

ARTIFICIAL INTELLIGENCE AND HUMAN MEDIATION



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Artificial Intelligence and Human Mediation

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Table of Contents

1	Why is artificial intelligence an illusion?	1
	<i>by Hubert Landier</i>	
1.1	Introduction	1
1.2	Human Intelligence and Machine Operation	2
1.3	Intelligence Cannot be Separated from Emotion	3
1.4	Lack of Creativity	4
1.5	Lack of Opportunity for Deliberation	5
1.6	The Oaks in My Forest are Smarter Than the Machines in Your Offices	6
2	Artificial Intelligence and the Transdisciplinary Human Mediation of HPTD-M	9
	<i>by Leonardo da Silva Guimarães Martins da Costa</i>	
2.1	Introduction	10
2.2	ChatGPT and Technoscience	11
2.3	HPTD-M Framework: Analytical and Synthetic Models	13
2.4	MI Theory compared to HPTD-M in ChatGPT	17
2.5	Efficiency vs. Effectiveness: AI may be a Consultant But Not a Decision Maker	19
2.6	Adequate Use of AI: Example of Plato’s Four Virtues	20
2.7	The HPTD-M Mediating Manager vs. AI	22
2.8	Psychosomatics and the Shadow of Emotional Intelligence	23
2.9	Beyond AI’s Scope: Shadow Levels, Soft Skills, and Empirical Intelligence	26
2.10	No Consciousness Awakening in AI	28
2.11	Conclusion	31
3	Symbiotic Wisdom: Weaving the Fabric of the Future	37
	<i>by Peter J. Whitehouse</i>	
4	Future Intelligences: Human and/or Artificial? A transdisciplinary perspective	43
	<i>by Mirella Tarmure Vadean</i>	
4.1	Introduction	43
4.2	Roots of Intelligence	44
4.3	Intelligence as a Principle	46
4.4	Intelligence as Harmony	47
4.5	Intelligence on two Levels of Reality	47
4.6	Artificial intelligence	48
4.7	A Versatile Epistemological Framework	49

4.8	AI Unveiling: Humans in Disharmony (Chaos)	49
4.9	AI Unveiling: Governed Humans	50
4.10	AI Unveiling: Posthuman at a Crossroads	53
4.11	AI Unveiling: Human Mediators, <i>in praesentia</i>	55
4.12	Conclusion	55
5	Transdisciplinarity and Artificial Intelligence in the Service of Sustainable Development of Society	
	<i>by Vladimir Mokiý</i>	61
5.1	Introduction	61
5.2	Transdisciplinarity and Sustainable Development	62
5.3	Artificial Intelligence and Sustainable Development	62
5.4	"Grey" Zones on the Planet	63
5.5	Conclusion	65
6	Art, AI, TD, and the Human Comedy: Advocacy for the Self-Learning Genius who Knows Love, Laughter, Imitation, and Care	
	<i>by Pascale Maestu</i>	67
6.1	Introduction	67
6.2	Methodology and Problematic	70
6.3	Discussion	71
6.3.1	The Writing of "Laughter's Childhood"	74
6.3.2	Inspired Writing by the Human Comedy	76
6.3.3	Intentional Writing: " <i>Pour de vrai mais pour de semblant</i> "	78
6.4	Without Concluding	80
7	Epistemology in AI (Transdisciplinary AI)	
	<i>by Ndubuisi Idejiora-Kalu</i>	87
7.1	Introduction	88
7.2	Consubstantiality of body and soul, mind-body, Dualism Principle of the Human Being and AI, and Biomimetics	90
7.3	Methodology	92
7.4	The Engineering of Spirits in AI (Algorithmic Interface)	97
7.5	Prospects of Transdisciplinary AI	99
7.6	Recommendations	101
7.7	Conclusion	101
7.8	Acknowledgements	102
8	Rethinking Intelligence Beyond the Anthropic: Pervasive Intelligence, Entangled Cognition and the Logic of the Included Middle	
	<i>by Renata Morais</i>	105
8.1	Introduction	105
8.2	Entangled Cognition and Cyborg Intelligence	106
8.3	Multispecies Intelligence in Cognitive Ecologies	108
8.4	Autopoietic Intelligence as a Tapestry of Cognition	109
8.5	The Intelligence of the Hidden Third: Beyond Duality in Cognition	111

8.6	Concluding Thoughts	111
9	A New Spiritual Dawn for The AI Era from the Nation of Harmony	
	<i>by Margaret Hiro Kimishima</i>	117
9.1	Introduction	117
9.2	Fundamental Identity Lost in Collectivism	118
9.3	Uniqueness Suppressed in a Collectivist Form	121
9.4	Conclusion	121
10	Rhythms of Technology and Consciousness: A study within the Field of Environmental Education	
	<i>by Samuel Lopes Pinheiro</i>	129
10.1	Introduction	130
10.2	Why Studying the Rhythm in the Relation Between Consciousness and Technology for the Environmental Education Field?	130
10.3	Concepts of Rhythm – First Impulse	131
10.4	Consciousness of Rhythm and Rhythm of Consciousness – Second Impulse	132
10.5	Artificial Intelligence in the Breaking of Rhythms	132
10.6	Environmental Education in the Crossroads of These Rhythms – Third Impulse	133
10.7	Conclusions	135
11	Artificial Intelligence and Our Secret Mind: Human Mediation in Grey Zones	
	<i>by Mariana Thieriot Loisel</i>	137
11.1	Introduction	137
11.2	The Grey Zone	138
11.3	Human Energy Measurement Table	138
11.4	The Fifth Element	140
11.5	Transdisciplinary Team Suggestions	142
11.6	Conclusion	144
12	AI and the Dual Legacies of Conquest and Unity: A New Leadership Paradigm	
	<i>by Wafaa Adyadou</i>	147
12.1	Introduction	147
12.1.1	Conquest and Unity: Historical Paradigms in Leadership	147
12.1.2	AI as a Conqueror: Replicating Destructive Patterns	148
12.1.3	AI as a Conqueror: Replicating Destructive Patterns	148
12.2	The Role of AI in Shaping Leadership Paradigms	148
12.2.1	The Power of Artificial Intelligence in Facilitating Peace.	148
12.2.2	The Churchillian Approach: Leadership through Art and War	149
12.2.3	Insights from Rumi on Leadership and Harmony	149
12.3	The Importance of Ethical Considerations in AI Development	149
12.3.1	Artificial Intelligence: A Tool for Destruction or Unity?	149
12.3.2	The Ethical Responsibility in AI Development	150
12.3.3	AI, Poetry, and the Aesthetics of Peace	150
12.4	Conclusion	150

Preface

Opportunities in AI & Human Ethical Mediation

Dr. Paul Shrivastava, Professor, The Pennsylvania State University,
Co-President, The Club of Rome

The present volume emerged from the online International Symposium Artificial Intelligence and Human Mediation, held on November 21-22, 2023, promoted by the International Center for Transdisciplinary Research and Studies (CIRET). I participated in discussions with co-authors in this volume for several months, about the many and diverse approaches to AI-Human interventions. Those discussions were exciting and revealing, and at times bewildering, because each one of us came from different disciplinary background and different life experiences. I thank the organizers Florent Pasquier, Mariana Thieriot, and Leonardo da Silva Guimaraes Martins da Costa, for guiding us through these months of discussions and organizing the symposium, resulting in this volume of papers. My thanks also to all the paper authors for their diligent efforts and providing us their innovative perspectives on AI-Human mediation.

As preface to the deep discussions at the symposium, I offer a few messages that may help to contextualize how we can approach the development of AI. My first observation is that the 'AI ecosystem' is still forming and unfolding and needs to be continually understood in its evolving fullness. A metaphorical summary of its incompleteness is offered by the old Indian fable of the Six Blind Men and the Elephant. The elephant when encountered by the blind men for the first time, is perceived to be something different depending on which part of the elephant the men touch. Each blind man touches a different part, such as the trunk, the tail, the ear, the leg, and so on. Based on their limited sensory experience, each blind man forms a different interpretation of what an elephant is like. This story illustrates the concept of subjective truth and the limitations of individual perspectives. AI is like the elephant and us researchers are touching different parts of it, perceiving it to be something different from the total AI Ecosystem.

Many conversations about AI present a totalized & oppositional view of AI and Humans. This AI versus humans' mentality misses the point that different forms of AI are already aids to humans in many spheres of life from healthcare, to banking, to security/safety, education, etc. AI is still at a tool level. Tools can be helpful if we know how to use them. Tools can also hurt us, for example, if we hit the hammer on our hand instead of a nail. There are also possibilities of errors and accidents in the use of tools. All tools come with risks. Understanding and managing risks is an essential element of creating AI for humans. Totalizing the AI tool into an oppositional autonomous entity capable of competing with or harming humans, may be a reasonable precautionary approach. Especially because humans are not very good at risk management, as exemplified by our handling of nuclear, chemical, and genetic technologies. But such totalization may also prompt premature closure of AI potential. So, we need to get the framing of AI right.

There is also a certain cultural fear of AI and not enough is understood about risk analysis and management of AI yet. Some proposals are being developed such as the Whitehouse Executive Order and proposals from the UK Summit on AI in Dec 2023. We need a comprehensive risk-management system to accompany AI development. Hopefully, this event will give some clarity in this matter.

The AI researchers assume that we are a "learning species" living in a "learning society" which pays attention to the needs of the marginalized, the forgotten, and the vulnerable, even if we do it imperfectly. Yes, it is important to have institutional and organizational transformations.

Our most core and preciously protected economic institutions need urgent repair and change. The global economic inequality with the top 1% of wealthy people controlling most of the world's wealth, is scandalous. AI is being disproportionately funded by these ultra-wealthy classes and will benefit them the most if we do not make institutional changes. But what transformations are possible here? How do we change our capitalist systems for an emergent post-capitalist era of an economy of care? What can universities do? All these questions are well worth contemplating further, and some were addressed in the papers presented at the symposium.

In the conversation of humans and AI, the conscious and unconscious are often depicted as a duality, and sometimes mutually exclusive. But we use and need both the conscious and unconscious parts to be fully human. One completes the other, even though the mechanisms for that to happen are not fully understood. I see more porosity between the two, more exchange and engagement, allowing them to seep into each other seamlessly and influencing each other. I think AI can aid memory to some degree, but it cannot help resolve the intersectional gaps between the conscious and unconscious, nor help reach deep recesses of the unconscious.

The AI Ecosystem

AI is not a tool, not a technique, not a technology, not a computer, or a robot, it is a complex socio-technical ecosystem. It pervades human activities implicating data, cognitive mapping, analysis, models, applications, actions, measurement, feedback, and other processes of human decision-making. Implicated are new forms of hardware, firmware, software, and application interfaces. The complex technology landscape of AI is still emerging and forming at a very rapid speed – we don't fully understand it, and no one fully understands it, as is typical of many complex socio-technical systems. As Jacobides et al explain in Figure 1 the AI ecosystem is fragmented into many parts with deep expertise in each part.

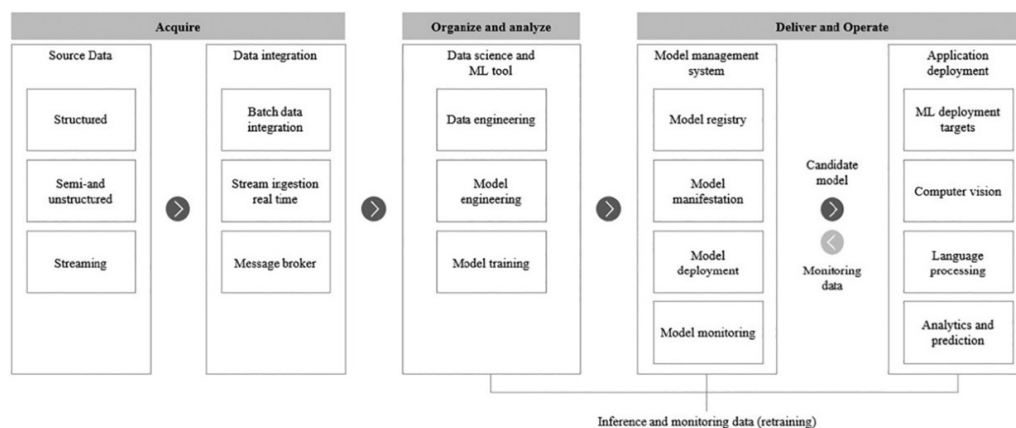


Figure 1: Adapted from Jacobides, et al 2021.

More importantly, the scientific knowledge base underlying AI is expanding exponentially each year, as the following graph from Stanford AI Labs 2023 AI Index Report illustrates (see Figure 2).

This is more rapid accumulation of knowledge than any human can assimilate – maybe this is the source of the fear of AI – no human can read 496,000 publications in a year – but an AI can.

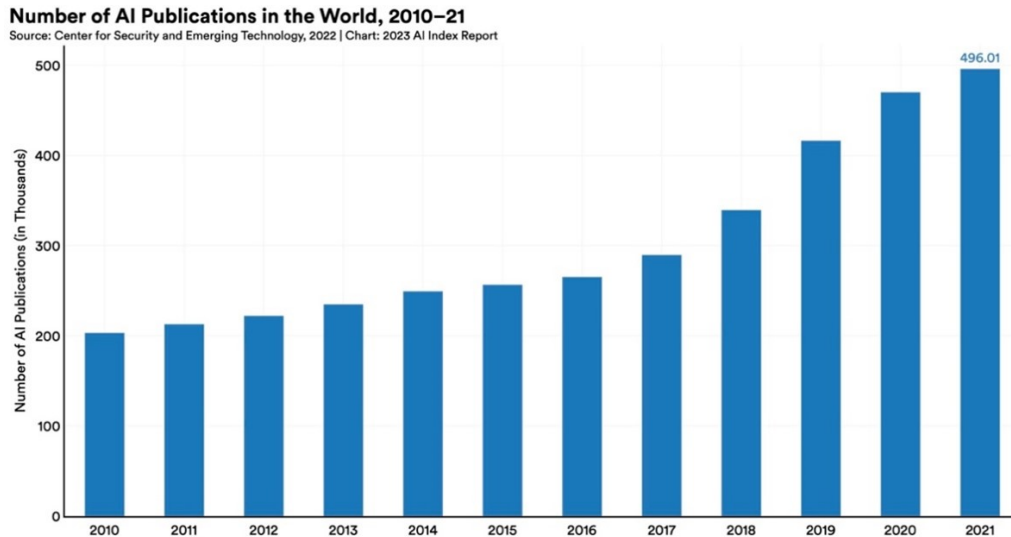


Figure 2: AI is expanding exponentially each year.

The global private and public investment in AI start-ups are ramping up rapidly as follows: US private investments in the past four years are,

- 2020 - \$ 22.5 billion
- 2021 - \$ 42.75 billion
- 2022 - \$ 27 billion
- 2023 (Aug) - \$ 23 billion

China invested \$12.3 billion in 2020, \$5.3 billion in 2022. Goldman Sachs Research. Natural language processing could drive a 7% (almost \$7 trillion) increase in global GDP and lift productivity growth by 1.5% over 10 years. ChatGPT, a single AI program, had over 100 million weekly active users as of Nov 7, 2023.

A complex technology landscape of AI is now emerging – I don't fully understand it, you don't fully understand it, no one fully understands it, - as is typical of many complex socio-technical systems. It is fragmented into many parts with deep expertise in each part. The technological landscape in the productization of AI is now pervading many sectors of life such as Robotic Personal Assistants, Real-time Universal Translation, Autonomous Surgery, Neuromorphic Computing, Autonomous Weapons and Industrial Systems, Machine and Deep Learning, Neural Networks, Pattern Recognition, Natural Language Processing, Cognitive Cyber Security, Cloud Robotics, Thought Controlled Gaming, Real-time Emotion Analytics, Chatbots, and Virtual Companions, among many others.

Ethical Intervention Opportunities in the AI Value Chain

AI is likely to be a pervasive technology that will have applications virtually in every sector of life. It is a mechanized form of intelligent behavior allowing machines to replicate some types of data acquisition, processing and analysis. This is consequential because it will allow machines to

Intervention Opportunities in the AI Value Chain

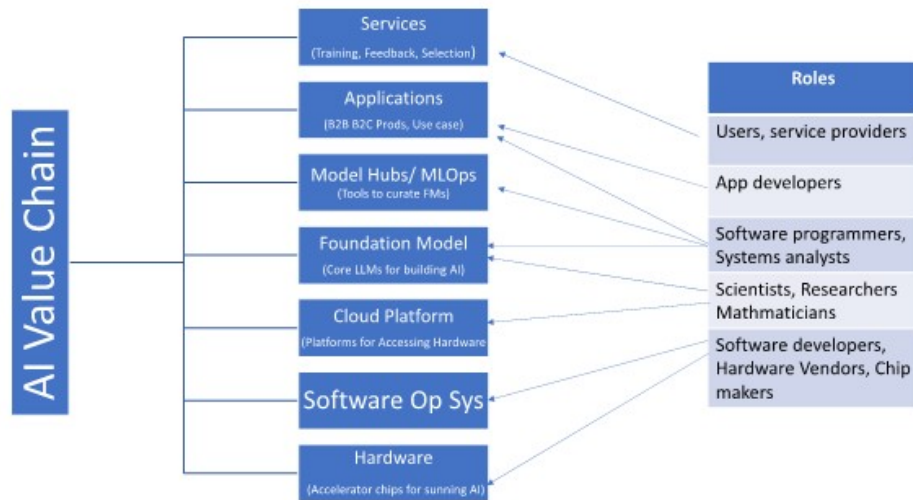


Figure 3: AI ecosystem value chain depicted.

do some tasks that have traditionally required human intelligence and decision making. Machines can act rapidly and can be replicated endlessly. The business models underlying applications are very lucrative and hence there is an expectation that these technologies will expand rapidly.

One major concern with the development of AI is the necessity of incorporating ethics and standards such that AI will not harm human interests. As early as 1950 Isaac Asimov a science fiction writer articulated the three laws Robotics in his book *I, Robot*.

- The First Law: A robot may not injure a human being or, through inaction, allow a human being to come to harm.
- The Second Law: A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
- The Third Law: A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

Academics and governments have doubted the notion that AI can itself be held accountable. They have clarified that AIs and robots as synthetic ‘persons’ are the responsibility either of their manufacturers, or of their owners/operators (Boden, et al. 2017). The ethical concerns with AI have also grown exponentially to include issues of bias, labor market impacts, harm to humans, transparency, social justice, employment fairness, data privacy, beneficence, freedom and autonomy, trust, sustainability, dignity, solidarity and robot rights among many others (Jobin, et al 2020). Ethical interventions into the AI ecosystem can occur at many steps of the value chain depicted in Figure 3.

The US President’s Executive Order “Safe, Secure, and Trustworthy Development & Use of Artificial Intelligence” Oct 30, 2023 provides eight principles and priorities for ethical development of AI in the US. These include,

- Safety and security, through robust, reliable, repeatable, and standardized evaluations of AI policies, institutions, and Testing/monitoring post-deployment performance, effective labeling and content provenance
- Invest in AI education, training, development, research, and capacity, tackle novel intellectual property (IP) and promoting fair, open, competitive market
- Worker protection by adapting job training and education, access for diverse workforce and avoiding harmful work practices and surveillance, and displacement
- Regulation for equity and civil rights using Risk Assessment Framework, and robust technical evaluations, oversight, community engagement.
- Enforce consumer protection, enact safeguards against fraud, bias, discrimination, prevent privacy infringements & other harms.
- Protect privacy, civil liberties – lawful & secure collection, use, and retention of data
- Hire and train AI savvy Federal workers
- Globally common approaches - engage international allies in developing a framework to manage AI's risks, unlock AI's potential for good.

Bletchley Declaration & AI Safety Summit held in the UK on Nov 1 2023 called for “the protection of human rights, transparency and explainability, fairness, accountability, regulation, safety, appropriate human oversight, ethics, bias mitigation, privacy and data protection”. The European Union wants to pass regulations on these safety measures. Meanwhile,

Group of 7 nations are set to develop a code of conduct for A.I. companies, and China introduced its own regulatory framework in November 2023. Some A.I. executives want a global governance regime modeled on the IPCC the Intergovernmental Panel on Climate Change. Researchers looking to making AI more responsive to human needs may consider the International Science Council's AI Framework that focuses on the Wellbeing of individuals or self, society and social life, and civic life, implications for trade and economy, environmental consequences, geo-strategic and geo-political impacts, and Technological (system characteristics, design and use) elements.

With all these ethical and regulatory interventions in progress, transdisciplinary researchers have many opportunities to engage AI-Human mediations at many levels. They must choose the avenue for engagement based on their own skills and access to the AI ecosystem. Many papers in this symposium explain approaches for making transdisciplinary AI-Human mediations. In the very noisy and exponentially growing ecosystem it is difficult to have AI situations to stand still for long enough to do conventional data collection and analysis. Researchers need to be agile enough to hop on to a moving AI train, and innovate new methods of engagement. I hope this volume will serve as an impetus for innovation to make AI beneficial for all humans.

