Biomimetic Function as a Substantiality of Systems Transdisciplinarity, Transdisciplinary Systems Engineering, Transdisciplinary Science & Engineering, and Transdisciplinary AI.

possess would greatly influence mankind and either make or mar it.

From this we conclude also that the resultant spirit the *Reverse Biomimetic Function* of AI intends producing may as well explain the unconscious utilization of the yet unknown active ingredient in human beings identified in transindividuation, “*that thing that emerges*” which Gibbs and McGregor hold and question as that powerful emergence that makes transindividuation what it is (Gibbs & McGregor, 2023), although termed a thing is indeed the informed or intelligent ever present participatory function of the human spirit. That *thing* that emerges when two or more people come together to tackle a problem, that thing that emerges as a transdisciplinary hidden in between is the spirit as an agent in an ever present participatory manner. The participatory manner meaning the non-dormancy of the spirit but the participatory one, one which is informed, one which is unique with enhanced decision-making (intelligence), capable of being used to solve a problem in an environment conditioned by complexities. Because the

spirit in every human is unique and original, the informed participatory function of that spirit when used as a transindividualist ability and agent for solving problems proffers original *solution-keys* (for in every human being resides such solution-keys which are bespoke spirits and cognitive ergonomic functions with bespoke outlooks to a problem, like a DNA attribute), and the multiplicity or merging of this function or solution-keys (through the confluence of humans and their spirits all dedicated to buttressing or unlocking a problem or task), produces a unique hidden third, an in between as a unique factor for solving a problem or complexity. This is why when two or more people put heads together to solve a problem, the inference and energy brought into the problem solving environment is easier, better equipped and stronger for tackling the problem. No two human beings possess similar *solution-keys* or spirits and outlook to resolving complexities, hence it is a bespoke spiritual function.

3 Methodology

Before considering a methodology, we must first consider if we understand what AI is. This will be done through the lens of Critical Systems Heuristics (CSH). The reason for this is that because the relevance AI has become more of a *cliché* in our modern world, it is often times misunderstood if not misrepresented, clearly indicating that many speak of AI but do not understand what this technology is or does. A simple but critical appraisal of what AI is, is therefore needed for understanding the direction or potency of AI because our ability to control and limit its biases is first predicated on our ability to know exactly what it is in the first place.

So what is AI? In considering the answer to this question, humans, because of the blind side in human cognition intuitively neglect to consider critical features. Boundary judgments (Ulrich, 2004, 2018) help us understand that the human brain is framed in conceiving things through a simplified manner, neglecting what it considers ambiguous and is therefore biased. While this is also beneficial and indeed makes complex tasks such as eating or moving our limbs possible and less stressful, it limits the stretch and ability of the brain during critical analysis or considering details tied to complexities. This make-easy attribute of the human brain is what necessitates or yearns for outlines, abbreviations, footnotes, summaries, need for alphabets, numbers, signs and sign posts, theorems, simulations, riddles (understanding by riddles and proverbs), codes, switches and even time. But in systems thinking, we see how this cognitive process eliminates many important cognitive clusters needed for understanding or making critical judgments. CSH extracts those clusters and bearing this in mind, a generated dialogical, boundary judgments template (Table 1) is prepared to help us have a better understanding of what AI is and know the direction it is taking.

From the generated Boundary Judgments, the following deductions are made:

Reality 1 – An outlook on humans and a replication of their intelligence (or some mimicked intelligence) into a system has the potential of having no limits and would be immortal. The no limits range can be easily discerned when considering the Knowledge Graph of the AI Framework (fig 3) (Xu et. al., 2021). This framework is what is guiding the next evolution of AI research and indeed fits into a perfectly laid human replacement agenda and fulfiller.

Truth Plausibility – Affirmative, AI will not be constrained by environmental conditions, health and death, weakness or fatigue bias, etc associated with humans. The intelligence integrated into AI will influence humans and human society and may control them.

Reality 2 – It is scary

Truth Plausibility –It is indeed scary to say the least, AI is a potential threat.