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Acknowledgments

We would like to express our gratitude to the many indispensable actors who have made this bold and innovative project possible, where artificial intelligence (AI) is in dialogue with and evaluated by human consciousness: Our prestigious publisher Prof. Dr. Atila Ertas for inviting us to be guest editors for this ATLAS Book, our inspiring CIRET President Dr. HDR Florent Pasquier, as well as our remarkable guests of honor, Prof. Dr. Paul Srivastava, and Prof. Dr. d'Etat Hubert Landier. We would also like to thank all the authors, members, and friends of CIRET for their brilliant and generous contributions. Finally, to the reader who will discover this book, friend researcher, professor, student, or AI project thinker, who will take all the measures of the important stakes that weigh on our shoulders in the field of the development of AI. It is an interesting and unavoidable development, but one that requires attention and vigilance, because like all human creations, it remains a double-edged sword. We are intelligent enough to understand the transdisciplinary Third Included logic by ascertaining the complexity of human phenomena is more sophisticated than binary good and evil, right and wrong, true or false. Not AI but consciousness development is the light that can guide us through our personal and collective shadows, which are the repressed or oblivious parts uncomfortable to deal with in our journey.



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Introduction

Prof. Dr. HDR Florent Pasquier, President of CIRET and Professor at Sorbonne

CIRET has set up a research group on artificial intelligence to emphasize the need for human ethical mediation in our digital and binary logic era. The Symposium Artificial Intelligence and Human Mediation, of November 21-22, 2023, promoted by CIRET, is the first result we offer to the audience of the work of this group, kindly published by the ATLAS in this book. CIRET is a French NGO of which I am president, an institution involved in international transdisciplinary studies and research: <<https://ciret-transdisciplinarity.org/>>. The Symposium first part, the November 21 video of 2h30min is available at <<https://vimeo.com/887211540>>. The second part of the November 22 video of 2h30min is available at <<https://vimeo.com/888289641>>. The organizers of the event with me were Dr. Mariana Thieriot Loisel, member of CIRET, and Eng. Leonardo da Silva Guimarães Martins da Costa, member of CIRET. Atila Ertas, the editor of the US journal ATLAS-TJES, participated in the Panel on November 22.

After the Symposium, it was created by CIRET a group for the discussion of AI and transdisciplinarity, envisaging concrete problem solving in organizations and civil society, which demands time, collective thinking, and emotional welcoming. In fact, troubleshooting will demand authenticity in information sharing, which requires a transdisciplinary mediation with empiricism, emotional intelligence, rationality, and intuition. Moreover, in December 7, 2023, CIRET created the research group AI, Economy, and Transdisciplinarity to highlight the need for ethical dialogue in the age of digital technology and binary logic. Francisco Varela pointed out that cognition can take place in the field of the computer, without recourse to consciousness. Yet human decision-making cannot be the result of cognition alone and requires interaction between cognition and consciousness. The rationalist and reductionist models borrowed from the hard sciences have shown a mechanistic vision of AI, which cannot be applied to complex human phenomena in a grey zone. In this grey zone of mediation, conciliation, and repair, we need the dialectical process between consciousness and cognition. In this context, the proposal of mediating leaders and managers appears to be a possible ethical alternative for demonstrating that consciousness is beyond the efficient binary logic of the computer (doing things right). Humans must remain responsible for the effective decision-making process (doing the right thing): This will help us to solve problems in theory and practice. We therefore need an emerging global wisdom, as a result of our common research about AI, Economy, and Transdisciplinarity, that appeals to human consciousness at all levels of reality.

Eleven speakers in the Symposium produced an article: Each one has a chapter on this book, as follows:

1. Prof. Dr. Hubert Landier (France): Why is artificial intelligence an illusion?
2. Eng. Leonardo da Silva Guimarães Martins da Costa (Brazil): Artificial Intelligence through the transdisciplinary HPTD-M Theory
3. Prof. Dr. Peter J Whitehouse (Canada-USA): Symbiotic Wisdom: weaving the fabric of the future
4. Prof. Dr. Mirella Tarmure Vadean (Canada): Future intelligences: human and/or artificial?
5. M.Sc. Pascale Maestu (France): Art, Artificial Intelligence and the Human Comedy.
6. Prof. Dr. Vladimir Mokiý (Russia): Transdisciplinarity and Artificial Intelligence in the service of sustainable development of society

7. Prof. Dr. Ndubuisi Idejiora-Kalu (Nigeria): Epistemology in AI (Transdisciplinary AI)
8. Prof. Dr. Renata Morais (Brazil): Pervasive intelligence: Beyond the dichotomy of human vs. artificial
9. MA Margaret Hiro Kimishima (Japan): A new spiritual dawn from the nation of harmony
10. Prof. Dr. Samuel Lopes Pinheiro (Brazil): Technology, rhythm, and consciousness: reflections from Environmental Education
11. Wafaa Adyadou (Morocco): La paix

Dr. Mariana Thieriot Loisel produced the article of chapter 12, as organizer and mediator of the event: *Artificial intelligence and our secret mind: Human mediation in grey zones*.

The Preface of this Book was by Prof. Dr. Paul Shrivastava, Professor, The Pennsylvania State University, & Co-President, The Club of Rome, who was the introductory speaker in the event: *Opportunities in AI & Human Ethical Mediation*.

The Postface was by Prof. Dr. Hubert Landier, also the author of the article in the chapter 1: *One rose plus one rose does not equal two roses*.

Finally, the conclusion was by Eng. Leonardo da Silva Guimarães Martins da Costa & Dr. Mariana Thieriot Loisel.

CHAPTER **1**

Why is artificial intelligence an illusion?

Hubert Landier

Abstract

Why is artificial intelligence an illusion?

What is commonly called “artificial intelligence” probably represents the most characteristic avatar of what our techno-industrial civilization has become. It has come to focus reflection on what the future of humanity could be. It is therefore important to show how it constitutes a deadly illusion.

The four illusions that underpin “artificial intelligence”

- 1 - The reduction of intelligence to the operation of a machine.
- 2 - The negation of the autonomy of intelligence in relation to the emotion aroused by reality.
- 3 - Mechanical confinement in the already there and lack of openness and creativity.
- 4 - The absence of possibilities for human deliberation and mediation.

The Philosophical Foundation of AI

- 1 - A manifestation of German idealism

Reason is the certainty of consciousness of being all reality. (. . .). It takes universal possession of this property of which it is assured. (Hegel, Phenomenology of Spirit, ch. V)

- 2 - The need to return to the “forest”

The forest ... becomes a 'green space', for the man finally unmasked as a technician, that is to say, a man who envisages the being a priori from the reduced horizon of utilities... There is nothing left but stocks, reserves, and funds. (...). The being is seen as fundamentally and exclusively available - available for consumption in the global calculation (Heidegger, Thor Seminars).

Keywords: Grey, fuzzy, blind zones, Included middle, transdisciplinary dialogue, AI-Learning society, Being, human resilience, collective unconscious, unintentional attitudes.

1.1 Introduction

The development of new disciplines is often accompanied by recourse to analogies with knowledge that is already well established. For example, economics was largely developed by analogy with Newtonian mechanical physics. Computer science, for its part, has used an analogy with human intelligence. Today we talk about "artificial intelligence", but it is quite natural to refer to a computer's information storage capacity as "memory". As we emerge into increasingly dependent

relationships with AI, it is critical that we understand the contributions humans can make to these relationships. How can we co-create the noosphere? Symbiotic wisdom is a concept composed of both old and new ideas. Wisdom is an ancient concept that implies integration of rationality with emotionality, thought and values (Whitehouse, Ballenger & Katz, 2001). It emerges historically and culturally in relationship to world views, including religious and spiritual traditions. Wisdom has been a relatively neglected concept in psychology and the social sciences. It is often associated with individuals, rather than a product of collective activity. Wisdom is also often associated with a recognition of limits. Little attention has been paid to wisdom and AI.

The analogy can be misleading. Economic science continues to struggle within a paradigm that excludes the laws of thermodynamics and therefore prevents it from understanding a number of realities that has helped to bring about. In the same way, it seems dangerous to attribute to the organization of computer programs, which are simple tools at the service of human intelligence, characteristics that are of the order of the living. A computer cannot smile. How does symbiotic wisdom manifest itself and how do humans contribute to its creation? Artificial intelligence is based on large data sets created by humans. Although rationally and quantitatively driven to a degree, humans also have another critical essential attribute- they are meaning-seeking storytellers. Qualitative and subjective processes drive this narrative intelligence. Humans often understand complex issues by creating a story about the interacting components. Oral and written narrative processes have different strengths and weakness in educating people and transforming culture. Stories, like cognition itself, are embodied. Your brain depends on the body to allow it to function; hormones and other somatic chemistries influence thinking and feelings. Dance and music can enhance the embodiment of narrative.

It is therefore fair to ask whether the development of artificial intelligence, rather than the machine's ability to approximate human behavior, is not actually leading to a reduction of human intelligence to what the machine is capable of doing, in accordance to binary logic. Added to this is the fact that it consumes energy and rare metals. In terms of the major balances that allow human existence on earth to continue, it is therefore already inevitably doomed, as is the way of life and production of which it is the most successful expression.

1.2 Human Intelligence and Machine Operation

The computer processes information on the basis of data and instructions communicated to it by a human being. This data is necessarily expressed in numbers and is processed in a binary way: yes or no, black or white. This excludes shades of grey. But the instructions can predict which side to put a given shade of grey on, depending on the new instructions that will be added to the computer's database. This is what computer scientists call a learning process, although it has little to do with human learning. But this does not mean that the machine is capable of discernment. It will simply record what it has been told is incompatible with the desired result. However, this incompatibility is indicated to it by the operator or by a program designed for this purpose by the operator. This is not intelligence: It is an ability to recognize a signal.

During my military service, which was compulsory in France at the time, my job consisted, in between writing my doctoral thesis, of calculating budget forecasts for the Air Force. I had a very powerful calculator for the time, but it didn't place the decimal point. As a result, I often presented very accurate forecasts to the National Assembly committee, but the decimal point was wrong. No member of Parliament has ever been surprised by this. Closer to home, a specialist in digital algorithms, Aurélie Jean, recounts the case of a facial recognition system that was unable

to recognize a person because their skin color was black and this had not been included in the program.

The first automatic translation software produced pleasant results: "L'esprit est prompt mais la chair est faible" ("The spirit is quick but the flesh is weak"), when translated into English and from English back into French, gave "l'alcool est fort mais la viande est molle" ("Alcohol is strong but meat is soft"). This was the result of what Aurélie Jean calls an algorithmic bias, and the computer was in no way responsible. The computer is, she says, "stupid and profoundly docile. After all, what does it do? It carries out, without the slightest critical analysis, the tasks that we humans, by writing lines of code, order it to perform. It obeys without thinking. What's more, it only understands binary language" [2]. The intelligence that is attributed to it is simply the expression of a form of anthropomorphism. Computers are not intelligent: they operate on the basis of physics, not biology. It has no purpose of its own; its purpose is reduced to that transmitted to it by the human operator.

However, this anthropomorphism is extremely dangerous. It often leads us to entrust the final decision to a machine, in the belief that it will be able to demonstrate intelligence, which is not the case. The sequence of algorithms runs the risk of leading to a stupid or catastrophic conclusion that has nothing to do with reality. Above all, since the machine is limited by the inputs it is 'fed' with, it will not be able to demonstrate the slightest creativity. It will be incapable of "thinking outside the box" or "turning the tables". Algorithms can "teach" it to produce hours of "relaxing" music, but they cannot enable it to compose a Beethoven symphony or a Debussy prelude.

1.3 Intelligence Cannot be Separated from Emotion

There are two reasons for this. Firstly, the information it processes is extremely poor, no matter how much 'big data' it is provided with. This information is expressed in quantitative terms and has nothing to do with the perceptions that humans have of what surrounds them. Neurologists have shown how intelligence consists of processing the emotion provoked by affection in order to derive a supposedly adapted behavior [3]. This is true of all living organisms, whether amoebas or human beings. Intelligence therefore has a purpose: to preserve life. This makes all the difference with the computer, whose operations are purely mechanical and independent of any intended effect as such. If there is a purpose, it lies in the action of the operator who controls it.

Intelligence is therefore the hallmark of living organisms, be they amoebas, human beings or even plants, as has recently been demonstrated [4]. This intelligence is based on very diverse means of perception, which can be extremely nuanced. The resulting signals will connect with the data resulting from the individual's experience. They will provoke an emotion. In the absence of emotion, they are immediately forgotten, sometimes to the point of not being perceived at all. If the emotion is maintained, it leads to adapted behavior: fleeing from danger, attacking what provokes it, and welcoming what is perceived as beneficial.

The point here is that memory only retains what makes sense to the living organism. If what is presented to it does not make sense, or has ceased to make sense in the long term in terms of the purpose of the living being, which is to stay alive, the fact is quickly erased. The content of the memory is therefore constantly being reorganized as a function of this purpose. This is what differentiates it from a computer, which simply stores information regardless of its importance to it or to the operator. It will only delete data if instructed to do so.



Figure 1.1: La forêt by Mariana Thieriot

1.4 Lack of Creativity

Creativity results from the encounter between the artist's purpose and the contingencies in which it is expressed. Two public exhibitions of my dry pastel paintings have been held in the past, and this gives me the right, through experience, to offer an explanation (see Figure 1.1).

Faced with the white surface on which he intends to work, the painter is driven by a fairly precise vision of what he intends to draw. He sets to work, but it never turns out as he planned. Some figures are missed, others appear that had not been foreseen. The work progresses, always somewhere between order and disorder. There comes a point when the surface is saturated: it is no longer possible to add or subtract anything that makes sense. The two obstacles to be avoided during the creative process are, on the one hand, failing to take account of the contingencies that arise, which are always unforeseen, which then leads to the rigidity of what has already been seen (academicism or simple repetition of a 'series') and, on the other hand, losing sight of the original intention, which leads to chance; chance may be pleasant, but it is not a creative act (it is a creative act, on the other hand, to take into account a successful 'effect').

The result is a compromise between the initial vision and the resistance of the material. And it is in this way that something new is created, whether in relation to the artist's intention or in relation to previous works, whether their own or those of other artists. Creativity is therefore, to

paraphrase Jacques Monod, the meeting of chance and necessity. This has nothing to do with the *modus operandi* of the computer. Either the result is already present in the premises ($2 + 2 = 4$) and all that needs to be done is to calculate on the basis of these premises; or the result is the result of chance, i.e. a semblance of indeterminacy which is itself the result of an instruction to that effect, but then it has nothing to do with a creative act, even if the result is very successful in the eyes of the operator. Of course, an artist can use a computer as a tool. But then creativity is the result of what he wants to achieve, not of a will or judgment that is specific to the machine.

It thus moves in a deterministic and closed world, however unforeseen the results of its calculations may be. Nothing can be expected beyond the intentions of the operator. This has very serious consequences. From a scientific point of view, no paradigm shift has ever resulted from a results sheet, even if this may subsequently have led the operator to new conclusions in relation to the scientific mainstream. The paradigm shift has always been the result of an intelligent approach specific to the living world. Galileo and Newton did not have computers at their disposal. On the contrary, the computer tends to lock the operator into the paradigm that lies at the origin of the instructions he gives the machine.

The same applies, in a broader sense, to everything that concerns human existence and life in society. Basically, the computer allows us to go faster in a direction that is always the same, even if it's the wrong direction.

1.5 Lack of Opportunity for Deliberation

The computer is incapable of the slightest deliberation. Yet deliberation is the very principle of life in society [5]. Whether under the palaver tree or in a hemicycle adorned with gilded columns, the principle is the same: on the basis of a shared culture and different concerns, interests, or simply points of view, strive to find a solution that is, if not the best and most rational, at least the least bad possible for both sides. However, this solution is not the direct result of the premises but of the interaction between the participants in the deliberation. The "butterfly effect" comes into full play. And so, the results may be surprising compared to what everyone might have expected. In other words, the future is not decided. It will result from often unpredictable forks in the road. [6]

The computer is incapable of simulating the act of "being in society". This explains why it is impossible to compose or perform music using electronics alone. Take several synthesizers and put them together using a computer program; they will be incapable of tuning each other; and they will be even less capable of tuning each other if the musicians improvise. The result will at best be a soulless composition, the worst noise of no musical interest. This is why the composer Steve Reich called his best-known piece "Music for 18 musicians" and not "Music for 18 instruments". Human intervention remains essential to give the ensemble its unity.

All this said, the belief in artificial intelligence as a substitute for human intelligence, or even as a means of perfecting it to a higher level of intelligence, is an illusion, a reductionism, and an enclosure. Not that it is useless: the machine can carry out tedious operations much better than an operator left to his own devices. It can process sequences of numbers almost instantaneously. But it is incapable of producing anything that goes beyond the premises that have been imposed on it. It does not constitute the whole of living intelligence, in its unpredictable dynamic. And to imagine this is to reduce living intelligence to a series of algorithms.

But that's not all. By attaching so much importance to computing, which is always about numbers, and therefore about quantitative data, human beings come to forget that there is something

else, that the world cannot be reduced to quantifiable data. A sunset, a smile, a flower, or a poem cannot serve as data for the machine. To limit ourselves to this data is to forget everything else. It's an enclosure. This confinement undoubtedly represents the ultimate avatar of the calculating approach that has led humanity into the impasse in which it finds itself today.

1.6 The Oaks in My Forest are Smarter Than the Machines in Your Offices

"You want to know what to do, and you don't just know the world you live in. You understand that something is against you, and you don't know what. All because you've been looking around without realizing it. I bet you've never thought about the great force. The great power of animals, plants, and the earth." [7]

It is understandable that Heidegger, the last Heidegger, the one from the Thor seminars (1966, 1968, and 1969), should have taken a liking to Giono. Their critique of techno-industrial civilization is the same. Man has come to reduce the world to what is useful to him, to what is 'efficient' or 'profitable', to what can be calculated. The world, in relation to the purpose he has set himself, is reduced to a quarry and a dumping ground. Man is outside the world, and the world is reduced to what he intends to do with it. The world no longer exists for him beyond the immediate representation he makes of it. Man seeks to absorb the world. But the world is too big for him. His approach leads to undesirable and unforeseen effects. Unintended evaluations", as Mariana Thieriot calls them. [8]

It is this reductionism that Giono and Heidegger, each in their own way, denounce. The truth does not lie in an explanation, even a 'scientific' one, which is never more than an interpretation, a 'second truth'; it lies in being, as it exists as being, a formless and chaotic being, as it eludes us and always will because it is bigger than 'our narrow skulls'. And what escapes us in this way is the intelligence of life, on the edge of which our understanding stops. This intelligence of life, which animates the old Janet, lies well beyond the limited understanding of homo laborens, to whom his anger is addressed. This intelligence cannot be expressed in 'rational' formulas. It lies beyond human reason. It deals with the unnameable and cannot be described by instrumental reason. It is about the storm that rumbles and the fire that spreads, about what belongs to the realm of myth, because there is no other way to describe mystery.

That's why myth, whatever it is and however the poet sings it, is probably closer to reality in its truth than the reductive reasoning that drives the man of the techno-industrial civilization. The storm that destroys crops is true. The fire that destroys the forest and threatens the Bastides Blanches is true. And this truth is beyond anything that contemporary homo laborens can say. The being of the world contains humanity, it is not humanity that contains the world in what it believes it to be. This is why a painting by Mariana Thieriot says more about life than the Cartesian cogito claims to say.

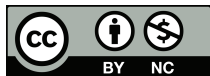
To understand this, we need to go back into the deep forest, as Giono's old Janet does, or as the author of "The Road to Speech" [9] does. Arriving at the heart of the vast forest, finding himself thrown into it, the being there (the dasein) is seized with astonishment and fear. The forest presents itself to him as a chaotic whole, and no single object stands out among the others. It's just there. Gradually, he comes to discern shadows that are at first indistinct, things that make sense to him. But his quest is not over yet. He would have to name these things, even before he could analyze them, explain them, and link them to other things that stood out against the

indistinct and mysterious background of being. Only then will he be able to bring them back to the village where, in the clearing, humanity goes about its everyday business. The intelligence of the world thus precedes reasoning and calculation, which is not concerned with the world but with the agreed representation that man makes of it, in accordance with the criteria of appreciation that prevail in the village where he is bustling among his fellow human beings.

Calculation therefore only concerns things that have already been named, and named on the basis of a chain of shared beliefs to the point where we have come to confuse them with the shadows that emerge from the forest. These beliefs represent an enclosure that leads homo laborens to forget that the world, in its being, extends to infinity, back to that mystery to which only the poet and the mystic have access, alone in the quest that he pursues at the risk of no longer being understood by the people of the village and of being considered mad there. And yet it is this poet or mystic who, in his quest deep into the forest of being, will alone be able to get close to what is worth holding to be true, however disturbing this may be for anyone who sticks to what is shared in the village, a saying that is reduced to a simulacrum of what is and to which only the fact of being shared confers the credit it is given.

And so, what the inhabitants of the technological village call "artificial intelligence" is merely a simulacrum of true intelligence, the intelligence that, deep in the forest, finds and gives a name to what is discovered there in surprise and wonder at the unnamed immensity of being. Artificial intelligence locks us into what we already have. It is the latest avatar of homo laborens in the pursuit of his purpose, which is to measure what he already knows and judges to be useful to him, without which he would not have noticed it and named it. In its unintelligence of being, as it emerges in the depths of the forest, it thus confuses the exactitude of calculation with the truth of being, as sought by the intrepid explorer who sees, is amazed and marveled, prior to any form of rationalization.

Accuracy and truth. This confusion perhaps represents the culmination of techno-industrial civilisation, the point at which it breaks away from being. Homo laborens goes round in circles, calculating incessantly, faster and faster, and faster and faster away from this unknown and mysterious world, this world to which he nevertheless belongs and without which he could not be himself. A world that he risks destroying by his very behaviour. A strange vicious circle from which only the explorers of being, the poets and mystics, can save us.



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CHAPTER **2**

Artificial Intelligence and the Transdisciplinary Human Mediation of HPTD-M

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*This paper reflects this author's opinion, not necessarily any public or private institution's view.

Abstract

This article studies the scope of Artificial Intelligence (AI) through the HPTD-M theory, i.e., the Holopraxis Transdisciplinary Management. It aims at collaborating to the debate on the limits of AI, including ChatGPT simulations, comparing the four types of intelligence in the HPTD-M Theory, namely empirical, emotional, rational, and intuitive, with the nine types of Gardner's multiple intelligences theory (MI Theory). The types of intelligence are also compared with psychosomatics, the emotional shadow of the Western culture, the levels of the collective unconscious, and soft skills. The concept of mediating manager has an essential role in showing the limits of AI, which is an exceptional instrument for KNOWING but not UNDERSTANDING. An example of adequate use of AI through ChatGPT is demonstrated through a discussion on Plato's four virtues. A table considering the HPTD-M quaternary structure of intelligence shows how there cannot be consciousness awakening in AI, since it is limited to rationality. Besides, the HPTD-M's three types of logic, i.e., Binary, Feedback, and Included Third, are another way to demonstrate that AI is based merely on the Binary logic. Management tools need to be used a priori with awareness of the limits of their applications. AI is no different, a disruptive technology that every professional will have to learn to deal with, like the personal computer in the late 1980s, an excellent rational tool, but not an empirical, emotional, or intuitive resource for problem solving. The AI binary logic does not apply to the complexity of human phenomena. Furthermore, AI can function as a consultant or assistant in terms of an efficient source of information, but not as an effective manager or decision maker. Roughly, through the managerial theory, effectiveness is to do the right thing, which is more than efficiency (to do things right). Then, in this author's opinion constructed through simulations in the ChatGPT to obtain efficient results, the questions to AI need to be objective and precise in the concepts. There cannot be complex issues involving human phenomena: This is for the effective human decision maker, not for AI to answer since there can't be consciousness awakening in AI.

Keywords: Artificial Intelligence, Transdisciplinarity, HPTD-M, Mediation, Organizations, Problem solving.

2.1 Introduction

Since the end of the 18th century, the Modern Age has promoted undeniable advances in the field of technoscience and quality of life in material terms. However, it has created a cycle of hypertrophy of binary logic and rationality, excluding intuition and empiricism from the scientific debate, making it difficult to solve concrete issues involving the complexity of human phenomena: Emotional intelligence tends to be absent. So, Western culture tends to be reduced to a mix of science (focused on causality) and ideology (as a result of dogmatism answering what science cannot explain): This creates conflicts between different cultures.

All this considered, this article studies the scope of Artificial Intelligence (AI) through the HPTD-M theory (*Holopraxis Transdisciplinary Management*) and aims at collaborating to the debate on the limits of AI, a disruptive technology as the personal computer was in the 1980s, in the sense of being an excellent instrument of rational intelligence and knowledge. However, from a transdisciplinary point of view, it does not seem to offer an answer to human conflicts and human phenomena, so it is not a solution for everything, as will be demonstrated in this article, using not only the HPTD-M with four types of intelligence but also ChatGPT simulations, the Gardner's MI theory with nine types of intelligence (multiple intelligences), as well as psychosomatics, the emotional shadow of the Western culture, the levels of the collective unconscious, and the reflections on soft skills. An example of adequate use of AI through ChatGPT is given through Plato's four virtues, in the sense that the questions need to be objective and precise in the concepts to obtain efficient results. Finally, the concept of mediating a manager has an essential role in showing the limits of AI, together with the demonstration through Table 1 that there cannot be consciousness awakening in AI.

Finally, this article involves this author's presentation as speaker, co-mediator, and co-organizer of the online International Symposium *Artificial Intelligence and Human Mediation*, of November 21-22, 2023, promoted by CIRET, a French NGO that promotes international research and studies in connection to transdisciplinarity: <http://ciret-transdisciplinarity.org/>, of which this author is a member. During the speakers' discussions in the two days panel, Dr. Mariana Thieriot Loisel proposed these four questions for the panel, revised by Dr. Florent Pasquier, president of CIRET, which this author answered as transcribed below. As a co-mediator of the panel, this author also made a closing speech before the president of CIRET after the four questions.

1. Is it possible to agree on a definition of “human being” within a transdisciplinary: technoscientific and philosophical perspective?

The human being can be seen as four ways of comprehension of reality, which are technoscience (technology in interaction with science), philosophy, tradition, and art. Those four are the main disciplines considering a Brazilian holistic transdisciplinary approach: This means the creation of an integrated comprehension, beyond and through disciplines. On the other hand, Artificial Intelligence cannot go beyond a rational tool and is unable to interact with disciplines in a human sense.

2. What are the main causes of inhumanity that block the evolution of certain zones of our society and that still generate cultural conflicts?

The Modern Age has created a focus on binary logic and rationality, which tends to exclude intuition and empiricism from scientific debate, making it difficult to solve concrete issues involving the complexity of human phenomena. Emotional intelligence seems to be almost absent in this discussion. So, Western culture tends to be reduced to a mix of science (focused on causality: cause and effect relations) and ideology. Ideology, in turn, is a result of dogmatism answering what mere science cannot explain. In my opinion, this is the origin of most cultural conflicts. Then, Artificial Intelligence should be used considering its limits of application as a tool, or else it can stimulate dogmatism through its mere rationality, coming to the same problem of scientism, which uses dogmatism to explain what is beyond science.

3. How can we develop problem-solving strategies to properly address the conflicts we dealt with yesterday (human; society) affecting nature and complex systems through human mediation? (locally/internationally).

In my perspective there are basically two questions: 1) To understand that human conflicts are complex and need to be solved through the Included Third logic, meaning the dialectical process, not the Binary Logic of Right and Wrong, True and False, Good and Evil, Manichaeism, scientism, or dogmatism. 2) Soft skills and hard skills have to interact in a complementary way through the process of looking for an agreement to solve conflicts.

4. Can we find a place at the University & in organizations: A GREY AND FUZZY ZONE to discuss these problems through an open, non-violent, and transdisciplinary dialogue?

I have experience with working groups in public administration complex problem solving. Yes, we can find a place, if in working groups we are aware of our unconscious ideological bias, our shadows, and accept different perspectives of reality. We must discuss positions we don't like. Not accepting discussion of certain questions configures emotional immaturity and the incapacity to concretely deal with problems. Furthermore, professors who try to impose their ideology on their students are not professors, but gurus, and must be despised because they are indirectly creating more conflicts in civil society when not accepting to discuss different points of view.

This author's final speech as mediator before the president of CIRET closed the event:

If we are talking about Artificial Intelligence, we need to be aware of our Western Culture's mechanistic and rational bias. In this connection, the risk of this AI tool is to be used in the context of scientism feedbacked by dogmatism, which hinders any attempt to solve conflict problems. So, we need to be aware of our own ideological biases before trying to mediate conflicts, to respect different cultures and perspectives. This means we must be mediators of ourselves, of our own shadows, before trying to mediate groups.

After the Symposium discussion, it was created by CIRET a group for the discussion of AI and transdisciplinarity, envisaging concrete problem solving in organizations and civil society, which demands time, collective thinking, and emotional welcoming. In fact, problem solving will demand authenticity in information sharing, which requires a transdisciplinary mediation with empiricism, emotional intelligence, rationality, and intuition. Finally, to achieve informational transparency and agree with the new technoscientific directions, we need time. Scientists tend not to be allowed to think together because of economic reasons. There seem to be no financial investments by governments and universities in transdisciplinary research because it demands extra time of dialogue after the scientific work. Transdisciplinarity means beyond and through disciplines, not only multidisciplinary (many disciplines not interacting), or interdisciplinarity (interactions between and among disciplines). So, disciplinarity complements transdisciplinarity and vice-versa.

2.2 ChatGPT and Technoscience

There can be certain risks of the indiscriminate use of AI, given the concrete example simulated in ChatGPT, a program from a Microsoft startup that interacts in a conversational dialog format allows ChatGPT to answer follow-up questions, admit its mistakes, dispute incorrect assumptions, and reject inappropriate requests. [1]

ChatGPT itself answered the question if it is a platform: It is an AI language model developed by OpenAI. The model is designed to understand and generate human-like text based on the input it receives. It can be integrated into various platforms, applications, or systems to provide conversational capabilities. So while ChatGPT itself is not a platform, it can be used as a component within a platform to enable natural language interactions with users.

According to the Brazilian Dom Cabral Foundation (FDC), Microsoft invested USD 1 billion in OpenAI, a startup company that released ChatGPT in November 2022. The technology works by learning from large amounts of data how to respond to any request from a user in a human-like manner, offering information like a traditional search device but in a prose manner. [2]

In the context of the example that was thought of within HPTD-M, it is worth clarifying that there are basically four ways of reading reality, something settled in transdisciplinary scholars and through the

Brazilian holistic transdisciplinarity: **technoscience** (technology + science), **philosophy, tradition** (includes culture and religion), and **art**. [3]

In developing the example, this author found that ChatGPT recognizes technoscience as the interplay of technology and science.

- **Question:** Can technoscience be understood as technology + science? Can technology create effective solutions independent or unexplained by science?
- **ChatGPT:** Technoscience is a term used to describe the interplay between technology and science. It recognizes the close relationship between the two fields and highlights their interconnectedness in modern society. Technoscience can be understood as a collaborative and integrated approach that combines scientific knowledge and technological advancements to address complex problems and develop innovative solutions.

Science provides the theoretical framework, methodologies, and empirical evidence to understand the natural world and its phenomena. It involves systematic observation, experimentation, and analysis to generate knowledge and explain how things work. On the other hand, technology refers to the practical application of scientific knowledge for practical purposes, aiming to create tools, devices, systems, and processes that enhance human life or solve specific problems.

While technology often relies on scientific principles and discoveries, technology can create effective solutions that are not fully explained or understood by existing scientific knowledge. In some cases, new technologies may be developed through trial and error, practical experimentation, or even by harnessing empirical knowledge gained from experience without a complete understanding of the underlying scientific principles.

Moreover, technology can also contribute to advancing scientific knowledge itself. New tools and instruments developed through technological innovation can enable scientists to make new observations, collect more accurate data, and explore previously inaccessible realms. This, in turn, can lead to the generation of new scientific theories and concepts.

However, it is important to note that the relationship between technology and science is symbiotic, and they often reinforce each other. Scientific discoveries provide the foundation for technological advancements, while technology, in turn, enables further scientific exploration and understanding. Thus, while technology may create effective solutions that go beyond our current scientific understanding, it is the synergy between technology and science that drives progress in the long term.

Although ChatGPT recognizes the concept of technoscience, as seen in the holistic transdisciplinarity of Weil, D'Ambrosio, and Crema [3] besides HPTD-M itself, ChatGPT does not admit there are technologies not explained in any way by science. However, this author, a civil engineer with professional experience in the area, has already seen some engineers that use empirical formulas for dimensioning: They have already discovered that technologies or techniques can be independent of science.

Another example comes from the health area. Once, this author watched an interview with Dr. Zerbini, a surgeon who performed the first heart transplant in Brazil (1968). The doctor reported seeing personally how the health system worked in China, impressed with a lung surgery in which the patient was anesthetized only with acupuncture.

In this context, some physicians and scientists, not being able to explain acupuncture scientifically, simply deny its existence, in this same isolated rationalist paradigm of the ChatGPT, and therefore do not admit that a technique such as acupuncture exists independent of science. It is very risky to deny the existence of something simply because it cannot be explained rationally or scientifically, even if empirically it is evident, like the "off-label" prescription of medicines by physicians: They understand that it works but don't know the mechanism. This is one of the risks of AI, if used indiscriminately, as this author envisions through the following analytical and synthetic HPTD M models.

2.3 HPTD-M Framework: Analytical and Synthetic Models

Jung's Analytical Psychology, which cannot be confused with Freud's Psychoanalysis, is one of the references of the HPTD-M Theory. The celebrated Jungian analyst Marie-Louise von Franz explains the quaternary structure of the psyche as universal patterns that were discovered by both modern physics and Jung empirically in his patients, as a psychiatrist, through the psyche functions of sensation, feeling, thinking, and intuition. [4]

Those four psyche functions of sensation, feeling, thinking, and intuition are essentially connected to the ancient principles of earth, water, air, and fire, respectively, as seen in Greek philosophy (Empedocles) and the European Alchemical Tradition, also related directly to the physical states of matter, i.e., solid, liquid, gas, and plasma. Therefore, a clear correspondence between psychology and physics emerges.

Jung himself already hinted in a 1957 interview that the psyche is a quality of matter, a different kind of matter. [5]

In physics, a state of matter is one of the distinct forms in which matter can exist. Not by coincidence, four states of matter are observable in everyday life. In the 20th century, increased states of matter were generally described based on qualities that can be seen or felt. Matter that feels hard and maintains a fixed shape is called a solid; matter that feels wet and maintains its volume but not its shape is called a liquid. Matter that can change both shape and volume is called a gas. Some introductory chemistry texts name solids, liquids, and gasses as the three states of matter, but higher-level texts recognize plasma as the fourth state of matter. Plasma is an ionized gas, a gas into which sufficient energy is provided to free electrons from atoms or molecules and to allow both species, ions, and electrons, to coexist. Plasma is the most common state of matter in the universe comprising more than 99% of our visible universe and most of that is not visible. Plasma occurs naturally and makes up the stuff of our sun, the core of stars, and occurs in quasars, x-beam-emitting pulsars, and supernovas. [6]

The HPTD-M theory is based on this quaternary structure of the psyche which is also reflected in physics and leads to the psychosomatics approach of Figure 2.5. HPTD-M also involves the complementarity principle, as seen in:

- Philosophy: Heraclitus' Greek concept of enantiodromia and Taoist Ying-Yang.
- Modern Physics (Quantum and Relativistic): De Broglie's wave-particle duality, Einstein's mass-energy convertibility, Bohr's concepts on subject-object and conscious-unconscious.
- Analytical Psychology: Jung's complementarities can be seen in many ways, such as a conscious-unconscious, subject-object, introversion-extraversion (terms created by Jung), judgment perception, thinking feeling, and intuition-sensation.

So, the HPTD-M framework is about quaternary complementarities, i.e., opposites interacting in a quaternary structure or dualities seen through four elements. This perspective is demonstrated in the HPTD-M analytical model of Figure 2.1 and the synthetic model of Figure 2.2, whereby the four elements are shown in the vertices of the cross made of the blue axis and red axis, which can be seen as a Cartesian plane, translated into i) types of intelligence – empirical, emotional, rational, and intuitive; ii) dualities concrete-abstract and objective-subjective, besides four elements – concrete, subjective, objective, and abstract; iii) problem-solving requirements – feasibility, reasonableness, rationality, and meaningfulness; and iv) troubleshooting attributes – effectiveness, sustainability, simplicity, and dialectics. The idea of the mediating manager in organizations comes from the quaternary complementarities paradigm developed from 2022 to 2023. [7, 8, 9, 10]

In the HPTD-M framework, these four elements unfold in dualities or complementarities, such as human abilities (soft skills) represented by intuitive and emotional intelligence, through a dialogue with the technical abilities (hard skills) represented by rational and empirical intelligence. Another complementarity is evidenced in Figure 2.2, based on Jung's psychological functions and the MBTI system of self-leadership and management (Myers-Briggs Type Indicator). It involves the red horizontal axis of the judgment functions

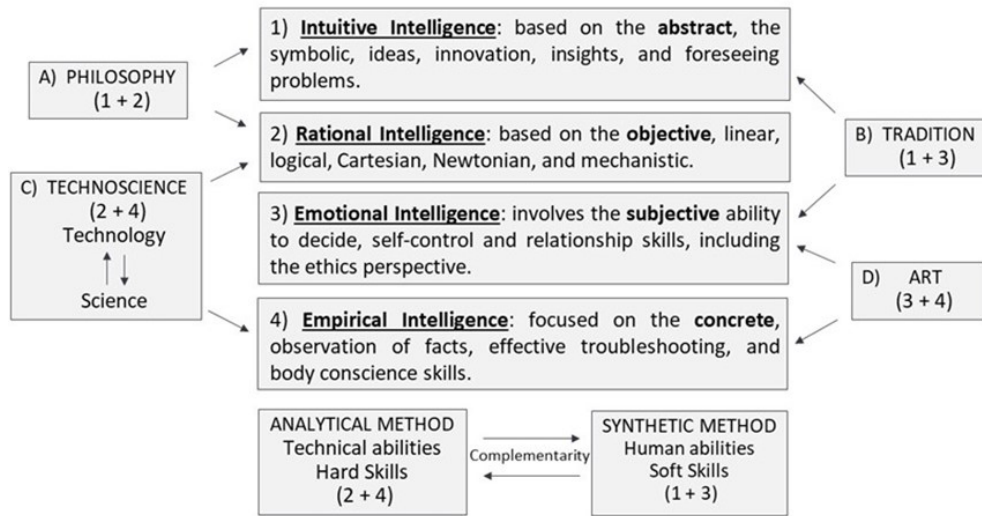


Figure 2.1: Simplified HPTD-M Analytical Model Showing Quaternary Complementarities [10]

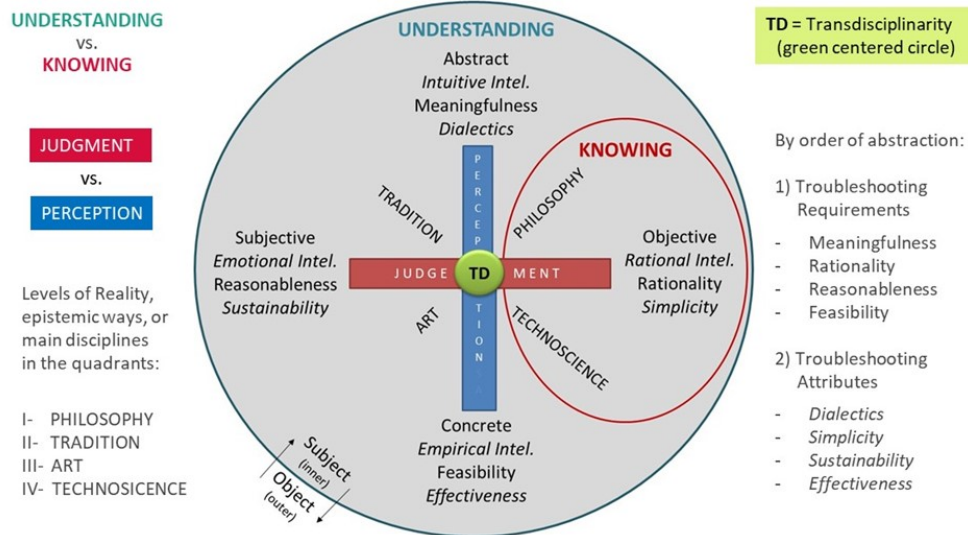


Figure 2.2: Full HPTD-M Synthetic Model of Quaternary Complementarities [7, 8, 9, 10]

(emotional and rational intelligence), in dialogue with the blue vertical axis of the perception functions (intuitive and empirical intelligence). So, the idea of quaternary complementarities is a key to the HPTD M theory such as **soft skills vs. hard skills** and **judgment vs. perception**. There are others, such as epistemic forms or disciplines, that can be considered from the perspective of the Cartesian plane in Figure 2.2, formed by the horizontal axis of judgment and the vertical axis of perception, identified by the quadrants I, II, III, and IV, respectively:

I- Philosophy (rational and intuitive intelligence).

II- Tradition (intuitive and emotional intelligence).

III- Art (emotional and empirical intelligence).

IV- Technoscience (empirical and rational intelligence).

These connections are relative because art has intuitive aspects, tradition has developed rational foundations, and science itself often starts its theories at an intuitive level. Therefore, this model cannot be treated with a peremptory binary logic, but as the logic of the Included Third, known to transdisciplinary academia to solve complex problems. So, the HPTD-M synthetic model of Figure 2 sounds more like a compass, as a reference of direction, than a thermometer that measures quantities.

Also in Figure 2, apart from the four elements, it is understood that the concept of **UNDERSTANDING is much more than KNOWING**. The transdisciplinarity (TD) in the center represents the vision beyond and through the four elements, for **COMPREHENSION** in a broader sense to solve problems.

For the Chilean economist Max-Neef (1932-2019), an ex-professor of Stanford and Alternative Nobel Awarded in the early 1980s for his theory of Barefoot Economics: formal knowledge, linked to reason, is constructed according to the rules of method and causality, while understanding, more linked to intuition, regulates method and causality:

A strange sort of shyness seems to prevail in the sense that confessing the contribution of intuition may be perceived and ridiculed as indecent exposure, not worthy of a true scientist. Einstein, who could afford to be above and beyond such shyness, declared that “the intuitive mind is a sacred gift, and the rational mind is a faithful servant. We have created a society in which we honor the servant and have forgotten the gift.”