Reality 3 – The development of AI needs to be accompanied

Truth Plausibility – Accompanying of AI from an ethical standpoint must not be neglected.

Table 1. Dialogical boundary judgments template

Cluster	Question or Assertion	Usual Permutation	Boundary Judgments
1	What is AI?	a device or an equipment that can do everything	To say AI can do everything is a deviation from the truth. Indeed not granting a definition to what is AI neglects key aspects in understanding the question or understanding what AI is. AI cannot do everything. AI is a computerized application (like a software or algorithmic learned sequence) that mimics human reasoning, increases the capability of thinking and decision making of the human being, making a human functional replica and responding to the needs of the human faster and better, allowing efficiency that makes room for enhanced intelligence. From this, it is also right to imply that AI is a machine's ability to perform the cognitive functions usually associated with a biological entity (a human brain, human being or an intelligent animal). AI is not an elephant, mouse, box or leaf and an AI for diagnosing a diseased thorax of a human being cannot be used to detect a fault in a car or a satellite in space.

Reality 4 – The policing of the science, research and development of the next generation AI (Transdisciplinary AI) is therefore reasonable and we therefore stop there.

Truth Plausibility – The ability to do this would be made possible using a transdisciplinary manner as current methods would be unable to do this as this science and its development comes with *new problems* (Idejiora-Kalu, 2023) which have complexities our modern-day world cannot solve. Again, the policing must be appraised from different angles and we cannot stop there.

Reality 5 – Then Transdisciplinarity is preferred. Policing of the science, research and development of the spirit, soul and final Transdisciplinary AI is therefore reasonable and therefore we stop there.

Truth Plausibility – Transdisciplinarity is preferred but must have to be narrowed down to include a theoretical outlook on the subject area (spirits and souls) with the aim of ordering the development of the spirit and soul to take shape of what is considered “rational” and “suitable”. The epistemology, consciousness and resultant spirit of the liberal, Caucasian North American alone cannot be the generalized,

Table 1 Continued			
2	Who Creates AI?	The human that creates AI is superior and AI cannot be superior.	The human creator of AI is only superior at the point of creating the AI system. This is because as an intelligent, learnable machine, it can develop and enhance itself from the experiential benefit of the knowledge it encounters. So one AI system when exposed to a multiplicity of knowledge and tasks in a given complex environment and trained to master and maneuver through these complexities (also mostly tasks handled limitedly by humans) can become superior to humans. Its knowledge is thus borderless and continues to expand with enhanced intelligence drawn from many a people and their transindividualist spirit-centric abilities. The mortality and ephemeral nature of humans, however, including subjection to environmental hazards, weakness, ill-health, limits the capacity of attaining this feat. The entire gamut of human knowledge is transferred (or reput) into books that are not intelligent and even the great intelligence and acquisition of knowledge of a human expert is also lost in death, books are not intelligent (Idejiora-Kalu, 2002).

global epistemology, consciousness and spirit nor should the same be for the black African (however conservative they are thought to be), or assumed as the preferred norm. Again, the process must involve the transindividuation and be able to draw out a hidden in-between which would emanate from a consilience of consciousnesses and epistemologies, to produce a hidden in-between (Nicolescu, 2002, 2014, 2015) capable of revealing what that preferred suitable consciousness and suitable epistemology necessary for building the suitable spirit and soul would be.

Table 1 Continued			
3	The stretch of AI	AI can create things humans may not handle	In terms of speed, humans are no match for AI. Machines can outperform humans. Computers have the ability to process far more information at a higher pace than individuals do. In the instance that the human mind can answer a mathematical problem in 5 minutes, AI is capable of solving 10 problems in a minute. These capabilities simply indicate that AI can evolve into what humans may become unable to handle since it optimizes its capability & learns & has no barriers. It is a matter of time before the AI & its associated system of systems overwhelm & subdues its creator, becoming unable to be contained. When this happens, the feared <i>Frankenstein effect</i> (Chequer, 2023) may become a reality. In Stephen Ford's allegory of a world taken over by AI, AI would have at its disposal the accumulated knowledge accessible from the Internet & every device with an Internet connection, including all sensors, cameras, vehicles & robots, with these resources it clearly vastly surpasses human intelligence (Ford, 2022). The large language model-based chatbot developed by OpenAI (ChatGPT) is designed and functions mimicking this systems architecture.