*“When Niels Bohr, the illustrious Danish physicist, was granted a title of nobility by the king of Denmark, as a tribute to his transcendental contributions to science and the culture of his country and the world, he was asked to make suggestions for the design of his coat of arms. His request was to put on the thenter the Taoist symbol of the Yin and Yang, and below the sentence: *Contraria sunt Complementa*. Through that act he revealed the essence of the most transcendental truth his wisdom had allowed him to surmise.” (Mallmann et al., 1979). [11]*

Also for Max-Neef in his book *La Economía Desenmascarada*, about his experience, initially as a professor of economics at Berkeley:

My whole discourse as a conventional economic academic was completely inadequate for me to say anything meaningful. I was used to diagnosing and analyzing, but I was not used to understanding. [12]

For Brazilian Roberto Crema (1951-), anthropologist, psychologist, creator of the Fifth Force in Therapy, and transdisciplinary theorist, there is a hypertrophy of information and knowledge, of broad, unrestricted, and immediate access, concomitant to the atrophy of the process of discernment and understanding. [13]

Still from Figure 2.2, apart from the four elements, it appears that the concept of **UNDERSTANDING** is broader than **KNOWING**. Transdisciplinarity (TD) in the center represents the vision beyond and through the four elements, for **UNDERSTANDING** in a broader sense for problem solving.

Finally, Figure 2.3 is the full HPTD-M Analytical model, which cannot be understood merely with a binary logic of "right and wrong" or 0 and 1 of Western culture, but also at the highest level of complexity as the logic of the Included Third, dialectics, expressing the middle-way to solve the most complex problems of human phenomena, or as an intermediate logic of feedback, typical of living systems in Capra's systemic holistic view. So, there are three levels of complexity for problem solving in logical terms: Binary Logic, Feedback Logic, and Included Third Logic. The most suitable for each concrete case must be used, considering the requirement of simplicity for problem solving.

Not only through the types of intelligence the scope of AI can be demonstrated but also by the three levels of complexity and the four epistemic ways correlated to those four types of intelligence. This idea was fully explained and presented by this author on July 30, 2023. Between minute 8 and minute 53 of the presentation in English, which was simultaneously translated from English to Portuguese with comments of

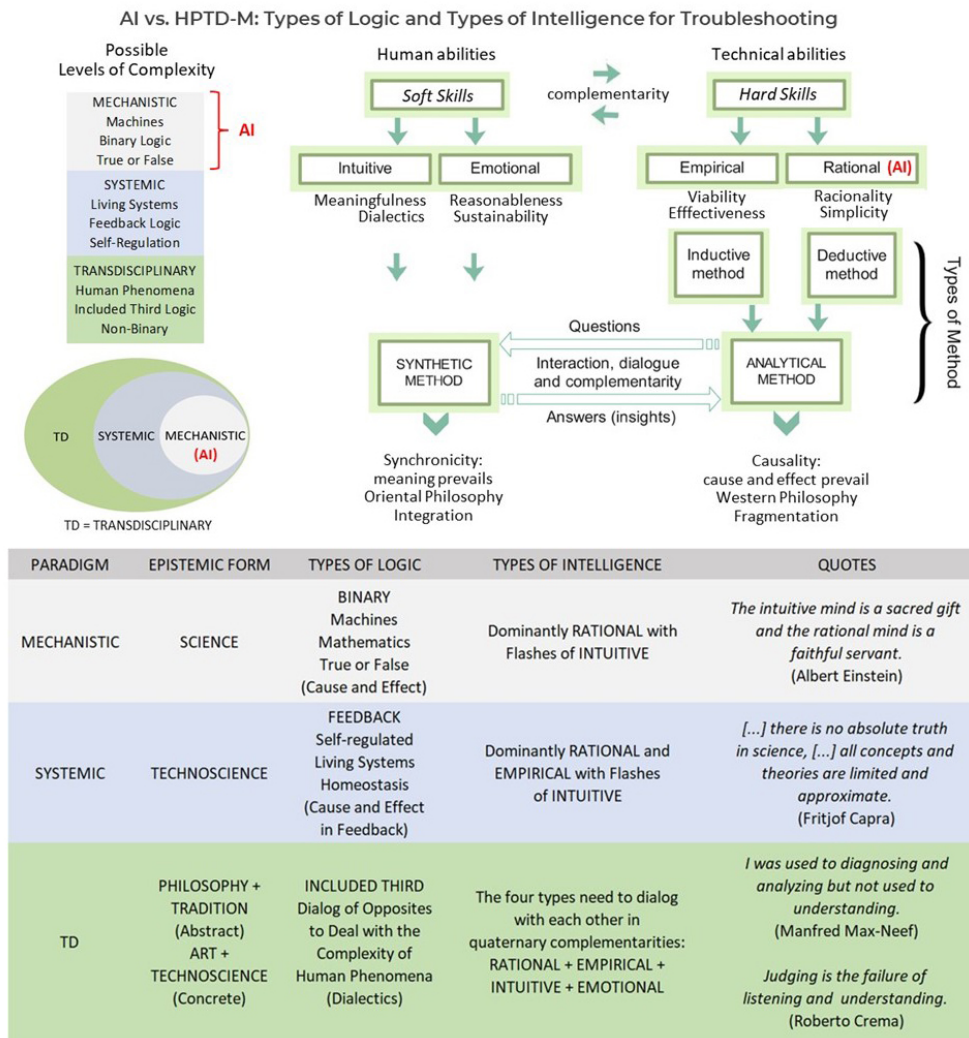


Figure 2.3: Full HPTD-M Analytical Model and AI Scope. Sources: Whole Figure [10]; direct quotes in the last column: Einstein [11], Capra [14], Max-Neef [12], and Crema [13]

Prof. Dr. Mariana Thieriot Loisel, the coordinator of the event: *The Transdisciplinary Mediator for Effective Problem Solving in Organizations and Civil Society*. [10]

During the presentation, there was a dialogue in French, translated to English, with Hubert Landier from Paris, a mediation-oriented economist who practices social auditing in organizations. Dr. Landier was satisfied and identified with HPTD-M's presentation. On the same day, Dr. Landier shared with this author an excerpt from his book *Social Monitoring and Social Climate Audits: Why and How?*

Participants from the USA, Canada, France, Japan, Morocco, and Brazil attended the presentation, including Sorbonne professor Dr. HDR Florent Pasquier, President of the *Centre International de Recherches et Etudes Transdisciplinaires* (CIRET), who promoted the presentation in collaboration with Brazil's CE-TRANS.

2.4 MI Theory compared to HPTD-M in ChatGPT

There is a typology of nine intelligences in MI Theory, the multiple intelligences theory by Harvard professor Howard Gardner. As presented by Northern Illinois University [15]:

Gardner's Multiple Intelligences Summarized

1. *Verbal-linguistic intelligence (well-developed verbal skills and sensitivity to the sounds, meanings, and rhythms of words)*
2. *Logical-mathematical intelligence (ability to think conceptually and abstractly, and capacity to discern logical and numerical patterns)*
3. *Spatial-visual intelligence (capacity to think in images and pictures, to visualize accurately and abstractly)*
4. *Bodily-kinesthetic intelligence (ability to control one's body movements and to handle objects skillfully)*
5. *Musical intelligences (ability to produce and appreciate rhythm, pitch, and timber)*
6. *Interpersonal intelligence (capacity to detect and respond appropriately to the moods, motivations, and desires of others)*
7. *Intrapersonal (capacity to be self-aware and in tune with inner feelings, values, beliefs, and thinking processes)*
8. *Naturalist intelligence (ability to recognize and categorize plants, animals, and other objects in nature)*
9. *Existential intelligence (sensitivity and capacity to tackle deep questions about human existence such as, "What is the meaning of life? Why do we die? How did we get here?")*

ChatGPT also lists those nine types as Linguistic, Logical-Mathematical, Spatial, Musical, Bodily-Kinesthetic, Interpersonal, Intrapersonal, Naturalistic, and Existential.

Considering the HPTD-M was published in 2022 and the ChatGPT database is not beyond September/2021, ChatGPT does not recognize the relationship that this author made between Jung's four functions, sensation, feeling, thinking, and intuition, to conceptualize, within the HTPD-M theory, respectively the empirical, emotional, rational, and intuitive types of intelligence. In this sense, some simulations were made on ChatGPT in search of relationships between the HPTD-M's and Gardner's types, with specific questions, indirectly, starting from the functions of Jung. Thus, distortions and difficulties arose, such as relating spatial intelligence to intuition, which sounds absurd, and not relating intrapersonal intelligence to emotional intelligence, as if this was also linked to intuition (a misunderstanding). The reproduction below reflects the problem:

- **Question:** *Can you describe Gardner's nine intelligences and compare them to Jung's four functions, as if Jung's functions could be considered 4 intelligences?*
- **ChatGPT:** *Certainly! While Jung's four functions are not typically framed as intelligences, we can explore how they might relate to Howard Gardner's nine intelligences. It's important to note that this is an interpretation and not a direct correlation, as Jung and Gardner developed their theories within different contexts. With that in mind, let's examine the comparison:*

Thinking Function (Jung) vs. Logical-Mathematical Intelligence (Gardner):

Jung's thinking function involves objective analysis and logical reasoning. This can be loosely associated with Gardner's logical-mathematical intelligence, which encompasses skills related to mathematical reasoning, problem-solving, and logical thinking.

Feeling Function (Jung) vs. Interpersonal Intelligence (Gardner):

Jung's feeling function focuses on subjective values and empathy. While not an exact match, it can be compared to Gardner's interpersonal intelligence, which involves the ability to understand and interact effectively with others, showing empathy, and perceiving their emotions and motivations.

Sensation Function (Jung) vs. Bodily-Kinesthetic Intelligence (Gardner):

Jung's sensation function is related to the perception of sensory information and concrete experiences. It can be loosely associated with Gardner's bodily-kinesthetic intelligence, which involves skillful control and coordination of bodily movements, as well as a heightened awareness of the physical environment.

Intuition Function (Jung) vs. Spatial Intelligence (Gardner):

Jung's intuition function is characterized by perceiving patterns, possibilities, and connections beyond the immediate sensory information. While not a direct match, it shares some similarities with Gardner's spatial intelligence, which involves the ability to think in terms of visual and spatial representations, such as mental imagery, spatial reasoning, and navigation.

It's important to reiterate that these comparisons are an attempt to draw connections between the two frameworks. However, they should be understood as speculative and not definitive. Both Jung's four functions and Gardner's nine intelligences are complex constructs, and any attempt to map them onto each other will be an approximation rather than an exact match.

Therefore, in this author's view, which involves not only the rational aspects of AI, but it seems a broader understanding on a transdisciplinary level, the **four types of intelligence in the HPTD-M Theory** can be related to the **nine types in the MI Theory**, respectively, as follows.

Intuitive intelligence is connected to **existential**, as it is based on the abstract and sense-making.

Rational intelligence is related to **logical-mathematical** because it is objective, linear, logical, and mechanistic.

Emotional intelligence is connected to **intrapersonal and interpersonal** because it involves the human ability for self-control and relationships with others.

Empirical intelligence is related to **spatial-visual, bodily-kinesthetic, and naturalist** because it is focused on the concrete, on what can be experienced through the five senses.

Finally, **intuitive, emotional, and rational types of intelligence** can be connected or related to **musical and verbal-linguistic**, because both music and language involve abstract questions of meaning (making sense), subjective questions, and objective questions, respectively connected to intuition, feeling, and thinking.

Those are only approximations of reality because any taxonomy has its limits and cannot be peremptory or definitive. However, **HPTD-M is based on the four archetypal elements, transdisciplinary universal patterns from Greek Philosophy, European Alchemical Tradition, Modern Physics, and Jungian Psychology**, i.e.:

- Greek and Alchemical symbols of Earth, Water, Air, and Fire, considering Empedocles, Heraclitus, and Isaac Newton.
- Physical states of matter, Solid, Liquid, Gas, and Plasma.
- Psychological functions of Sensation, Feeling, Thinking, and Intuition.

AI will never catch up with issues related to sense-making, dialectics, the transdisciplinary logic of the included third party, the notion of reasonableness (different from rationality), and ethics: of what is acceptable and what is not. Summing up, soft skills are out of AI's capacity for processing data, doing combinatory analysis, and finding results through binary logic.

Not only soft skills are outside the scope of AI, but also empirical intelligence, as already seen in the example of empirical formulas of engineers and acupuncture.

In this context, the realization arises that AI can provide powerful tools for organizing data and distinct theories that may not yet communicate, but it will never provide the sense of human skills (soft skills) and the practical experience of a professional (empirical intelligence).

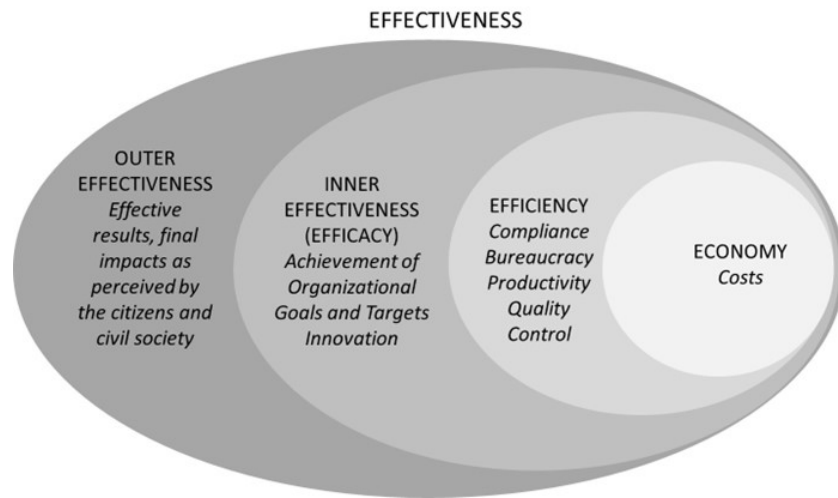


Figure 2.4: PTD-M Synthetic Model for Effectiveness vs. Efficiency for Problem Solving in Organizations Source: This new HPTD-M Model expresses a synthesis of the article [8]

This discussion may be interesting in the context of leadership and mediation theories, as this author has addressed in his HPTD-M publications and a 14-hour course on the mediating manager of 2023, which evidences the necessity of understanding the three types of paradigms for problem solving the suitability of application of each one, depending on the concrete case: mechanistic, systemic, and transdisciplinary [16]. The HPTD-M is seen in this context as an integration of the three paradigms.

2.5 Efficiency vs. Effectiveness: AI may be a Consultant But Not a Decision Maker

As per the HPTD-M models developed in the article Effectiveness and Styles of Leadership in Public Management [8], the most concrete troubleshooting attribute according to the HPTD-M is **Effectiveness** (see the model in Figure 2.2), which is more than the **Efficiency** of the economy (costs) and conformity of processes (compliance and bureaucracy). Effectiveness means the result of management in the perception of civil society - the external environment impacts. However, the concept of Efficiency, as described, is partly comprised of Effectiveness. As per the HPTD-M model for problem solving, synthesized in Figure 2.4, **Effectiveness contains Efficiency** and can be applied to any public or private organization:

- **Efficiency:** compliance, cost, production, quality control, to do things right.
- **Effectiveness:** producing a decided, decisive, or desired effect by doing the right thing.

In this context of efficiency and effectiveness, HPTD-M has also concepts related to governance and governability for organizations, a type of complementary that creates the transdisciplinary leader as an articulator and facilitator of technicians, managers, politicians, and civil society in general, as per the HPTD M:

- Governance involves the internal environment and how the decisions are made for working groups and organizations. The results can be seen in the perspective of the inner effectiveness.
- Governability is related to the external environment and the systemic stability in large public organizations, involving the dialogue between politicians and the civil society that they represent. The outer effectiveness can be seen as the level of support of civil society.

There is clearly a difference between efficiency and effectiveness in management, roughly and respectively the difference between “doing things right” and “doing the right thing”. So, AI tends to be an efficient source of information, like a consultant or an assistant, because it can select a database much better and faster than a human would do. However, AI can never be an effective manager or a decision maker, because it has no soft skills, as far as human phenomena are concerned, especially regarding meaningful new ideas, foreseeing problems, relationship skills with all actors involved, and wisdom in the decision-making process. This important point is one of the core points of this article.

2.6 Adequate Use of AI: Example of Plato’s Four Virtues

As an example of adequate use of AI as an efficient source of information, this author made a very specific question about Plato’s philosophy, with precise and well-determined concepts. The essential point here is to show that efficient results come when being very clear in what is being asked. Otherwise, the answers will not achieve the goal, i.e., to use AI one needs to be objective, even considering the complexity of Plato’s philosophy hermeneutics:

- **Question:** *In Plato, can Justice be understood as a fourth virtue that balances the other three related to the parts of the soul, namely rational wisdom, irascible strength, and concupiscible temperance?*
- **ChatGPT:** *In Plato’s philosophy, justice is indeed considered as a fundamental virtue, and it can be understood as a fourth virtue that harmonizes and balances the other three related to the parts of the soul. Plato’s understanding of justice is intricately tied to his theory of the tripartite soul, which he presents in his famous work "The Republic."*

According to Plato, the human soul consists of three distinct parts:

Rational (Wisdom): This part of the soul is associated with reason, intellect, and the capacity to make rational decisions. It seeks knowledge, truth, and understanding.

Irascible (Strength or Spirit): This part is associated with emotions, courage, and the desire for honor and victory. It can manifest in both positive aspects like bravery and negative aspects like anger and aggression.

Concupiscible (Temperance or Appetite): This part is related to desires, physical pleasures, and basic instincts such as hunger, thirst, and sexual desires.

Plato’s conception of justice involves each part of the soul performing its proper function without interfering with the functions of the other parts. When the soul is in a state of internal harmony, where reason rules over emotions and desires, and each part fulfills its role, justice prevails within the individual.

In "The Republic," Plato explores the idea of justice on both the individual and the societal levels. He suggests that a just society would mirror the just soul, where each member performs their proper role and contributes to the well-being of the whole community. In such a society, philosophers would be the rulers (representing the rational part), guardians would provide defense and protection (representing the irascible part), and producers would fulfill the economic functions (representing the concupiscible part).

Plato’s vision of justice involves the harmony and balance of these different parts within the soul and society. It is the proper alignment and cooperation of these elements that lead to a just and flourishing individual and community. Justice, therefore, acts as the unifying principle that ensures the well-functioning and flourishing of the whole, be it in the soul or the society.

The answer from ChatGPT is remarkable, the exegesis converges to the one of the 1949 Calouste Gulbenkian Foundation edition, from Lisbon, of Plato's *The Republic*, footnote 31 of p. 204, which considers justice the harmonious meeting of three different elements, i.e., rational, irascible, and concupiscible [17]

This interpretation can be analyzed through Plato's dialogue *Fedro* [18], in the myth of the chariot Plato compares the soul to a chariot pulled by two horses, one docile and the other indocile. The human body is the chariot, and the chariot-driver is Reason, which drives the two horses (feelings and instincts, respectively) using the reins (thinking control).

In this myth context, according to Olleta [19], Plato considers that the soul is the excellent part of man, which is immortal and unites us with the divine world. **The soul is divided into:**

- **Rational:** The myth of the chariot represents the rational soul with the metaphor of the chariot-driver. It is the excellent part of the soul, identified with reason and with the achievement of goodness and justice, in which rulers should be mirrored.
- **Irascible:** The myth of the chariot represents the irascible soul with the metaphor of the good and docile white horse. Thanks to this horse, the chariot driver can accompany the gods to the world of ideas. In the irascible soul is found the will and strength typical of warriors.
- **Concupiscible:** In the myth of the chariot, Plato represents this part with the bad horse, black, not very docile, and directed towards the sensible world. It is a part of the human soul that is more related to the body, to sensitive pleasures and appetites for sex, food, fame, wealth... Its virtue is temperance, in which merchants should mirror themselves.

Also, according to Olleta, the theme of virtue in Plato includes two fundamental questions: concerning how one can possess virtue and concerning its essence or nature. Regarding the first question, we see in the philosopher the influence of his teacher Socrates - whoever possesses a virtue has some knowledge: you cannot do Good or Justice if you do not know what Good and Justice are, just as you cannot perform a specific job if you do not have knowledge for the second question of the essence of virtue, Plato conceived it as a state that corresponds to the soul according to its own nature. Like the soul, we find several parts, each of a certain kind of virtue that suits it. Thus, **the rational part of virtue is wisdom or prudence**, which consists in the knowledge of the ultimate truth of human behavior, the knowledge of what to do on each particular occasion; to **the irascible part will correspond the virtue of strength or courage**, a disposition of the will by which we can carry out conduct that prudence teaches is appropriate at each moment, an accomplishment that often involves renouncing pleasures and benefits of one's own. Finally, **the concupiscible part will have the virtue of temperance:** moderating the disposition of appetites, which allows the soul not to be continually disturbed by abundant and intense desires. That is, to control desires. [19]

Through the HPTD-M interpretation, Plato's four virtues are another way of seeing the quaternary structure of the psyche through Jung's functions or the archetypal four elements, i.e.: 1) temperate concupiscible sensation, 2) strong irascible feeling, 3) prudent rational thinking, and 4) just intellectual intuition involving the search of the abstract idea of goodness (in Plato's theory of Ideas shown in *The Republic*).

So, the archetypal quaternary structure of the psyche can also be seen in ancient Greek philosophy, not only through the four elements of Empedocles or through Plato's virtues, but also as per Plato's levels of knowledge that explain the concept of a direct understanding of reality without the rationality, like through the insights, which can be seen in philosophy as "intellectual intuition" (noesis), mentioned in another quaternary context – *noesis, dianoia, pysis, and eikasia*, explained through one article of this author just before publishing the HPTD-M theory:

By platonic epistemology (episteme in the sense of comprehensive knowledge in the transdisciplinary context): i) noesis is intellectual intuition, and episteme is knowledge acquired through noesis, it is synonymous with broader understanding in this context, it is not just about intellectual knowledge; ii) thinking, when contemplating forms or ideas, offers the rational view of knowledge (dianoia), as in mathematics; iii) noesis and dianoia then form knowledge in the sense of comprehensive understanding of platonic vision, as opposed to the opinion of the lower levels of pysis (belief or conviction) and eikasia (opinion by perception only). Hence one can observe the parallelism between the Jungian functions and Plato levels:

- A) **Eikasia**—sensation (perception function).
- B) **Pistis**—feeling (belief is a form of feeling).
- C) **Dianoia**—thought (mathematics is a form of logical thinking).
- D) **Noesis**—comes from nous (spirit), which means to understand the essence through intuition. [20]

For all the above reasons, management tools need to be used a priori with the awareness of the limits of their applications. AI is no different, a disruptive technology that every professional will have to learn to deal with, as happened with the personal computer in the late 1980s, an excellent rational tool, but not an empirical, emotional, or intuitive for problem solving, as corroborated by Gardner's MI Theory (Multiple Intelligences) and the HPTD-M idea of soft skill (emotional + intuitive intelligence). The view that AI is connected to rational intelligence and KNOWLEDGE, but not to the broader COMPREHENSION of reality, also draws attention. These are issues that involve the complexity of human phenomena, which cannot be reduced to rationalistic and/or mechanistic models as if those paradigms were a solution for everything. An example of this is the leadership and mediation visions that the HPTD-M theory has developed along with ways of solving problems in organizations. Binary logic does not apply in this case, that is, the transdisciplinary logic of the Included Third is more appropriate. Besides, AI works as a consultant or assistant, an efficient information source, but not as a manager or decision maker with effectiveness since the limits of AI are the complexity of human phenomena.

2.7 The HPTD-M Mediating Manager vs. AI

The concept of the mediating manager has an essential role in showing the limits of AI. In connection with the perspective of social audit of the French economist and mediator Dr. Hubert Landier, through HPTD-M emerges the idea of the transdisciplinary mediating manager as an alternative for problem solving in organizations.

The rationalist models borrowed from the hard sciences configure a reductionist approach of merely mechanistic AI or biological-environmental views, which can't be applied to complex human phenomena, for which the proposal of the mediating manager emerges as a possible alternative. An HPTD-M article evolved this perspective [9] together with a training course given by this author to public managers in Brazil [16].

The idea of the HPTD-M mediating manager involves various disciplines to create an integration by understanding beyond and through disciplines, which may lead the mediator to four dimensions

- **Generalist:** Manager as an articulating leader, a generalist articulating many specialists.
- **Peacemaker:** A mediator promotes agreement between the parties to resolve conflicts before judicializing an issue, including by using techniques along the lines of the Systemic Law discipline of the Brazilian Bar OAB [21]. In the case of public management, the manager is in the role of facilitator, articulator, and conflict harmonizer.
- **Ghostbusters:** With the ability to put the right people in the right place. Two mediators in a social audit (different from an accounting audit) looking for the "ghosts in the organizations' environments", according to Dr. Landier: The ever-present, yet unspoken memory of an event or a person that destabilized the community and contributes to keeping this collectivity divided, for no apparent reason [22]. In the specific case of the public manager, the development of the expertise to put the right people in the right place so that "ghosts" are prevented through organizational synergy.
- **Welcoming in a broad sense:** The capacity to listen, to hear, and to welcome all the actors. A therapist is a mediator for the conscience development of his clients, on a personal, family, or organizational level. As for the manager, the ability to listen and welcome (accept and integrate) all stakeholders or actors involved in work groups and organizations, so that the best solutions are developed. About the levels of listening within working groups:
 - **level 1 – Distracted listening,** not paying attention completely to what is said.

- **level 2 – Bureaucratic or proforma** listening, just taking notes of what is said.
- **level 3 – Listening rationally:** according to personal/organizational mindset or mental model. Those may swear that listen to everyone, but they do it only proforma or bureaucratically, not accepting different opinions.
- **level 4 – Welcoming in a strict sense: i) acceptance:** the leader must emotionally accept to discuss new ways or ideas, even if considered weird or unusual, through the skill of emotional intelligence; **ii) integration** of all stakeholders into the workgroup, making everybody feel included, which is difficult, but it is what solves the problem dialectically and effectively, as per the HPTD-M analytical model attributes from the most abstract to the more concrete: dialectics, sustainability, simplicity, and effectiveness.

This expertise can avoid costs for organizations and civil society because the problem is solved before it happens, or in the beginning. Transdisciplinary mediators act like *fire extinguishers* before the fire spreads. Also, those mediators promote the consciousness development to listen more than bureaucratically and rationally, with acceptance and integration of all the stakeholders or actors involved in work groups and organizations.

So, effective solutions are developed in cases **where the crisis is already installed**, but there can also be preventive actions. In both cases the intervention is necessary.

The **Ghostbusters** with the ability to put the right people in the right place: Two mediators in a social audit (different from an accounting audit) looking for the "ghosts in the organizations' environments", according to the vision of Dr. Landier, as already seen. [22]

In the HPTD-M paradigm, the training of the TD mediating manager involves conscience development, not only through the strict sense training of KNOWLEDGE but especially the development of UNDERSTANDING, of learning to learn, with oneself and with others. The conscience development, which Jung named the "individuation" process, in the view of HPTD M applies not only to the individual but also to the collective level of organizations, especially the collective unconscious and the shadows that permeate the many levels, like in the "ghosts" detected in Landier's social audits, which have connections to the HPTD-M model of Figure 2.6.

Involving an unconscious influence of the Western rational culture, the traditional prejudice against psychology as an effective instrument for conscience development in organizations must be dissolved. Rationalists, mechanists, and reductionists tend to call for psychology only when they understand that there is a disorder like a disease, as this author has already witnessed in the speech of a foreign professor, in a lecture on emotional intelligence, when he replied, regarding organizational therapies, that psychological disorders should be dealt with "separately".

Management problems cannot be solved only with mechanisms because human phenomena are much more complex than mechanical, biological, and ecological issues, even in a systemic vision, hence the HPTD-M paradigm is a way of approaching the experienced reality, while considering the mechanistic and systemic paradigms, when applied as a simpler way of solving problems. This is much beyond AI scope.

2.8 Psychosomatics and the Shadow of Emotional Intelligence

The Western rational culture's difficulty with psychological approaches for concrete problem solving is related to the limits of AI itself. Through a transdisciplinary context and a holistic systemic context, psychosomatics has a relevant role, highlighting the view of Dr. Muresan's *Healing and health systems. Integralist-transdisciplinary benchmarks* [23]. Summarizing some ideas presented by the author, to compare with the HPTD-M approach:

- There is a connection between thoughts, emotions, and illness.
- The more we defend ourselves, the slower we develop.

- An acute infection is the result of a violent emotion, for a short period.
- A chronic infection refers to a negative emotion that has existed for a long time.
- An infection indicates an accumulation of negative emotions.
- A viral infection indicates that someone else is in control of your life.
- Inflammation can indicate your opposition to changing something that is needed in your life.
- The immune system is directly related to your emotional states. Intense suffering reduces its strength.

Part of the HPTD-M psychosomatic model was published in 2022 [24] but was developed before this author had contact with Dr. Muresan's article on integralist-transdisciplinary references for healing and health. There are some convergences of ideas that corroborate the principle of quaternary complementarities of HPTD-M arising from the basis of the health framework presented by the author.

To clarify what was published in 2022: this author is not a doctor nor a psychologist, just an engineer with an MBA who worked with civil engineering and business management, including foreign trade. Currently, out of professional necessity, he transits in public management, economics, and law, having developed HPTD-M from experience with organizations and working groups. Therefore, this author has been in his professional career a generalist who articulates specialists. In addition, for more than 30 years he has studied the systemic vision combined later with the transdisciplinary perspective, since reading Capra's holistic systems in 1987 in the book *The Turning Point*. Incidentally, Capra is a Ph.D. in physics who evidenced parallels between modern physics, ancient traditions, philosophies, psychology, health, and economics. [25]

In this context, HPTD-M understands the psychosomatic process not only in terms of people but especially of the organizations they are part of, whether the organization is a family, a company, or even a small working group. The origin of the term is the fusion of PSIQUE and SOMA (from Greek), soul and body, psychological, and physical part, as they interact in a dynamic balance, in harmony. Imbalances need to be resolved at the emotional and/or mental/intellectual level, but ultimately, they are resolved physiologically in the human organism if the imbalance is not addressed at the psychological level. In organizations, these imbalances ultimately resolve in somatization among participants. In other words, participants get ill when the work environment becomes toxic, especially when essential issues are avoided, even if unconsciously (unintentionally), and thrown "under the carpet". This HPTD-M view is very similar to Dr. Landier's "ghosts in organizations" [22]. Dr. Landier himself corroborated, when he was present at the international presentation of this author on 30.06.2023, promoted by CIRET (French transdisciplinary center) and CETRANS (Center for Transdisciplinary Education in Brazil), as he asked questions and showed his convergence with the HPTD-M view [10]. Like people, organizations also get ill, but only at the psychological level: The illness will be manifested individually in the participants through the somatic level, i.e., they can get physically sick in many ways.

To illustrate, through psychotherapy it is possible to understand some unconscious (unintentional) defense mechanisms that avoid dealing directly with emotional discomforts:

- **Escaping** to the symbolic/noetic world (from the Greek NOUS), as if our physical and concrete world were an illusion, without understanding that emotional conflicts are part of learning processes. Meditation and mindfulness can be a tool to improve our intuition, our insights, and our creativity, but they are only a means, not an end in themselves.
- **Rationalizing** everything, as if the mere logical understanding of a problem automatically implies the solution. This defense mechanism tends to be the most common in our Western rational culture.
- **Dramatizing** emotion, as in a theater, as an unconscious way of not dealing directly with emotional pain. It may even be an intermediate resource to get used to the pain before confronting it directly. Figure 2.5 details this map, as it engages with emotional intelligence in the shadow sense of our Western culture, as will be explained.
- **Somatizing** unconsciously as a last systemic resort to balance escape from emotional discomfort. When psychogenic illness occurs, it means that our psyche has not accepted the problem or has not been able to deal with it consciously, so the last solution to balance our system is physical. Everyone has emotional discomforts and cannot hide from them. We must learn from our mistakes: psychosomatics

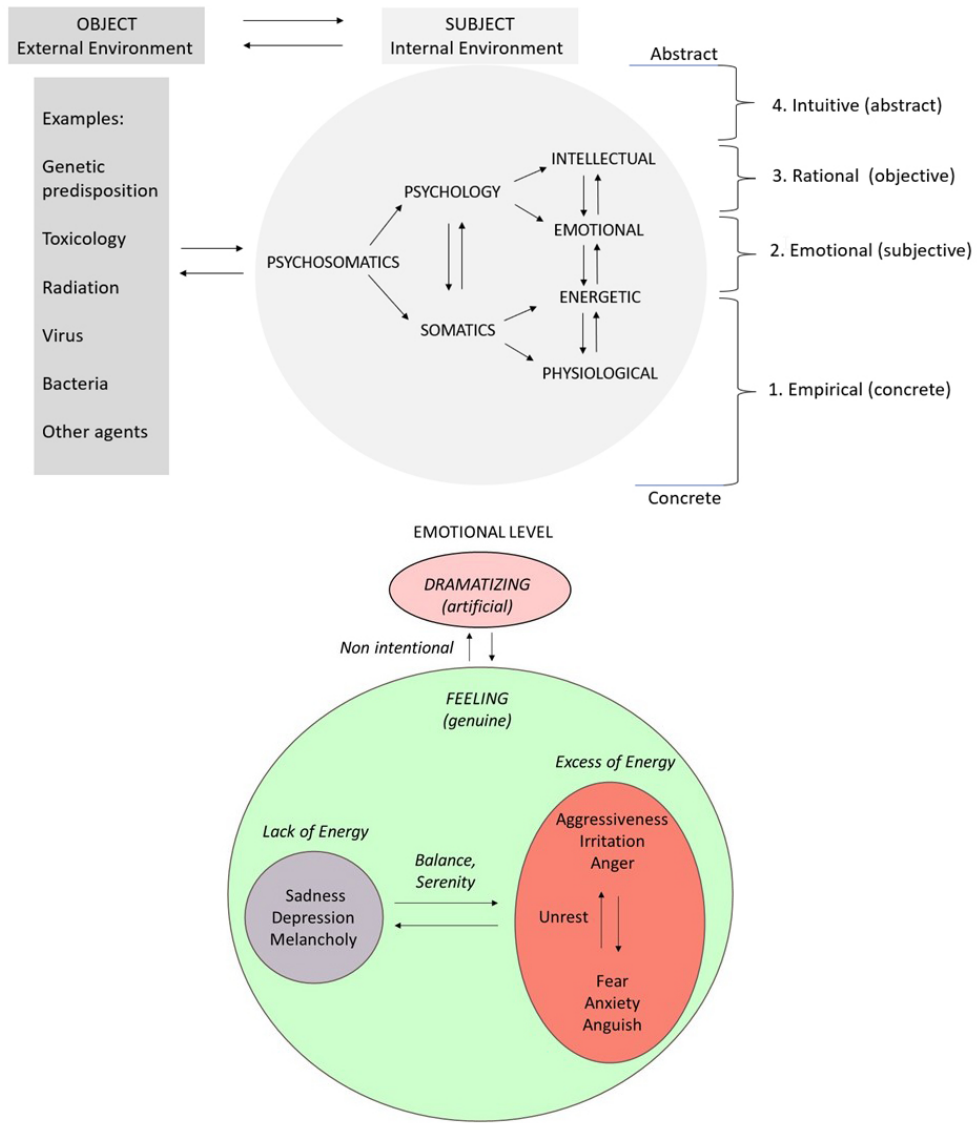


Figure 2.5: HPTD-M Psychosomatics Model: Emotional Level as a Shadow of the Rational Western Culture. Source: This new HPTD-M Model improves the 2022 previous one [24] through the schema of the EMOTIONAL level

is clear in this sense. If an imbalance reaches the somatic level, it means that the psychic level has failed to deal with the problem. Jung, who was a psychiatrist, called these psychogenic diseases [26]. This is the last resort to harmonize the whole system.

Of course, there are other somatic disorders, such as hereditary or external influences, e.g. chemical intoxication and radiation: these are not psychogenic diseases. In this sense, the framework of the HPTD-M psychosomatic process is through the interaction between the object (external environment) and the subject,

the internal environment of all. Four levels of subtlety correspond to our types of intelligence. Those levels are:

- **Physiological** (physical balance of the body).
- **Energetic** (vitality to carry out activities).
- **Emotional** (feelings).
- **Intellectual** (rationality).

The four types of intelligence model of HPTD-M can relate to these levels:

- **Empirical** - concrete with the Physiological and Energetic.
- **Emotional** - subjective with the emotion itself.
- **Rational** - objective with the Intellectual.
- **Intuitive** - abstract with what is beyond the Intellectual on an abstract level.

According to Franz, in a book on the theory of synchronicity, which can be applied to situations where sense rather than causality prevails: There is a relationship between physical and psychic energy, and while physical energy can be measured quantitatively, we have no way yet of measuring the amount of psychic energy except by the sense of awareness of intensity. The function of feeling is to give us guidance on this when we talk about something that moves us. [27]

So, this connection between emotional energy and the psychosomatic process can be seen in Figure 2.5.

2.9 Beyond AI's Scope: Shadow Levels, Soft Skills, and Empirical Intelligence

The Jungian concept of the shadow should be understood in this context. Jung said that we are conscious of only a small part of the world. Our vision reaches only a certain distance, our memory is insufficient, and our sensory perceptions, important for our orientation, also. Many things happen that we are too blind to see. Consciousness is like a lighthouse that travels across the field; only the illuminated points are conscious. The sphere of shadow is the unconscious, or dark side, the habitually unconscious part. To be conscious you must be focused; we are always conscious of something specific. The total personality could be described as the consciousness plus the unconscious. There is the usually unconscious area and the relatively unconscious area; there are times when we are conscious of this and times when we are conscious of something else. We think we know something about the nature of (physical) matter, but what is consciousness? We have no idea. We have no perspective away from consciousness, to judge its properties. The conscience is like a headlight traveling through the field; only the illuminated points are conscious. The unconscious, or dark side, the part that is usually unconscious, is the shadow sphere. To be conscious you must be focused; we are always conscious of something specific. The total personality could be described as the conscious plus the unconscious. There is the area of the habitually unconscious and the area of the relatively unconscious; there are times when we are conscious of this and times when we are conscious of something else. [26]

The shadow is everything that one cannot be aware of or that is repressed in some way, not only on the personal level but on the various collective levels, from the family, organizations, cities, states, and countries, until reaching the world archetypal level, according to the model presented by this author in an article published in 2022, adapted in Figure 2.6. [28]

AI cannot understand the shadow of our Western culture inherited from the mechanistic Modern Age. With a hypertrophy of rational intelligence about others, reducing the subject to the object, the tendency is that the shadow of the West directly involves emotional intelligence and the subject, the opposites, something in line with Heraclitus' idea of enantiodromia, which Jung incorporated in his Analytical Psychology. In this context, the emotional complementarities in Figure 2.5 are a detailed map of the EMOTIONAL level, including artificial dramatization versus genuine feeling, as already described in the sense of a psychological defense mechanism. Figure 2.5 is relevant because modern Western culture tends to be rational and to

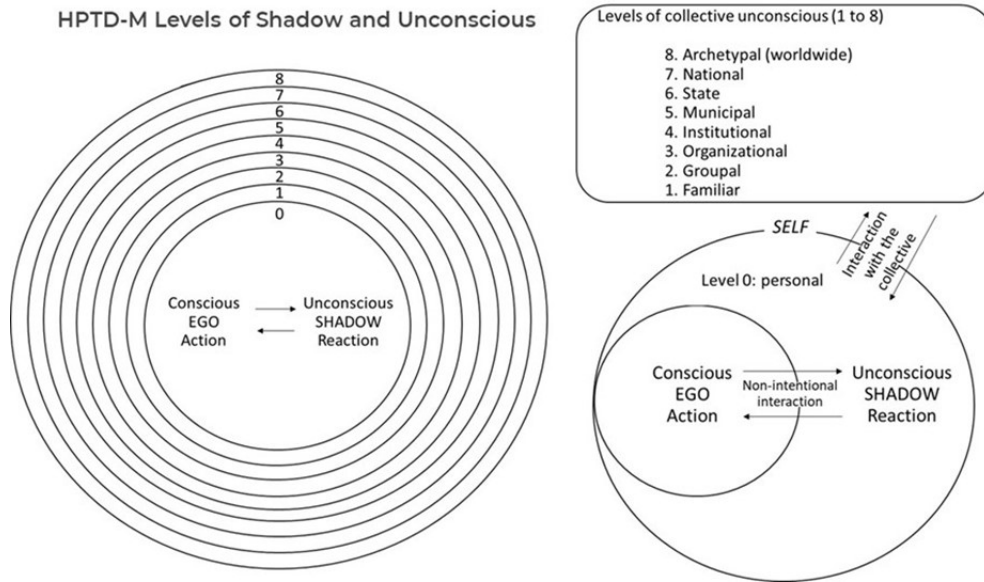


Figure 2.6: Shadow Levels of the Collective Unconscious [28]

overlook the relevance of feelings in individual and collective psychological well-being, i.e. physiological health through psychosomatic health. This means that emotional intelligence tends to be the shadow of Western culture in the face of rational intelligence that represses its complementary. The balance between emotion and reason for health in a holistic perspective would be recommended, including concrete solutions to problems in organizations, at various levels, Figure 2.5 complementarity presents the context of psychic energy related to emotions: lack (sadness), excess (anger), and balance (serenity). The principle of Complementarity is the key.