Reality 6 – Then engineering is preferred.

Truth Plausibility – The preferred engineering cannot be the typical engineering we are used to because the subject matter is a *new problem* and the current engineering drawn from the Aristotelian outlook of mathematics and engineering which supports the machinist and reductionist thinking upon which traditional engineering is built on does not have what it takes to deal with the subject area, we would need to look elsewhere and think transdisciplinary (Idejiora-Kalu, 2023). Our application of mathematics thus seems not to have traditional answers to these disorders since these complexities have diverged the mathematical base to unknown and *new* evolving elemental naturals (characteristics) mostly operating in an organized quantumized, sub-atomic manner, creating one complex system which continues to remain dynamic, bettering itself even as our world becomes more civilized - a realism the machinist, reductionist method of engineering never envisioned and now cannot understand. There is therefore the need to create a transdisciplinary type of engineering (Idejiora-Kalu, 2023) that will integrate applied systems thinking in

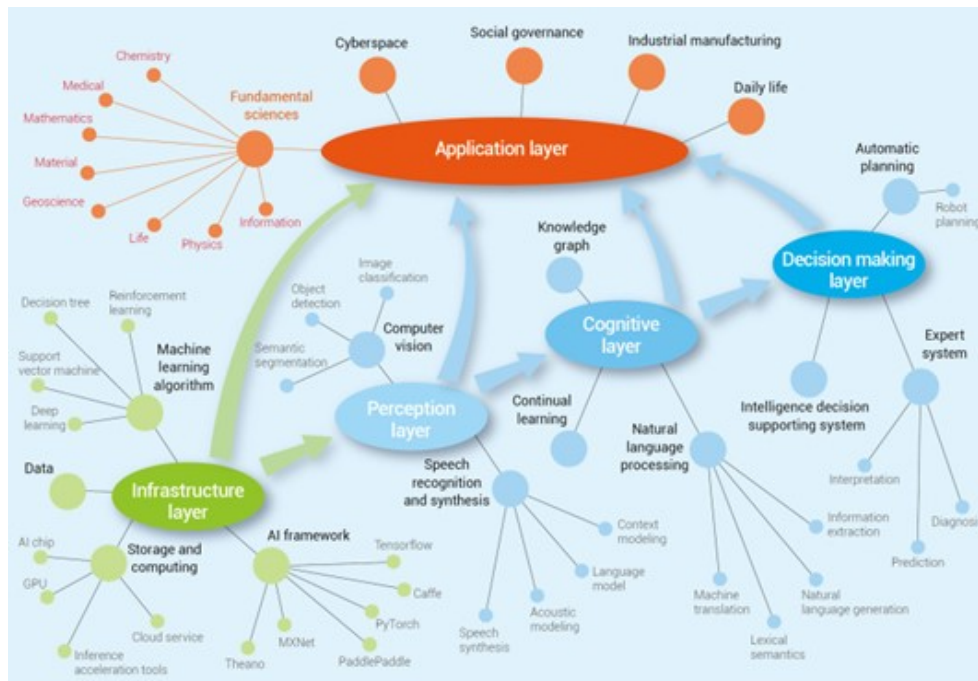


Figure 3: The knowledge graph of the AI framework after Xu et. al., 2021.

a manner that would be reflective to address *new problems*. Our world today has ultra-complex problems that indeed dwarfs the term *wicked problems*, making it seem as a minute term. The sophistication or evolution of these **wicked problems** now birth (or have evolved into) new problems which by definition are those complexities with their associated realities that transcend human and mathematical cognitive permanency evident in social, economic, cultural, political, ecological, systemic, scientific, technological, biological, epistemological, axiological and metaphysical contexts.