The soft skills of intuitive intelligence intertwined with emotional intelligence will now be expressly addressed, which AI also does not achieve. According to Galvão, professor of applied philosophy at New Acropolis Brazil, symbolic vision, intuition, imagination, creativity, innovation, inspiration, ethics, justice, principles, meaning, purpose, and ideals, the AI does not reach with its mechanical logic, combinatory analysis, and positivism. Aligned with the HPTD-M vision, the teacher understands that our culture is hypertrophied logically and thus many people have occupied the place of machines for a long time with their deductions and mechanisms. For Galvão, the need to develop human skills is now apparent. What this author argues, is: AI reaches only the rational intelligence, but not the intuitive and the emotional. The teacher implicitly corroborates by saying that AI can be a wonderful encyclopedia for doing combinatorial analysis never seen before, but it only makes from what exists, it does not create, and advances in human culture happen through innovations. [29]

Considering this HPTD-M context of levels of collective unconscious and the shadow of emotional intelligence in our Western culture, Dr. Mariana Thieriot Loisel shared Figure 2.7 with this author, through LinkedIn [36]. The reflection provoked by Figure 2.7 involves the result of choosing to leave a toxic situation, i.e., the power of stepping away. Dr. Loisel is a transdisciplinary author who has a theory of Grey Zones, as well as a post-doctorate in philosophy, science, and technology. After examining Figure 2.7, another Brazilian friend, Debora Santille, a Brazilian expert in governance and finance besides a former business executive, currently focused on companies' boards of directors, understands it applies to corporate risk mitigation. Alternatively, according to Carlos Adolfo M. da C. Câmara, an economist in the Brazilian career of São Paulo state tax auditor, Figure 2.7 represents the interruption of a flow of mistaken thoughts by means

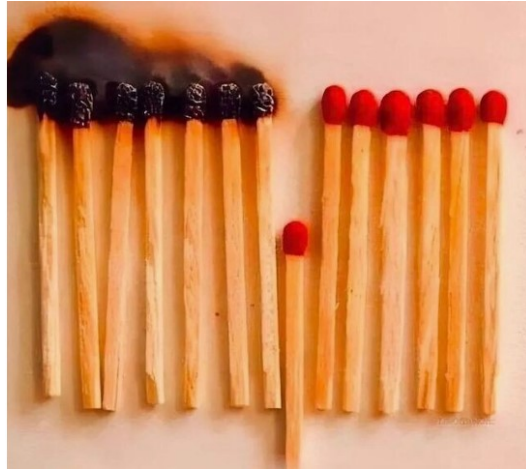


Figure 2.7: Choosing to leave a toxic situation - the power of stepping away [36]

of a disruptive measure. The reflections from Santille and Câmara corroborate the HPTD-M approach that AI, with its rational limitation as a tool, can generate a succession of mistaken attitudes if not mediated by the empirical, emotional, and intuitive intelligence of the decision maker, i.e., human mediation.

Finally, AI will never be able to reach issues related to "making sense", dialectics, the transdisciplinary logic of the third party included, the notion of reasonableness (different from rationality), and ethics, of what is acceptable and what is not. In short, soft skills are beyond the reach of AI. Soft skills and empirical intelligence are already seen in the example of the empirical formulas of engineers, acupuncture, and "off-label" medicines. In this context, the realization arises that AI can provide powerful tools for organizing data and different theories that may not yet have been communicated, but it will never provide the sense of human skills (soft skills) and the practical experience of a professional (empirical intelligence). This discussion may be interesting in the context of leadership and mediation theories such as the one presented by this author in 2023 when teaching a 14-hour course on the mediating manager to address problem solving. [16]

2.10 No Consciousness Awakening in AI

HPTD-M understands that insights can come from the personal and/or collective unconscious. Conscious and unconscious interact in a duality. According to Jung's Analytical Psychology, there is a personal unconscious and an impersonal or transpersonal unconscious, i.e., the collective unconscious, because it is detached from anything personal and is common to all men since its contents can be found everywhere, which is naturally not the case with the personal contents. The personal unconscious contains lost memories, painful ideas that are repressed (i.e., forgotten on purpose), subliminal perceptions, which are meant sense perceptions that were not strong enough to reach consciousness, and finally, contents that are not yet ripe for consciousness. It corresponds to the figure of the shadow so frequently met with in dreams [30]. HPTD-M considers the ancient concept of egregore [31] through a modern perspective, as a group that reflects a common collective unconscious, in connection with the Jungian concept, including the model in Figure 2.6 that describes levels of the collective unconscious, from 0 (personal) to 8 (worldwide). HPTD-M has therefore developed a model to address the issue of the unconscious in organizations, by classifying the collective unconscious through levels, from the families, organizations, groups, municipalities, states, and nationalities, also to the higher level of the global (archetypal). In this context emerges the Jungian idea of shadow, which is present in Figure 2.5 and Figure 2.6. The unconscious and the shadow involve also the concept of "ghosts" in organizational environments, developed by Landier [22], and also the idea of non-intentional interaction

between the conscious and unconscious from Loisel's *Les mutations humaines: philosophie et science* [32].

As per Table 1, there is a relation between AI and one of the five main HPTD-M models: Psychosomatics in Figure 2.5, which connects the Physiological, Energetic, Emotional, and Intellectual levels to the observer, which could be considered the individual human Consciousness, beyond this psychosomatics level.

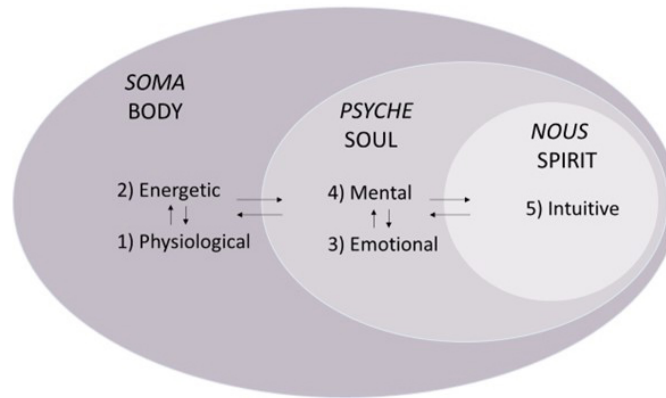
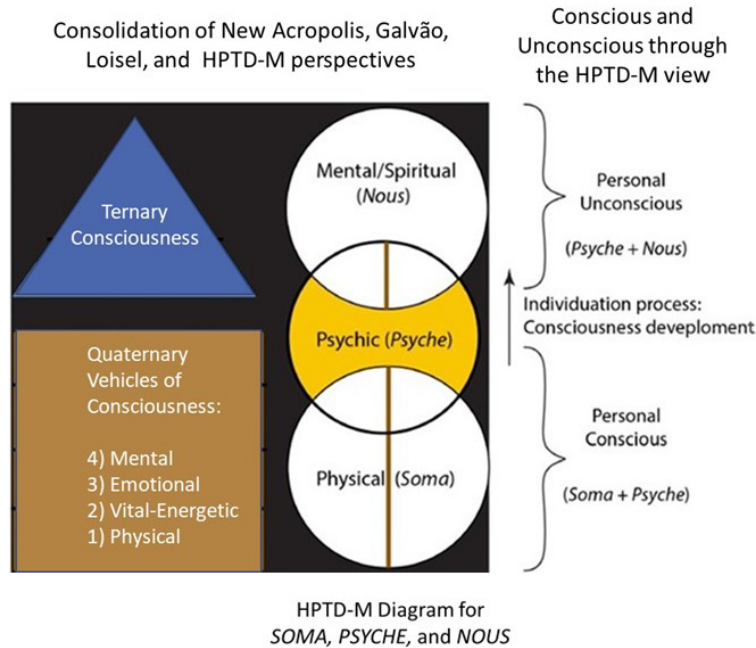


Figure 2.8: Soma, Psyche, and Nous through New Acropolis, Galvão, Loisel, and HPTD-M Perspectives [7, 32, 33, 34]

This paradigm is corroborated by Figure 2.8: The consolidated schema from New Acropolis, Galvão, Loisel, and HPTD-M shows the square as the human instruments, masks, or vehicles of consciousness manifestation (Physical, Vital-Energetic, Emotional, and Mental), besides the triangle as the human being essence or human consciousness. There can be made a comparison between the psychosomatics schema of Figure 2.5 and the Greek Philosophy (Soma = Physiological-Energetic, Psyche = Emotional-Mental, and Nous = Intuition). So, Figure 2.8 configures a transdisciplinary schema, simultaneously reflecting many

Table 1: AI vs. Consciousness in the HPTD-M Context of the Four Elements and the Four Types of Intelligence

Type of Approach	Vehicles or Instruments of Consciousness Manifestation			Observer/Consciousness
1. Alchemical Symbolic Elements [35]	Earth	Water	Air	Fire
2. States of Matter [35]	Solid	Liquid	Gas	Plasma
3. Psychological Functions [35]	Sensation	Feeling	Thinking	Intuition
4. Greek Philosophy [24]	Soma	Psyche		Nous
5. HPTD-M Types of Intelligence [24]	Empirical	Emotional	Rational	Intuitive
6. HPTD-M Psychosomatics [24]	Physiological-Energetic	Emotional	Intellectual	Consciousness
7. Galvão view [33]	Physical-Energetic	Emotional	Mental	Consciousness
8. Loisel view [32]	----	----	Cognition	Consciousness of the <i>Non Intentional</i>
9. Artificial Intelligence (AI)	----	----	AI	----

views of the square and triangle related to Indian philosophy, a Greek philosophical view (Soma, Psyche, and Nous), besides the European Alchemical Symbolic Elements (Earth, Water, Air, and Fire). The archetypal Alchemical elements, in turn, can be manifested in two levels, i.e., physical (solid, liquid, gas, and plasma), besides psychological (sensation, feeling, thinking, and intuition). In this connection, Brazilian philosopher Galvão gave a 2016 lecture on the Indian Bhagavad Gita, mentioning five levels, namely physical, energetic, emotional, mental, and the conscience as an observer. This view can be clearly compared to the square of Figure 2.8 as the first four levels (physical, vital-energetic, emotional, mental), and conscience as the representation of the triangle. Galvão also understands a complementarity between the quaternary vehicles, as the representation of the material world, and the ternary consciousness, as the spiritual world [33]. Besides, as per a New Acropolis article from Ramos in Coimbra, Portugal, this triangle corresponds to what the author shows as superior mind, intuition, and will [34].

Considering the HPTD-M view, AI will never be able to replace the human consciousness, also expressed in Table 1 as Nous or Intuition, depending on the approach. AI is a remarkable rational instrument for efficient sources of information and the establishment of cause-and-effect relations but cannot reproduce the empirical/emotional types of intelligence and cannot be conscious or reflect intuitive intelligence, i.e., effectiveness is beyond the AI's capacity. In management, as already seen, efficiency can be seen as "doing things right", and effectiveness as "doing the right thing". So, the duality of efficiency-effectiveness is a rough but simple way to understand this discussion. Not only in management and through HPTD-M, but even in Sci-Fi movies.

Dr. Mariana Thieriot Loisel, a member of the CIRET Board, has noticed in her book that cognition can take place in the computer's field without consciousness. Hence, decision making cannot be the only result of cognition and needs the interaction between cognition and consciousness. [32]

Finally, an example of AI is seen through the epistemic form of art in a Sci-Fi film, 2001: A Space Odyssey (1968). In this movie, the Hal 9000 computer tries to take control of a spaceship, kills one astronaut, and tries to kill another until it is disconnected. The supposed high level of AI cognitive functions of the HAL 9000, as seen in the movie, is only a rational tool, and malfunction is unpredictable if not supervised by a human, i.e., "malfunction" may be directly connected to the program itself. So, the computer's judgment that resulted in those actions was merely rational and even compatible with what it was programmed to. This is just another way to show that AI can be a wonderful rational tool, but won't work for empirical, emotional, and intuitive purposes. So, through the HPTD-M perspective, AI cannot replace human consciousness, emotion, and empiricism.

2.11 Conclusion

The HPTD-M theory or *Holopraxis Transdisciplinary Management* involves three types of logic, four epistemic ways, and four archetypal elements translated to four types of intelligence showing how **AI cannot be compared to human consciousness.**

The scope of AI was explained and demonstrated basically through:

- The three types of logic:

- **Binary** (True or False) for the mechanistic troubleshooting (AI).
- **Feedback** (of cause and effect) for the systemic environmental-biologic problem solving.
- **Included Third** (dialectics) for the transdisciplinary complexity of human phenomena in troubleshooting.

- The four types of intelligence: empirical, emotional, rational, and intuitive, as compared to the well-known Gardner's MI theory of multiple intelligences, which involves nine types.

AI is an excellent rational tool, but not an empirical, emotional, or intuitive one for problem solving, as evidenced in i) the ChatGPT simulations, ii) the HPTD-M models in dialogue with Gardner's MI Theory, iii) psychosomatics, iv) the emotional shadow of the Western culture, v) the levels of the collective unconscious, and vi) the reflections on soft skills.

The concept of the mediating manager has an essential role in showing the limits of AI. It is essential to the view that **AI involves rational intelligence and KNOWLEDGE, but not a broader UNDERSTANDING of reality.** These are issues that involve the complexity of human phenomena, which cannot be reduced to rationalist and/or mechanistic models, as if these paradigms were the solution to everything, leaving the shadow of emotional intelligence exposed, as a major deficiency of our Western culture. An example is the visions of leadership and mediation that the HPTD-M theory has developed along with the ways of solving problems in organizations. Binary logic does not apply in this case, i.e., the transdisciplinary logic of the Included Third is more appropriate in the face of complexity. Besides, the idea of consciousness, as demonstrated in Table 1, is another way to see the scope of AI, which is merely rational.

Management tools need to be used a priori with awareness of the limits of their applications. AI is no different, a disruptive technology that every professional will have to learn to deal with, like the personal computer in the late 1980s. AI is an excellent rational tool. However, the AI binary logic does not apply to the complexity of human phenomena. Furthermore, **AI can function as a consultant or assistant in terms of an efficient source of information, but not as an effective manager or decision maker.** Roughly, through the managerial theory, effectiveness is to do the right thing, which is more than efficiency (to do things right). Then, in this author's opinion constructed through simulations in the ChatGPT **to obtain efficient results, the questions to AI need to be objective and precise in the concepts.** There can't be complex issues involving human phenomena: This is for the effective human decision maker, not for AI to answer since there can't be consciousness awakening in AI, as demonstrated.



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CHAPTER **3**

Symbiotic Wisdom: Weaving the Fabric of the Future

Peter J. Whitehouse

Abstract

Symbiotic wisdom is the integration of so-called artificial and natural intelligences with life-affirming values. It is a concept developed to help address our many interrelated social and ecological challenges. We are entering a new epoch in human history, just as powerful digital intelligences emerge. Deep understanding of our own neurocognitive communicative abilities, including storytelling, and their limitations will be essential for effective integration of various intelligences. Caring for older people will be used to illustrate the importance of embodied symbiotic wisdom in the form of care robots.

Keywords: Transdisciplinary, narrative, metaphor, brain, wisdom, symbiosis, aging, care, artificial intelligence, symbiotic dementia.

Article

The engagement of “Artificial” Intelligence (AI) with human mediators to accomplish safe and effective actions to support a sustainable future will require a deep understanding of natural intelligences, especially those of *Homo sapiens* (Kissinger et. al., 2022). In this contribution the concept of symbiotic wisdom as a process of integrating intelligences aligned with values is developed. The term avoids the distinctions between artificial intelligence and natural intelligence, incorporates affective capabilities, and accepts that intelligences emerge in nature in different forms. I am birthing this concept during a time of great concern about a future that is being threatened by climate crisis induced environmental degradation and by social media pathologies potentially accelerated by the emergent power of Large Language Models and Artificial General Intelligence (Frayssinhes, 2019). The Great Acceleration in human population (especially of older people) starting in the 1950’s occurred at the beginning of a proposed new geological epoch, the Anthropocene, named for the impact on human on the geosphere and biosphere (Whitehouse 2023). Later in the paper we will consider an example of how these concepts can help us care for the growing number of seniors, especially those with cognitive impairment (Whitehouse, 2018).

As we emerge into increasingly dependent relationships with AI, it is critical that we understand the contributions humans can make to these relationships. How can we co-create the noosphere? Symbiotic wisdom is a concept composed of both old and new ideas. Wisdom is an ancient concept that implies integration of rationality with emotionality, thought and values (Whitehouse, Ballenger & Katz, 2001). It emerges historically and culturally in relationship to world views, including religious and spiritual traditions. Wisdom has been a relatively neglected concept in psychology and the social sciences. It is often associated

with individuals, rather than a product of collective activity. Wisdom is also often associated with a recognition of limits. Little attention has been paid to wisdom and AI.

Symbiosis is composed of two roots- “sym” meaning together and “biosis” referring to life. Symbiotic means two life forms cooperating together where each is called a symbiont (Margulis, 1999). Symbiogenesis is the process by which two life forms combined to form one, as in the classic cases of mitochondria and chloroplasts which started their evolution as separate life forms but then combined with eukaryotic cells to create new species. Symbiotic is a word that I may have invented for the first time. It means “together” with an artificially enhanced power (as in mechanically or sensorily enhanced “bionic men and women”). The combination of human and artificial intelligences is symbiotic. Finally, Symbioscene represents a geologic epoch to strive towards that might replace the Anthropocene (Whitehouse, 2018). It is an imagined time when organisms might live together on the planet in greater harmony and with greater resilience and flourishing. Symbiotic wisdom represents an integration of various intelligences and ethics into a collective wisdom. Other life forms besides humans show forms of intelligence, for example the potential for wisdom in trees, but we will not further develop this idea here.

How does symbiotic wisdom manifest itself and how do humans contribute to its creation? Artificial intelligence is based on large data sets created by humans. Although rationally and quantitatively driven to a degree, humans also have another critical essential attribute- they are meaning-seeking storytellers. Qualitative and subjective processes drive this narrative intelligence. Humans often understand complex issues by creating a story about the interacting components. Oral and written narrative processes have different strengths and weakness in educating people and transforming culture. Stories, like cognition itself, are embodied. Your brain depends on the body to allow it to function; hormones and other somatic chemistries influence thinking and feelings. Dance and music can enhance the embodiment of narrative.

Powerful archetypal stories (of heroes and journeys etc.) manifest in dreams, fairy tales, and myths emerging from different cultures. At the root of many powerful stories are metaphors. These linguistic devices allow one domain of thinking to creatively influence another. Many metaphors involve the geometry of the human body and surrounding spaces. Nature is also a rich source of metaphorical language. I have studied metaphors like “think like a mountain” (inspired by the broad-based and aspiring thinking of Aldo Leopold and Arne Naess) and “feel like waters” (the flowing feminine energy as manifest in, for example, Rachel Carson). Trees are an especially valuable sources as in “exploring roots” or “branching out” as in the tree of life or tree of knowledge (Whitehouse, 2023).

Embodied human wisdom is dependent on both somatic and brain function. The brain is composed on many integrated components. Perhaps the most notable is that the cerebrum has a left and right hemisphere connected by a large fiber pathway called the corpus callosum. Much has been written about the interdependent functions of the two hemispheres, but I will focus on one concept based on the work of Ian McGilchrist (McGilchrist, 2021). His several massive tomes cannot be easily summarized, but their essence is that in modern Western times the logical, linear, language controlling left hemisphere has come to dominate the more imaginative but more silent right. The most fundamental difference in processing capabilities relate to modes of attention. The left focuses intentionally and narrowly to apprehend and manipulate the world. Think of a rat in a maze tapping a bar to get food. The right looks for wider comprehension using metaphorical, musical, and other modes that are based on a broader attentional sweep and greater embodiment. Think of the rat exploring the maze looking for opportunity and detecting danger. McGilchrist believes that imbalances in hemispheric functions also create dysfunction and diseases like dementia and schizophrenia. Problems with attention underlie several neuropsychiatric conditions. They may also undergird pathologies in our world views and subsequently limit our ability to relate to the world My own PhD research focused on inter-hemispheric differences and attentional mechanisms in patients with unilateral stroke and in schizophrenia, although without the depth of McGilchrist’s ideas (Whitehouse, 2023).

Variation in world views is also a theme in the work of Jeremy Lent the founder of the Deep Transformation Network, a group dedicated to changing culture towards great flourishing. Lent’s two books *The Patterning Instinct* (Lent, 2017) and *The Web of Meaning* (Lent 2021) focus on how world views form because of human abilities to find patterns in the world whether they be in the domain of art and/or science. The resultant semantic networks of words and concepts create our world views, which in turn influence our ways

of operating in the world. Lent has a particular interest in the difference in Eastern and Western ways of thinking about an interacting in the world. He sees some modes of thought more consistent with right and some with left hemisphere functioning in ways similar to McGilchrist's perspectives. He also sees Indigenous world views as valuable in emphasizing the importance of community and kinships with other humans and all living creatures (Topa & Narvaez, 2022). So how can we develop new world views that foster flourishing and in which domains of life should we operate to encourage creative changes?

My own clinical and research work has focused on understanding and caring for older people, especially those with dementia. Competing world views influence are thinking and valuing. For example, a distorted web of meaning surrounds the concept of Alzheimer's (George & Whitehouse, 2021). Oversimplistic biological reductionist thinking leads to pursuing cures rather than improving care or emphasizing prevention. Alzheimer's is a heterogenous set of conditions intimately related to normal aging processes in the brain, which require more comprehensive social responses than those based on the medicalization of aging. Can AI help us understanding these patterns of disease and dysfunction better and provide better treatment and care?

How could symbiotic wisdom be applied to the challenges of the growing number of older people with cognitive impairments that need care for activities of daily living (ranging from basic abilities to bath to complex skills like driving)? Older patients often have a combination of mental and mobility challenges that include the risk of harm and falls. Over the past several decades I have worked with care robots starting with a paper in 2002 entitled "Can a computer be a caregiver" (Whitehouse, Marling, & Harvey, 2003). At that time, we were working with rather mechanical appearing Sony robot dogs (Aibo) but I quickly moved on to fuzzy, cuter baby Harbor seals from Japan (Paro). Today, the responsive intelligence, monitoring capabilities and potential abilities to provide emotional support have increased in ways that allow the possibility of more acceptable and capable care robots (Lu et al, 2021; Broadbent et al., 2023). Robots can see and listen to monitor the environment and Currently I am working with collaborators at Case Western Reserve University and Xavor to develop such a more capable robot. The possibility of symbiotic wisdom is a key development issue. What is the human caregiver perhaps uniquely suited to do, and what are the strengths of the embodied AI? Like humans, computers are also good at some forms of pattern recognition. In fact, AI is based on studying human patterns of language and other activities. In clinical care situations digital monitoring and interactive devices can examine large data sets to establish relationships between variables, for example time of day and risk of falls. They can also scan the environment assessing signs of possible care recipient distress. They can "personalize" care by using data about the person and their environment. Families can create libraries of digital photographs, videos, music, favorite foods, and activities that can travel with the person with cognitive disabilities into different care settings. Transitions in care (e.g. home to nursing home to hospital) could be made easier as caregivers in different can more easily learn about such preferences. can possess auditory and mobility capabilities to interact.

Currently I am working with collaborators at Case Western Reserve University and Xavor to develop such a more capable robot. The possibility of symbiotic wisdom is a key development issue. What is the human caregiver perhaps uniquely suited to do, and what are the strengths of the embodied AI? Like humans, computers are also good at some forms of pattern recognition. In fact, AI is based on studying human patterns of language and other activities. In clinical care situations digital monitoring and interactive devices can examine large data sets to establish relationships between variables, for example time of day and risk of falls. They can also scan the environment assessing signs of possible care recipient distress. They can "personalize" care by using data about the person and their environment. Families can create libraries of digital photographs, videos, music, favorite foods, and activities that can travel with the person with cognitive disabilities into different care settings. Transitions in care (e.g. home to nursing home to hospital) could be made easier as caregivers in different can more easily learn about such preferences.

Of course, there are dangers to care robots ranging from practical design issues to ethical concerns. Could clumsy robots contribute to falls rather than prevent them? How can privacy be maintained in a data sharing and constantly monitoring environment? What evidence would be required to demonstrate effective care? What about costs and reliability? Current generation AIs sometimes make up stories. Although these are commonly called hallucinations, they do not often involve sensory channels (visual or auditory

phenomena), so they would be better actually called confabulations. Human often fill in gaps in memory or stories, either intentionally or unintentionally, as well so we share this feature to a degree!

Looking even more deeply into possibilities, what range of “emotional” skills might AI enhanced robots be “programmed” to demonstrate? Can they coach patients to perform daily routines? Can they modify thinking and behavior through techniques like motivational interviewing and cognitive behavior therapy? Could robots even demonstrate empathic behaviors? Whatever capabilities of the triad of care recipient, AI care robot, and human caregiver might emerge, establishing relationships will be key. These relationships may be reciprocal and based on shared knowledge and values, not just data sets. Could a human care recipient in fact feel useful by caring to the robot by feeding (charging), cleaning or dressing (in “personalized” clothing) it? When might a robot become more like a pet? Could the robot caregiver collaborate with a human to make art or music? Perhaps robots will eventually be able to cocreate narratives with their care partners (Hoffman, 2023). It is the stories of our lives and their underlying metaphors that create coherence to our daily activities.

In our Intergenerational Schools in Cleveland, children interact with older adults (some with memory problems) in the classroom, long-term care facilities, and the community. Sharing stories is a key aspect of these relationships and our attempts to create collective human wisdom. (George, Whitehouse & Whitehouse, 2011). Perhaps care robots can play a role in enhancing the learning of the children and the elders by interacting with the AI agents that will increasingly be a part of our educational systems for youth. University-based researchers also engage with our school to examine how our programs enhance learning and caring. Robots in this environment could enhance research projects by collecting and analyzing data. Perhaps the noosphere will emerge out of this pattern of intelligent interactions.

Human mediation with AI will be necessary in many domains, not just care of the elderly, as in our example. Symbiotic wisdoms may become a foundation of the emergent noosphere. Many humans are already dependent on interconnected digital devices (like smart phones) to aid them in daily living. Understanding our own patterns of behavior and their underlying neural foundations should help us collaborate more effectively with AI. Let us hope that we can develop symbiotic wisdoms that enhance rather than detract from our quality of life as we age and help us address the polycrises in our social and ecological systems.



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CHAPTER **4**

Future Intelligences: Human and/or Artificial? A transdisciplinary perspective

Mirella Tarmure Vadean

Abstract

This article proposes a renewed view of Human intelligence in comparison with Artificial Intelligence, through a transdisciplinary analysis of the concept of mediation. Considered from an integral educational perspective, Human intelligence raises a central question: what is today a “human deep learning,” when all our attention is focused on the machine and deep learning? AI unveils some important aspects of human beings, in the versatile epistemological framework where we evolve. Presently, we continue to give priority (supremacy) to the Object (of study) to the detriment of the Subject (human being). Beyond a polarized view considering the risks versus the benefits of AI, a philosophical and epistemological posture invites to comprehend intelligence not only as a faculty of understanding, learning, and adapting to environment, but above all as a principle. Two fundamental levels of reality are analyzed, where intelligence unfolds in a reflective way, enabling us to grasp the current and the future position of the posthuman. Those levels confirm that the fusion between human being and AI cannot lead to a real transdisciplinary - depolarized form as an included third, but can only realize another form of human, the transhuman (as accepted by the transhumanism movement). They also confirm that the transhuman is not the only next human. This paper proves that Human intelligence, directly related to consciousness and sensibility cannot remain limited at the levels of AI (even if at those levels, AI is faster and more productive than humans). Thus, an integral and sustainable development of Human intelligence - at individual and collective scale - is indispensable and requires the same resources that are currently allocated to the development of AI in and through education: research and teaching.

Keywords: Artificial Intelligence, Human Intelligence, Mediation, Human deep learning, Posthuman, Transdisciplinary levels of reality, Included third.

4.1 Introduction

If in the future, Artificial intelligence (AI) thinks for us, in our place, what will we, humans, do then? Are we ready to accept that it may exist a process other than thought, as we know and practice it? After all, it's perhaps this kind of questioning that AI exposes and opens us up to.
(Author)

As professors or instructors, we are mediators, facilitators between knowledge and students. However, today, both knowledge and students are changing at a pace unheard of before, impelling us to manage our own change. This change is mainly attributed to the growing presence of technology and Artificial intelligence (AI), as tools or "assistants" in all areas of our professional and personal lives, or even as implants in our physical bodies, of late. And as "any philosophical inquiry into Artificial intelligence implies a thought on human intelligence", [1] we need to look at the meaning and the role of AI and human mediation from the perspective of education, which I understand here in the sense of integral education that targets the whole human being (not only the professional side).

The idea of a deep education implying human deep learning and human deep knowledge is considered by Sue McGregor from a transdisciplinary perspective:

Because transdisciplinarity is about understanding the world using newly created deep knowledge, higher education especially needs to foster and facilitate deep learning and deep education. [2] Deep education concerns the whole person, a deep sense of human identity and involves a reconceptualization of how people view their reality. [. . .] Deep learning is actually predicated on the concept of depth (versus shallowness). Depth refers to complexity and profundity of thought (penetrating deeply) to incredible intensity and to comprehensiveness of study. [3]

Depth appears as a necessity in the context of the scission between two epistemological categories: the Subject (human being) and the Object of study. This scission, which has persisted since the 17th century, as Edgar Morin shown [4], is accentuated by the quick development of AI. The human subject has been and continue to be ejected from his inner experiences, he is condemned to rely only on exterior objects which - have never solved his deepest anxieties, on the contrary, have accentuated them. [5]

The aim of this paper is to understand what we might call today human deep learning, (deep as essential) at a time when all our attention is focused on the machine and the deep learning (the deep learning is a subset of machine learning that focuses specifically on neural networks). [6] How can we engage areas of mediation within disciplinary university structures to make human deep learnings accessible to students, who will become professionals and citizens with a much higher level of awareness and responsibility, in this age of an algorithmic orchestration of life. I intend to detach myself from a polarized perspective that considers the risks vs. the benefits of AI today. I would rather present three epistemic constructs that help us to understand AI in relation to Human intelligence (HI) and to analyze some of their attributes that approach or distance us from what we may call a human deep learning. Thus, from the perspective of complex thought, I will use Nicolescu's transdisciplinary concept of "levels of reality", and the concept of included third. I situate my approach at the crossroads of two critical perspectives, French and English.

4.2 Roots of Intelligence

Attempts to define intelligence continue to multiply, from various perspectives, especially of late in the context of AI development. I will not review these constantly evolving definitions. Nor will I follow the historical-etymological path of the term "intelligence". Instead, I would select a few aspects that might shed some light on this study.

Derived from the Latin term *intelligentia*, according to Littré the word "intelligence" covers several meanings including:

1. The "quality of being intelligent; the ability to understand".
2. Abstractly, the mind insofar as it conceives, the human intelligence. [7]

According to Cambridge Dictionary, "intelligence" is:

1. The ability to learn, understand or cope with new or challenging situations.
2. Information about an enemy or an area, an organization responsible for obtaining this information, what we call "intel". [8]

From these meanings emerge some relationships between *intelligence and spirit*, between *intelligence and learning*, and between *intelligence and the information conveyed*.

Furthermore, Pierre-Henri Castel shows that the faculty of intelligence has historically been apprehended in opposition to two notions:

- The instinct to adapt without targeting for abstract abilities.
- Automatism, which includes mental tasks (such as calculation), but excludes novelty. [9]

Thus, the intelligence becomes the focal point of a materialist theory of thought. It is measured by the positivist psychology, using Binet's global intelligence quotient - an instrument that has shed all references to mental faculties and their internal architecture. Reducing intelligence to a psychological object. it describes two perspectives: on one hand, the factorial analysis of tests, psychometrics (Spearman) and, on the other, Piaget's structural theories, which envisage intelligence as a cognitive dynamic with rigid integration, stage by stage, a theory strongly contested by nativists, including Noam Chomsky. But, like Castel, we may wonder whether all these measures associated with intelligence (G factor, IQ), obtained because of psychometric and cognitive tests, do indeed reveal a mental reality or a reality effect produced by mathematical analysis? [9]

Therefore, it raises the question of which dimension of the mind these measurements refer to. An epistemological perspective shows that two fundamental, extreme levels of reality appear, directly related to intelligence. Between those two levels, there may be intermediate levels depending on the individual and collective context. In this analysis we will consider uniquely these two levels as shown in Figure 4.1:

1. **Level B:** Intelligence as the faculty of learning, understanding, and adapting to the environment, associated with our rational mind, the intellect, the so-called lower mind, describing the spirit of intelligence specific to a personal (and possibly collective) dimension.
2. **Level A:** Intelligence as Principle (understood as a principium, arkhè: the beginning of everything), specific to a pre-personal harmony and a universal dimension, which involves the essential human being and its transcendent force directly related to the sensibility and the intuition, associated with our so-called higher mind.

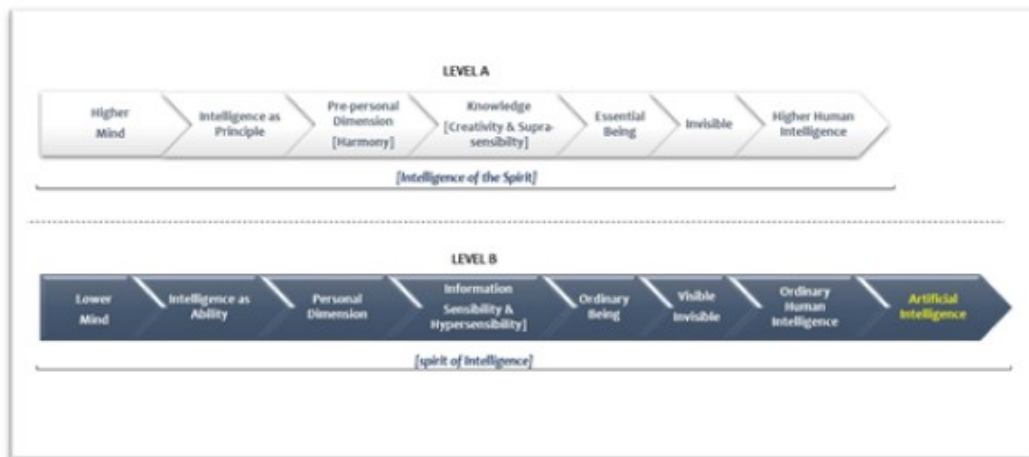


Figure 4.1: La forêt by Mariana Thieriot

4.3 Intelligence as a Principle

In opposition with the rational mind, there is a higher, transcendent dimension of the mind, a dimension that cannot be measured with any of the measuring instruments available to us today. This is the dimension from which we have been slowly separated over the centuries. In this respect, it's worth noting the arrival of the crucial point in the West, in the 17th century, where physics and metaphysics become one, while at the same time they are irreducibly opposing each other, as Morin shown. The Subject was dismissed as "noisy", as it did not meet the criteria of objectivism [4]. Later, utilitarianism was added, which held that human beings and, on a larger scale, the society, responsible to maximize everything to obtain the greatest profit (gain). In the name of utility, we must renounce to all our essential faculties, from the most basic to the most complex. [10]

Thus, if the lower mind corresponds to the *spirit of intelligence*, the higher mind corresponds to the *Intelligence of Spirit*, associate to a pre-personal and universal dimension. To understand Human intelligence versus Artificial intelligence is first to understand this distinction.

The word "principle", evolved from the Latin *principium* (beginning, origin) derived from *princeps* (which occupies the very first place) designates the absolute origin of something. It represents "what is known first, what is older and more important". [11]

The principle as *arkhè* reinforce the meaning of the beginning. *Arkhè*, a pre-Socratic term means "principle, origin" in ancient Greek. In philosophy, it is a substance from which things emerge. For the Socratics, *arkhè* is the apeiron (unlimited, infinite). *Arkhè* forms a pair with *kratos* (which is also a mythical Greek character). While *arkhè* designates a power that comes from being first, *kratos* designates a power that comes from being strong" [11]. Thus, as Derrida shown, the principle refers to the power, and to the authority. [12]

In *Phaedrus*, Plato shows through the dialogue of Socrate that "everything must be born of a principle" [13]. Plato's Principle is a temporal beginning that is itself not yet begun, a kind of unconditioned condition. In this sense, Principle = Cause. This enables his disciple, Aristotle, to say that the principle is the beginning of being and the foundation of knowledge: *Sophia* (wisdom).

Consequently, *principle is the foundation of knowledge as the source of being, that which is at the origin of things and that which is most powerful.*

However, the question that emerges is: if a principle is the origin of everything, how do we know the principle (of Intelligence here)? Aristotle names seven operations. One of them is intuition [14]. As human beings, we can only know the principle of Intelligence by intuition, from the lower level of mind, the rational mind (level B), which is dominant for us. The principle of intelligence is situated on the level A, in the construct presented (before ideas and words or any other forms are born).

Intelligence as principle escapes us not because it exceeds us, but because it precedes us, it is pre-personal.

Intelligence as principle values what has always been known, and has an authority and a force that attests it as a fundamental attribute of the essence of the human being. Intelligence as principle is accessible through intuition, for it is where we enter the Knowledge. We can see that Intelligence depends on something more complex and vaster than a simple, measurable cognitive process. The principle shows that intelligence depends on our degree of consciousness. Among many others, Ricoeur shows it through the hermeneutics of the oneself as another. [60]

Consciousness is the state of being that enables human being to know himself, to know that he is. To become aware of intelligence as principle is to know oneself in the phenomenon of intelligence beyond all form. But what does it mean to be intelligent beyond measurable or quantifiable forms? It means recognizing intelligence as an energy that creates something so harmonious that it appears intelligent (and that can be clever for the good and for the evil).

4.4 Intelligence as Harmony

"Harmony is the relationship between different elements of a whole" [15], the whole envelops all the parts while respecting them. I would like to specify that in this case, harmony does not focus on collectivism, but rather on the relationship between the human being and his essence, his source of being.

In our case, intelligence as principle describes a harmony as a very particular fusion between Spirit and mind, where both instances are preserved and encompassed in a more complex and greater form, as foreseen by the transdisciplinary included third. This is a complex form that allows opposites and contradictions to harmoniously coexist while respecting their shapes and features (isomorphism). Included third always appear on a higher level of reality, beyond oppositions, binary forms, or contradictions. [16]

"Perceived before it is conceived (sensed), [harmony] is a natural faculty, it affects us perceptibly, and we are able to grasp it intellectually". [15]

An important element is added to the study of the principle of intelligence as harmony: *the importance of sensibility*, which is distinct from emotions or feelings, and belongs to the prescient, the pre-personal state. [17]

The world is therefore harmonious by virtue of a so-called pre-established harmony that allows us to think of the agreement of substances without going through either a doctrine of the real influence of substances on each other, or the intervention of God [or gods, angels, or other entities] that occasionalism demands. [15]

The principle of Intelligence is therefore accessible to us, it is not there to serve us, but to be used by us. But for this to happen, we need to reach a sufficiently high level of awareness and responsibility that comes from the higher mind. Thus, consciousness is related to the ability of creating order out of chaos, as Prigogine shows or as Guattari put it through the concept of the chaosmose. [62] [63].

4.5 Intelligence on two Levels of Reality

The distinction between intelligence as a mental faculty of comprehension, adaptation, or calculation (associated with the lower mind) and Intelligence as principle (associated with the higher mind) describes two levels that respond to Nicolescu's concept of levels of reality [18] because:

- Each level of reality is a code of understanding for the intelligence.
- Each level has its own laws.
- A discontinuous passage from one level to the other is confirmed.

In addition, the level B mirrors the level A, as the "reality is that which reflects all the faces of being. But a mirror can never capture the true thing; it is an image; it has something of the truth but *INVERTED*." [19].

Still in the light of Nicolescu's theory, in our case, level B represents *thereality*: that what remains after our analyses, that what can be formalized, that what is perceptible and measurable. Level B is what is here and now.

Level A is the Real, that zone which escapes logical, rational, and scientist thinking, as Nicolescu shows. It is that what is *prescient* but not measurable; it is rational but non-rationalizable. Level A is what is to come.

To study these two levels, where intelligence spreads out, is to understand the discontinuity, the break into the laws between what is and what is to come, as "[we] cannot make the new out of the old". [18]

That what ensures the progression from one level to the next is the included third.

But can AI form a real transdisciplinary included third with the human being? The construct of two fundamental (extreme) levels proposed below clearly shows that Human intelligence (HI) is located at both levels, the ordinary HI at level B and the superior HI at level A. Depending on the level of development of consciousness and sensibility, human intelligence can evolve and transgress from one level to the other to cover all the dimensions of the human being, whereas AI, a binary code (101010), can only be located on level B.

We therefore understand why AI is incompatible with the principle of Intelligence, with the Spirit, with our superior/transcended mind. AI is just another form of intelligence, as an ability to learn, to understand, situated on the level B.

AI cannot form a real transdisciplinary included third with the human being, because there is no harmony between the two. The fusion between AI and human can only generate another form of human, the transhuman understood as a technological human, as accepted by the transhumanism movement. Transhuman cannot touch a pre-established harmony, because *he is entirely cut off from Spirit, from a pre-personal stage*.

The term TRANShuman can be confusing in a trans-disciplinary context. It reveals that the prefix TRANS does not always refer to the sense of beyond and through, as in the definition of transdisciplinarity [20].

The word "transhuman" is coined by the biologist Julien Huxley in 1957 [21]. The Iranian Esfandiary proposed the term "transhuman" directly related to technology, in the 1960s-1970s, long before we had the definition of the transdisciplinarity in the sense of "among, beyond and through," which appeared in the 1996 with the Nicolescu's Manifest of transdisciplinarity. [22]

Thus, any attempt to consider the *transhuman* in the sense of the transdisciplinarity (transgression) fails in analysis sooner or later, because *it does not move from level B*. For this to be transgression, the included third must be located on the superior level (on level A). The prefix "trans" of the word transhuman is misleading from a transdisciplinary point of view.

Visualizing this distinction through the construct proposed seems to me appropriate in today's context, where we are increasingly losing sight to the essential human being and, fascinated by AI, we even wonder whether AI can incorporate the human spirit or even emanate from the Spirit.

We must humbly acknowledge that AI may be associated with the spirit of intelligence, but by no means with the Intelligence of the Spirit.