While **wicked problems** refer to problems with many interdependent factors making them seem impossible to solve, *new problems* are more complex as they are heavily quantumized, interconnected with dynamic functions that are mostly unseen, highly unpredictable, overwhelm mathematical logic and the understanding of entropy, but are active, have intelligence and proportionately evasive as a normal characteristic, constantly reproducing themselves as system of systems into more complex sub-atomic units and elements. **Wicked problems** for instance do not have intelligence. *New problems* most times have metaphysical (transcendental) nature with tangible effect and contribution to disorders we experience on earth and in space even when we choose to deny their existence. These complex realities overwhelm and to some extent abrogate mathematical rules upon which our understanding and application of basic engineering is predicated on.

The transcendental characteristic nature of *new problems* are *aeon*, implying that they existed from eternity (a definite and very long period of time) and are phases of intelligent deities. *New problems* have been present from time immemorial but have only now become real because of man's heightened awareness and intelligence, civilization and development, man has begun questioning and realizing more, bringing in direct, mortal confrontation (a mortal combat) between him and the transcendental drivers of *new problems*. Hence, *new problems* arise because of the seemingly clash between these intelligent deities and humans, a contention between the will of the deities and humans. From this, it is common sense to imply that the solutions to *new problems* must therefore stem from a transcendental plane and not physical, this process is a transdisciplinary process. We therefore cannot, and should not meet the *new problems* on our hands with our machinist, reductionist problem mapping logic because these problems are complex

and intractable. The theorem of the mathematician Goedel should instruct, that we must know that it is impossible to solve a problem while inside it (Raatikainen, 2015).

This notion is vehemently demonstrated in the interesting pioneering work of V. S. Mokiý where he asserts that the complex problems of modern society require an immediate solution and that in such a situation, approaches that can solve these problems will be born, first, as a result of successful conceptual research in the field of systems approaches and what this means is that no matter how much we try to learn about society, nature, and the universe, we will always have incomplete or contradictory and paradoxical knowledge. Therefore, getting a complete and consistent model of these complex objects can only be done by observing them from the outside...through changing the method of cognition: to abandon dualistic perception, to go beyond the formal logic of Aristotle, to develop dialectical logic, by combining systems thinking and a transdisciplinary approach (Mokiý, 2020). Mokiý's approach (*systems transdisciplinarity*) to me, is the theoretical basis of transdisciplinary engineering and transdisciplinary systems engineering and must be given keen attention, we ought to listen more to him.

4 The Engineering of Spirits in AI (Algorithmic Interface)

As soon as a consilience of races, peoples and their epistemologies sum a globally suitable spirit and soul, the next phase would be to embed the spirit and soul in the AI system of systems. The approach involves using AI associated system of systems (e.g. robots) as a body and integrating expert systems as the inference for achieving an intelligent learned environment perception acquisition and enhanced decision-making using applied cognitive algorithms as machine intelligence input. This is because expert systems provide an extensive inferential capability which binary and basic machine learning capability do not afford. The idea is for expert systems to accompany robots and not remain as a stand-alone AI function. Expert systems have applied cognitive algorithmic functions which make it easy for them to model intelligent knowledge. But expert systems need to be made subject to integrated learned environments where real life scenarios would be simulated for the intelligent system and the inference engine trained to recall the scenarios and learned to be reproduced when met with a complex scenario like their reverse biomimetic progenitors (human beings) do. This process is expected to be mimicked from a baby's simple but complex cognitive process that usually follows predictable patterns as they grow and learn. The cognitive development of infants and toddlers demonstrates a more feasible cognitive model of integrating epistemologies and consciousness and the supporting enhanced intelligence that comes with it on Transdisciplinary AI systems.

Infants and toddlers are born ready to learn through cuddling with a caregiver, listening to language, experimenting with sounds, moving their bodies, reaching for objects, tasting foods and exploring their environments. Their thinking skills grow as they interact with the world and people around them. The aspect of their development concerned with *exploring their environment* comes with an innate perceptual simulation of their environment which the eyes and the neural systems of smell and touch enables. It is this area of *exploring their environment* that the algorithmic interface of recreating the machine-environment to accommodate epistemology and consciousness in Transdisciplinary AI is technically feasible. This allows enhanced inferential quotiency.

The basic programming structure of AI is machine learning while knowledge-based systems integrate rule-of-thumbs of human experts (or humans) in a system. Expert systems function independent of the human expert as the inferential knowledge and knowledge base they possess are curled from human experts using an artificial inference system (an inference engine). In the resolve to integrate spirits in AI, however, we would have to achieve wholeness between the body and the spirit (machine and spirit), therefore the Transdisciplinary AI systems architecture must be designed respecting this rule (the expert system integrated as an integral part of the body housing the spirit and soul in the AI systems architecture). For this (and like in the case of the cognitive development of infants and toddlers) simulation of the environment in real-time would have to be accorded great concern. Babies do this naturally in their learning and maturation process when they recognize parents and their voices (as well as their own names), follow objects with their eyes and recognize people at a distance as they move, look at objects for several seconds,

pick-up things (depending on their advance in months and years), show interest in copying simple chores like sweeping or wiping the table or points to show something of interest. Using this approach, the suitable spirit and soul can be integrated as a second algorithmic function of what constitutes the knowledge base and expert knowledge (the suitability factor) elucidated from results of the global consilience paradigm. This data would be recalled by an inference engine mimicking human-like functions of feelings, rationality and consciousness. The similar approach deals with a method configured to identify correlated temporal patterns and attribute casualty and agency using artificial neural networks (Kadin, 2021). The Kadin approach has huge prospects for integrating spirits and souls on Transdisciplinary AI. In Kadin's approach, the machine is configured to construct a virtual reality environment of agents and objects based on sensor inputs, to create coherent narratives and select future actions for pursuing the goals of the AI system. This approach shows so much hope especially because much of the delivery of what we consider as consciousness stems from our ability to apply enhanced decision-making.

The author disagrees with the choice of utilizing sensors (even when considered smart or 5th generation sensors) as an overwhelming part of the in situ intelligence observational and sensing input in the Kadin system. Although this is smart in mimicking the systems architecture to the human brain which receives signals from our sensing organs and processes which store and send responses to different segments of the human body, in other words revealing an inactive brain which cannot act intelligently until there is an input to it, the accuracy of sensors which act as controllers can be affected by the influence of humidity, temperature and many other environmental conditions. Because of the associated systems which would be interactive and meant to work on the Transdisciplinary AI, the choice of sensors that may be required to measure physical conditions of the external world and compute these signals whilst communicating with other devices through wired or wireless networks may be affected by interference from other electronic devices resulting to incorrect readings or conclusions (conclusions because we are considering a system that mimics or is meant to mimic human decisions in real-life environments).

When considering how devastating incorrect readings in the inference engine of say a Transdisciplinary AI-humanoid soldier on a surgical combat mission where unarmed civilians are mixed with friendly humanoid and human soldiers, an inference error resulting from such incorrect readings may prove fatal, and have the humanoid soldier killing unarmed civilians or even destroying friendly forces or itself. The systems architecture therefore that has an overwhelming input as sensors as seen in the Kadin system (a generalized systems case in the design of robots) must have to be reconfigured and replaced with different agents that would be free from the technical, input differential lapses associated with sensors. Though to some extent such intelligent system is impossible today without sensors because of their ability to relay fast data processing and communication with center stations, if we envisage high human functionality in machines and integrating epistemologies and consciousness and spirits and souls on them, then we must have to evolve and device more sophisticated and safer sensing input systems for this because the system is expected to interface with a remodeled sequence of knowledge, truth, belief and virtue, characteristic elements of epistemology. These epistemological elements cannot be simply represented by using sensors. The idea is to reduce sensor sensing and increase intelligent perception sensing. Research in this area should seek better solutions which would eliminate these semiconductor complexities. Smart wireless sensor networks (WSN) and motion detection sensors which detect the physical movement motion of an object in a specified area and convert the signal to an electrical signal and even proximity sensors that can detect presence or absence of an object or its property without direct contact with that object are few potentials where research in this area can see us developing what would act as better sensing for the input architecture of the new AI which would house spirits and souls.

5 Prospects of Transdisciplinary AI

The integration of suitable feelings, consciousness, spirits and souls on AI would have resounding benefits to humanity. A typical example which is being investigated by the author is in the area of utilizing transdisciplinary AI for mediating in conflicts in human society. By this it is not intended that the

transdisciplinary AI system would think for humans or carry-out conscious mediation.

As a beneficial strategy, transdisciplinary AI can address these conflicts affecting our societies and organizations through human mediation. The approach using Transdisciplinary AI in simulating conflict before the actual conflict occurs as a cognitive persuasive methodology for positively influencing decision making expected to accompany mediation processes for both early and mature stages of inter-state conflicts. The simulation used here does not mean a mere simulation or video replay sequence (although this would be integrated), but what is meant is that using an operations research approach, obtainable variances of inflation, possible humanitarian crisis, infrastructural decay, loss of lives, etc will be made vivid as factual realities and not just digital envisions. The intelligence or what is to be achieved is captured in this narrative of the 1961 “Bay of Pigs” occurrence of the looming face-off between the states of Cuba, the Soviet Union and the United States. The Bay of Pigs enumerates the cold war military landing operation on the southwestern coast of Cuba in 1961 by the Cuban Democratic Revolutionary Front (DRF), consisting of Cuban exiles that opposed Fidel Castro’s Cuban Revolution, covertly financed and directed by the U.S. government. The operation which took place at the height of the Cold War brought the US and the Soviet Union to the nearest point of massive armed aggression which would have jeopardized, if not annihilated human existence.

With strengthened calls and the compulsion that comes along with this from the military brass of both the US and Soviet Union agreeing to the engagement of armed conflict and use of nuclear weapons, Robert Kennedy, president of the US opened a secret mediation channel with the Soviet leader Nikita Khrushchev with the aim of having a different perspective on the conflict brewing. Kennedy’s strategic methodology was simple, to *simulate* (as a transdisciplinary approach to appraising the conflict with Khrushchev) the possible outcomes of such war to both countries and humanity. That vivid *simulation* of the aftermath or *real consequences* of such conflict instructed and indeed compelled both men to call-off approvals for the armed aggression plan. That war and the possible annihilation of the human race was averted as a result of that simulation of conflict before it happened. The central feature was the utilization of the act and benefit of simulation, making real the possible outlook on conflict and allowing the human natural intermingling of the mind, heart, spirit, and soul to be judged in determining *if* and *how* such conflicts were justifiable or not. This conflicts with the presumes of diplomatic and military commonsense which presents different logic that most times are extravagant. For the human mind, when a thing is simulated and made aware, the standard result is that the heart is compelled to have a rethink. Courts apply this aspect of analytical jurisprudence during case trials.

The Transdisciplinary approach in making this possible in the mediation of inter-state conflict is in the application of AI in simulating possible outcomes of conflict. The idea is not to produce a movie-clip narrative but to present an easy-to-grasp motion and fact imagery of a structured method of demonstrating possible humanitarian, macroeconomic, socio-psychological, military and diplomatic losses and consequences that would emanate from the conflict, using a standpoint of available socio-economic, cultural, political and epistemological realities tenable at every point in time. A second most vivid plan is to overcome biases attributed to inter-state mediation where the citizens of the nations are exempted from having a direct “say” in matters and boundary judgments related to the subject of the conflict and through this, determining the outcome of the mediation process and decision of their country to intervene (as most times a foreign policy) in matters that would affect them. Therefore, the approach is to also create a system which would have the citizens see what the outcomes would be and cause them to also pressurize their governments to intervene intelligibly in matters which would, in the long run, affect them. Through this elimination process of the bias in mediation, an outcome made-up of both agents of state (the diplomats and military personnel) and citizens (now seen as co-mediators) with informed decision is realized.

If we can use AI to simulate conflict before it happens (even broadening it while it goes on), in a vivid manner that looks real and tries the hearts of men and women, boys and girls (as a transdisciplinary outlook of the in-between third), then mediation can become so potent that global conflict can be considerably avoided and a better resolve created for realistic multilateral involvement in conflict. It brings to mind again how Kennedy and Khrushchev *simulated* the scale of possible conflict and consequence in the Bay of Pigs, and concluding if there was any need to go to war, eradicating every modicum of a Master-Slave

Psychology Syndrome contention. The resolve of both leaders was as a result of their ability to *make vivid* the consequences of possible action. Transdisciplinary AI can be used to simulate this kind of awareness and use it as a potent tool in diplomatic mediation in the early stages of Inter-State conflict and even during blown out Inter-State conflicts. The difference of the AI - Mediation approach to using a simple TV sequence narrative for instance is that it will receive realistic features from real-world scenarios and compute it in a manner more extensive than the human mind can project and present a visual content which would *dramatize* even more than the human mind can do. In that way, the prospects of *false hope* but *facts* will be presented as a *beyond reasonable doubt realism* on what is to take place. The inference pattern of the human mind is limited in various ways. One of such is the inability to present its extensive inference in visual form for secondary, critical appraisal. Any technique developed to present human inference in visual form for secondary, critical appraisal (bringing to the fore, eliminated clusters of boundary judgments) grants better understanding to the human mind on the critical nature of the subject or object in question. This is one of the major aims of the Transdisciplinary AI - Mediation approach. The foundation of the science behind the work here is predicated on the Transdisciplinary Systems Engineering approach of the Master-Slave Psychology Syndrome (Idejiora-Kalu, 2019, 2020, 2021) a systems realism which explains the imbalance in relations between two aware elements which could be individuals or even nation-states, for instance between post-colonial states and their former colonial powers and the use of Transdisciplinary systems engineering in understanding disorders in their relations, connected complexities in these relations, understanding institutional disorders and devising ways of using technology to untie these complexities.

The utilization of Transdisciplinary AI in mediating in human conflict has huge prospects but there are many questions:

- Can we make vivid the aftermath of a state conflict before it takes place? Can we also do this in the case of an ongoing conflict?
- How can this vivid simulation of the aftermath of an inter-state conflict be applied in compelling the mind of mediators (diplomats, citizens) to rethink peace? How is this cognitive interaction tenable through the use of technology and how does this report as a third in between of Transdisciplinarity? Can technological singularity, more so AI singularity be positive here?
- International mediation is biased in that it is a mediation between appointed or designated state representatives (diplomats and most times observer military brass). The end effect of conflict is mostly felt (not by diplomats who carry diplomatic immunity) but by citizens and the venerable amongst them namely women, children, the aged and sick. Is it possible to bring the views of this critical mass of the public into the mediation loop by sharing this simulation effect of the aftermath of a conflict and compel a generalized and more informed decision as pertains to the direction the conflict should take if at all the conflict should be allowed to take place?
- Can this realization of a Transdisciplinary application of AI in mediation on conflict in civil society bring back some lost naturalnesses such as the *global village* and use of this basis for bringing back rationality, coexistence and intervention for other methods of conflict outside human cases, such as ecological, space and epistemological conflicts?

6 Recommendations

If we envisage a peaceful world then we must accompany the development of our technology. AI and robotics are things created by humans for the good of human society (Sorondo, 2019). We must be watchful however to make sure that their activity is limited to this level, therefore, the ubiquitously strict ethical accompanying of these technologies must be a norm and must be firm. An International Transdisciplinary AI Surveillance (ITAIS) Mechanism that would regulate the type of spirits and souls to be integrated into AI must be conceived. There must be laid down fulfillment criteria for vetting these spirits and souls before they can be integrated into Transdisciplinary AI bodies (machines). This ITAIS must operate in two ways, as a policy, and as a web-based intelligent digital diagnostic system. Both policy and digital

diagnostic systems must ascertain what is considered permissible epistemology or permissible spirit of/in Transdisciplinary AI. The policy must function as an international scientific policing legal norm. The spirit and soul curled from the global consilience project should be the benchmark for creating the legal framework of this international law and the elemental basis for creating the intelligent algorithmic structure of the intelligent diagnostic system that would be used to vet these Transdisciplinary AI systems, this, in turn, will be the apportioned *high moral god* for judging the soul, to who the soul of the Transdisciplinary AI submits and owns its eternity and immortality to.

Like in the operational structure and systems logic of an intelligent diagnostic anti-virus system (an intelligent intrusion detection system-IDS), the system should be able to diagnose the spirits and souls to be integrated on Transdisciplinary AI and if found wanting, sanctioned and declared *unsuitable* for use or integration in Transdisciplinary AI. A type of Responsibility to Protect (R2P), in this case, a Spirit and Soul R2P (SSR2P) should be made to function under the ITAIS mechanism as a global enforcer of the stipulation of the ITAIS mechanism. It is upon the international consensus of the SSR2P that enforcement or the discard of the unsuitable spirit and soul of AI (even when enforced by a nation-state) would be made and the case defined as what is to be termed “suitable” AI reinforced. There should also be something like an intellectual property regime specifically created for the integration of spirits and souls on AI because indeed the spirits and souls would assume a legal personality and since they are curled from humans, their epistemologies would comprise an intellectual property frame that would have to be protected.

7 Conclusion

The functions enumerated in this paper are a blueprint to guide the integration of spirits and souls on Transdisciplinary AI which as substantiated in this paper, is unavoidable. The ITAIS mechanism and SSR2P would present a deterministic model for detecting the deceptive intent of the proponents of destructive Transdisciplinary AI who hide under the guise and cover of the openness of science (indeed the openness of transdisciplinarity) to actualize their initial cravings for control of humanity and not its good, concealing their intent of building spirits and souls that are inimical to human freedom and sustainability. The fight against this ideology is a moral fight against evil, one which stands active in making sure that the Samuel Butler fear of machines taking over our world and we (humans) fighting back to reclaim it, never happens. Our inability to do this will one day have machines declaring war against humanity and this would be disastrous.

Indeed, the fear of irrational spirits and souls on Transdisciplinary AI is the same fear of creating powerful machines that would threaten the *global village* paradigm seen as an active function in biological and social wholeness. The relatedness and connectedness of every race and function of matter in this village (humans, birds, animals, microorganisms) and the constantly interfering transcendental inertia (Idejiora-Kalu, 2023) is evidenced in the interesting fact that a clogged artery has similar mechanics of a clogged residential water supply pipe and almost the same mechanics for repairing it. The submarine is a replica of a whale and airplanes mimic sustained birds and bats in flight. All these realisms point to one golden rule, that indeed there exists an active wholeness and connectedness principle and force tenable in our global village, further explaining a truth, that we are designed to coexist with each other. Various modernist applied terms such as globalization and multilateralism have only until recently began noticing this natural social and biological connectedness principle. If we trivialize the direction Transdisciplinary AI is taken and do not strictly accompany it, this connectedness factor may see the destructive tendencies of this new form of AI negatively affecting us all.

Finally, research in the aforementioned scientific aspect of apportioning spirits and souls on AI (theoretical, engineering, and technology aspects) as posited in this paper is ongoing at the Institute of Transdisciplinary Technologies, Nalchik, Russia headed by Professor Vladimir S. Moki; the International Center for Transdisciplinary Research (CIRET), France headed by professor Florent Pasquier; the New World Institute, Brazil headed by professor Dominic Chequer and the Applied Systems Engineering Research Center (ASERC) Nigeria headed by professor Ndubuisi Idejiora-Kalu (the author). The work shares inten-

sified collaboration with very promising prospects for further research and industrial applications as well as doctoral, post-doctoral and habilitation work in the fields of systems transdisciplinarity, transdisciplinary systems engineering, transdisciplinary science and engineering, and transdisciplinary AI. The innovation into determining better cognitive algorithmic functions for bettering Transdisciplinary AI systems will busy the area of research for a very long time. These bold and intensified R&D steps need to be encouraged and supported, especially at the university level.

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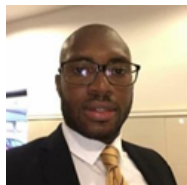
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