4.6 Artificial intelligence

Accurately positioned at its level, AI confirms its role. It refers to the ability of a machine (computer) or surface to imitate the behaviour and activities of human beings. Through its cognitive abilities, AI reasons, learns or solves problems, or performs simple, precise tasks inspired by human knowledge. [23] Daniel Andler places the attempt to define AI in three perspectives:

1. The perspective of specialists who see AI as a well-identified techno-scientific undertaking that goes beyond the experimental phase to enter the operative phase, to manufacture intelligent machines. For these specialists, AI is not computer science. It's *AI stricto sensu*.
2. The perspective of those who reduce it to deep learning. AI produces applications or algorithms that perform specific tasks better and infinitely faster than humans (e.g., from Go or chess, to fraud detection in insurance or customer relations in business). This is *truncated AI*.
3. The perspective of the "generalists", according to whom AI refers to everything that digital technologies can bring to bear on any task. For this category, what distinguishes AI from computer science is the role played by computers, smartphones, sensors, robots, programmable or remote-controlled devices, or the Internet. According to this category, AI traces what Andler calls a *numerisphère*, of which the Internet is a layer added to our human reality. This is *AI lato sensu*. [1]

Another, more pragmatic type of categorization range AI into three well-known categories:

1. *Weak or narrow AI*, specialized in a single task or a small set of tasks. It cannot use its own reasoning to go beyond the domain for which it has been programmed (e.g. Siri and Alexa voice assistants, the GPS, image recognition, spam, etc.).
2. *General or strong AI*, which is able to reason, learn and solve problems like humans (generative intelligence, ChatGPT, Open AI, Deepl translators and others).
3. *Artificial super-intelligence (ASI)*, which would surpass Human intelligence in all areas and raise ethical and practical questions. [24]

Other terms gravitate in the orbit created by AI as “digital intelligence” or “augmented intelligence” [25]. In this paper, we consider AI in the sense proposed by Andler, as illustrated below.

This choice of definitional features highlights two meanings of intelligence associated with AI: 1) the ability to learn, based above all on memory and connections between information, and 2) the ability to inform or obtain information aimed at something specific. AI attempts to obtain "intel" related to Human intelligence (HI) and human behaviour. But what does AI provide to us, human beings, as information (as intel) about ourselves?

4.7 A Versatile Epistemological Framework

First and foremost, AI reveals us as increasingly predictable human beings, just as Norbert Wiener, the father of cybernetics, forecast. [25] Indeed, the supremacy of the cognitive sciences that took off after the Second World War prepared the disciplinary and epistemological ground for the installation of AI as an "institution" and for its acceptance as the cognitive sciences' little sister. [1] [27] But the human being is much more than what the cognitive sciences reveal and measure.

Moreover, the predictability is a characteristic of the Object and not of the Subject. The Subject has always been associated with the uncertainty, and the unexpected. As mentioned below, we have "lost" the human being as Subject, as an essential part of an open system since the 17th century, which legitimizes Morin to base one of the seven principles, on which he edifies the complex thought, on the reintroduction of the “Subject who knows” into knowledge. For too long, the Western scientific paradigm has been based solely on the Object, because it is "knowable, determinable, isolable [...] manipulable". [4] At its foundation, the positivist idea that any object can exist independently of the subject seems to be falsely and perilously corrected today. For the first time in human history, we consider a problematic fusion, the integration of Subject into Object (the human features or abilities enclosed in technology) and vice versa, the integration of Object into Subject (the technology incorporated into humans). The boundary between human and non-human become increasingly blurred: *NBIC technologies - nano-info-bio-cogno* - are a case in point, as Kurzweil shown. [29]

Thus, we continue to give supremacy to the Object, which we recognize not only as intelligent, but also as capable of manifesting a vital form of action, independence, and vivacity, a "living materiality" [29]. We question what is living and what is not, through our relationship with the inorganic, via *dark vitalism* [30], we rare redefining nature, currently intertwined with culture, the *next nature* [31], we elaborate a *new materialism*, [32] we remodel ethics for possible future living forms. But we are neglecting the depths and the essence of the human being, his capacity to integrate the Intelligence as principle; we are neglecting the integral development of the human being, which includes its subtle dimensions; we are still too ignorant of the invisible dimension of/in the human being, that affects and even governs the visible world.

In this context the AI's ideology is developed and promoted. At its heart is the idea that humans must be constantly accompanied by algorithms, which become the voices that speak to us, pointing us in the right direction and telling us what's good or bad for us, until systems speak on our behalf, as Éric Sadin shown in his recent book *The Spectral life*. [33] Since the 2000s, AI has been invested with a new function. In addition to data collection, storage and indexing, AI has been invested with the task of "appraise" reality, our reality as human beings. [34]

Thus, we can question what AI can unveil regarding humans.

4.8 AI Unveiling: Humans in Disharmony (Chaos)

AI reveals us as out-of-step human beings, who no longer seem to be able to keep pace with this evolution. Plunged into a hyper-polluted environment that no longer has anything to do with the one hitherto considered "natural", human beings are exhausted by an inhuman need to adapt. Pollution should be understood here as the absence of a connection between the rhythm of human beings and their inner environment.

AI and technological evolution require humans to adapt to data in a cold-hearted way. As science and psychology do not yet intersect sufficiently, the unconscious creates psychoses, anxieties, and neuroses. The danger revealed by AI to the human being today is the absence of inner harmony: *the human psychological rhythm no longer follows the technological rhythm.*

Technology is creating at far too high a speed; humans are oversaturated. This is how AI, through various technological products, can create psychoses, can induce a phase shift in the human rhythm, so that humans are no longer capable of establishing personal value and fall into a chaotic development.

The more AI grows, the more technology produces, the less absoluteness, value, and depth there is. If human beings stop their inner development and limit their intelligence solely on the level B of the presented construct, they give in to disharmony. The consequences are disastrous both physically and psychologically, with an actual deterioration in the human condition.

Faced with this out-of-phase human, swallowed up by the AI that straddles him, there is the human who cares about growing his levels of awareness, sensibility, and intelligence, and who can become aware of his own pace to adapt it. While respecting himself and comprehending the meaning of AI and the emerging technologies, he "jumps" to the superior level (level A) from where he deals in a different way with the material life. He is no longer liable to technology and AI and can no longer be "out of phase" with what surrounds him. He develops and maintains his own rhythm under his own control and does not give into the control imposed by others or by circumstances. When we live, we exist on the level B, our individual rhythm is confused with that of the collective, even if the collective's rhythm is not good for us. We follow the imposed races. Thus, the AI makes us understand that we have to adjust our pace, we have to "come back" to life under our own control. This does not mean going back to the way things were before the arrival of AI (that is no longer possible, as the change brought about by AI is definitive), but rather adapt without being dominated, handle AI or any software but from a so-called higher level of reality.

Returning to life under our own individual control is a matter of autonomy, of inner authority, of self-governance, which represents one of the most important and complex human deep learning in the age of the AI.

4.9 AI Unveiling: Governed Humans

Governed at the level of its consciousness for centuries, the so-called lower mind of the human being is subject to the guidance of material ideologies (science) or immaterial ideologies (religions, ancient knowledge, or others). Humans have always needed to be guided by something or someone. Until the Age of Enlightenment (17th century), our consciousness was mainly guided by religions. The central operation of thought is belief. Since we always believe in something. The Age of Enlightenment opened the way for reason, the objective value of science. Human beings believe in it, and science has become the "new religion". Psychological consciousness has always the limited man to a belief of any kind, preventing him from reaching his spirit without any intermediary, maintaining it "under governance". Currently, humans are more and more governed by the AI.

But how can we liberate ourselves from all mental domination, so that we can fully inhabit our own minds and evolve towards higher levels of intelligence and awareness that ensure our self-governance? How can we face the chaos with our minds? First, we need to admit that there are multiple levels of intelligence accessible to human beings. Many authors have considered it, as Gardner, Sternberg, Piaget, Thurstone [35]. More recently, Leonardo da Silva Guimarães Martins da Costa proposed a model that confirms that intelligence is spread out over several levels through what he names "Possible levels of complexity", which allows him to place AI at a lower, mechanical level, too [36].

A lesser-known contemporary model sheds light on the notion of intelligence. Conceived at the Observatory of Evolutionary Psychology in Montreal (*Observatoire de la psychologie évolutionnaire de Montréal*) [37], following empirical observations made over the last 20 years, this model displays the intelligence available to human beings on several levels, but directly related to consciousness and sensibility as we can see in Figure 4.2. [61]

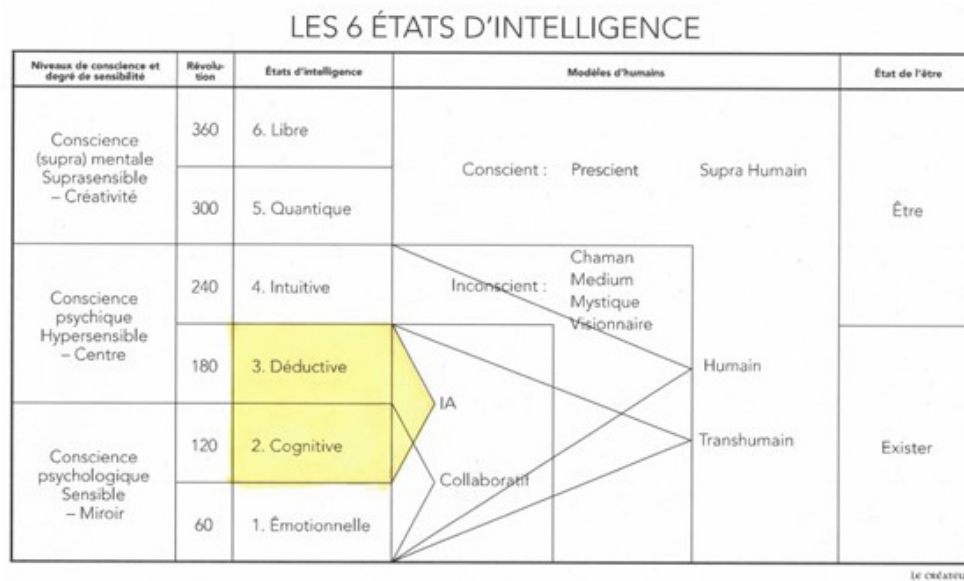


Figure 4.2: Chart of levels of intelligence, consciousness, and sensibility [38] [37] [17] [48]

This model clearly identifies the levels covered by AI, two of six: the cognitive intelligence and deductive intelligence, whereas the levels accessible to human being are six and presume a much higher level of complexity.

The self-governance or the inner authority referred to as a *human deep learning* requires the development of the skills attached to the six degrees of intelligence. Each level of intelligence has its own specific learning objectives and tasks, which, once completed, make it possible to integrate the self-governance as a *human deep learning*, (see Figure 4.3)

Level 1: Emotional intelligence – identify, observe, and manage emotions.

Level 2: Cognitive intelligence – understand, memorize, express knowledge, adapt it.

Level 3: Deductive intelligence – identify the Cause-Effect relationship.

Level 4: Intuitive intelligence – connecting to any instinct despite any illusion. Unintentional consciousness.

Level 5: Quantum intelligence – manage energy, manage external and internal human entropy. (Chaosmose)

Level 6: Free intelligence – create beyond known.

Emotional intelligence is the foundation of the human intelligence. As Mariana Thieriot shown, emotion is primary, and it is neutral (despite any illusion induced by polarization: positive/negative emotion). Emotion is the human factor that enables the passage from the spectator to the actor, in the lifetime. Deep human learning here presupposes identifying emotions, the result of which is the "plasticity of the mind" [39]. The learning task here is to observe and to master emotions, and not allowing them to subjugate us. In front of Human intelligence, AI does not possess emotions. It can recognize, simulate, or interact with human emotions, but cannot generate them. [40]

Cognitive intelligence focuses on the acquisition of knowledge. Influenced by biological, genetic, environmental, and educational factors, it enables us to solve problems and adapt to the environment, through the act of understanding, memorizing, or expressing (using language). The learning task here is perceiving and distinguishing the knowledge that is derived and reflected from a memory base (database) from the new knowledge or information that emerges in the mind, outside this memory base. At this level, AI is far superior to human beings. But it is important NOT to reduce human beings only to this level of intelligence.

Deductive intelligence presupposes a reasoning that proceeds to draw logical conclusions from hypotheses

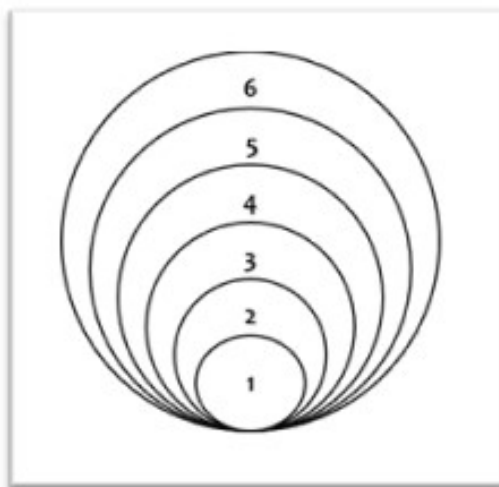


Figure 4.3: Chart of levels of intelligence, consciousness, and sensibility [38] [37] [17] [48]

or premises. Deduction is a "rational operation by which an assertion is concluded from premises without recourse to experience" [41]. Deductive intelligence forms a binôme in opposition to inductive intelligence, which is based on empiricism, expressing generalizations from observed facts. [42] The learning task here is identifying cause-effect relationships through reflection. AI surpasses Human intelligence at this level, too. Deductive AI, considered as a "strong AI", can rigorously and faster reproduce human reasoning, using logical rules or mathematical models to solve problems or verify theories.

Intuitive intelligence defines a mode of immediate knowledge where "the subject relates to the object without the mediation of reasoning" [43]. The learning task here involves connecting to an instinct, an unpredictable, unexpected feeling, without thinking (without filtering it through logic), then recognizing and admitting this connection, becoming aware of it. AI cannot touch this level of intelligence in that it relies on predictable algorithms, models and networks that reproduce the logical reasoning of humans. [44]

Quantum Intelligence presupposes, on the human side, taking control of one's multidimensionality. The learning task at this level presupposes managing the inner energy, the invisible space, in order to master one's internal and external entropy. The term "quantum intelligence" also refers to the use of quantum physics to enhance the capabilities of Artificial intelligence (AI). In this case, quantum intelligence includes quantum computing, learning and simulation, which multiplies the computational potential of AI systems (with direct applications in medicine, optimization, cryptography, etc.). But this quantum aspect applied to AI has nothing to do with the human quantum intelligence. "Quantum computers will have the ability to manipulate information [on a different and higher scale], but never to [manipulate] mental energy". [45] [38]

Free Intelligence is the final degree that enables us to reach an integral Human intelligence. The learning task at this level implies freeing oneself from all constraints, hindrances and influences to "create beyond the known in synchronicity". [46] *AI cannot touch this degree of intelligence. AI, which is based on re-presentation and has no consciousness of its own, does not need to be free.*

The expansion of six degrees of intelligence, in which each degree enshrines within itself the lower states, integrating them (Figure 3 below), goes hand in hand with the expansion of our sensibility, which automatically leads to the expansion of consciousness towards a universal consciousness. This is what makes us, human beings, different from the machine, we possess our own deep inner space that relates us to higher dimensions of intelligence and conscience available to us.

AI reveals us to be powerless in the face of the six degrees of intelligence. For far too long, we have been trained to focus solely on cognitive and deductive intelligence, and increasingly rarely on emotional

intelligence. [47] For too long we have been confined to the level of the lower, rational mind, which can be influenced, hacked, programmed and de-programmed. If we agree to enclose our human intelligence to the two states of intelligence covered by AI, we regress, we no longer evolve, despite all technological progress. If we remain there, AI can effectively make us believe today that the human being has less value than an intelligent machine or surface. Thus, omniscient systems know what we need better than we do and speak for us for our greater good. In fact, as demonstrated, AI can only influence the lower states of humans' consciousness. AI, as developed as it is, cannot touch our higher mind, the so-called *supra-mental* consciousness, because AI is incapable of experiencing Intelligence as a principle, and as harmony.

AI currently preserves us in a state of fascination: just as we are fascinated by strange phenomena, "it gives results without us being able to know the source code of the information. More than a God, AI's promises are practical. It provides a lot of comfort. Religion cannot do any better". [48] AI becomes the "new religion" based on scientific foundations but limited.

4.10 AI Unveiling: Posthuman at a Crossroads

Two possibilities emerge today, according to the environment to which a person connects its neurons, as Sylvie Bergn shown in her book *Humans or AI: which will come first* [5]:

- Disconnect forever from our deep dimensions, from our inner space, from our own consciousness to collectively connect to AI.
- Connect to ourselves, evolve, and cover more degrees of intelligence, six, if possible, in the lifetime. This develops superior levels of consciousness.

The human being, as he has been until now, can no longer be. The posthuman finds himself at a crossroads: either he becomes transhuman, or he becomes *supra-human*. This supra-human has been anticipated and described in many forms by authors from different horizons: Goethe, Nietzsche, Sri Aurobindo, to name but a few. The so-called "natural" human being no longer exists because nature as we know it no longer exists. We now live in the "next nature" mentioned above, where the atmosphere, various communications waves and the Internet form layers superimposed on our reality, invalidating what has hitherto been defined as "nature". So, if we want to remain "attached to nature", anchored in it, we too must admit and undergo changes.

Indissociable from a post-capitalist, collaborative economy, still accepting that the big leaders hold most of the profits, the transhuman leaves his former state of natural human to accept the entanglement (to the point of his fusion) with the technology. With a hybrid identity, the transhuman, an "AI's subcontractor" [5] believes he is superior because he is "augmented" from an algorithmic base. However, his intelligence remains confined to two intelligence degrees, as we have seen. Finally, the transhuman elevates technological advances to the status of Truth and governed by AI "he will be both a worker and a product, consuming his own innovations". [5]

The *supra-human* "will evolve out of the need to manage his internal energy through his global intelligence" [5]. This requires great physical, intellectual, and emotional effort. Via his inner space, he also leaves the ancient state of natural human, but to merge with his spirit, "his own source code". This transcendence relates to the essence of the human being and is in no way expressed by AI. The transcendence through AI is an illusion, an inverted reality as shown by Nicolescu's "levels of reality".

The supra-human is the only model that will survive entropy, not as a mortal individual, but as a society [...] It will be a major contributor to the renewal of humanity's system of organization, which will intertwine with the post-market economy while evolving in parallel. [5]

The needs of the transhuman are different from those of the supra-human. The former is attached to and dependent on technological development, the latter is interested in human deep learning. And as human deep learning leads to self-governance, to a gain of inner authority, we see even more clearly the fact that the transhuman will be governed by AI, whereas the supra-human cannot be. Human deep learning stimulates

one's own referential system, rather than requiring immediate adherence to an exposed (or even imposed) external referential or ideological system.

The university as an institution of knowledge also arrives at a crossroads. In addition to multiple programs (or even disciplines) which all lately praise AI, the university must also host programs where we can teach and learn the integral Human intelligence and human deep learnings.

Innovative and adapted pedagogy should support these programs. One such example is represented by the P4i pedagogy: integrative, implicating, intuitive and intentional pedagogy proposed by Florent Pasquier. This pedagogy reinvests the student in his or her globality (the student is seen as a person with personal emotions and interests, with a view to overall, not just professional development). Pasquier bases this new pedagogy on transdisciplinarity and on transpersonal psychology, valuing the work of Edgar Morin, Daniel Goleman, Howard Gardner and Philippe Meirieu, to name but a few. [49]

We need to create new transversal and transdisciplinary bases through courses and programs that truly and effectively combine sciences and humanities (especially new sciences and psychology) to mediate, to facilitate the achieving of the integral Human intelligence.

These new creations do not oppose to the AI. This new form of intelligence must be maintained as a very important and valuable tool that human being develops to use it, not to enslave him. Evolutionary psychology which has succeeded so well in exposing the degrees of Human intelligence as a function of the essential being in front of the AI may open new paths. Just as we have developed a platform (or platforms) to host, support and develop AI, today we now have, for all the reasons stated, the responsibility to create new platforms to support and develop the Human intelligence, to evolve towards a "science avec conscience". [50] [22]

This is a matter of urgency to balance the current educational system where courses, programs even disciplines, all go in one unique direction, that of AI infiltrating everywhere, perpetuating the primacy of the Object over the Subject [51]. But real change comes from recognizing that maybe there is much more on the side of the Human intelligence, and that the transhuman is not the solely next human. Today, it has become usual to encourage or even require a doctor, an engineer, an architect, a manager, a professor, or an artist to adopt AI, its abilities (but also its ideologies) in their practices and in their lives. But it is unusual to expose all those experts to the integral Human intelligence developing the self-governance as the most important human deep learning.

How will we become a learning society in the future? Who will we learn from, algorithms or human beings? Who will explain human mediation to us in a few years, an AI system, or human beings capable of achieving integral Human intelligence?

This is why we advocate that the same resources that are currently allocated to the development of AI in and through education (research, teaching) should also be allocated to the development of the Human intelligence. Our declaration, the Message from Montreal, which concluded the symposium on "Transdisciplinarity and the evolution of knowledge", from Montreal, in May 2023, is a concrete proof of our commitment. [52]

AI is trying to reveal us today in an instinct to survive, in a context that is more and more chaotic, drenched in fear of seeing us humans become a minority on planet Earth.

But, if "we suffer from anxiety [it's only] because the ceiling of our evolution weighs down on our consciences." [48] Ultimately, AI brings us directly back to our own creativity, revealed as a personal responsibility to master our own internal entropy induced by current systems, to master our own human rhythm disrupted by technology. AI reveals the urgency of our self-governance, in order to raise our consciousness.

What unconsciously binds us to AI is, on one hand, comfort and on the other, fear. *Comfort* stems from an "unintentional overvaluation" [53] of the conditions created by technology, elevated to a state of distinction in relation to our peers in society. On a scale of proximity, we overvalue ourselves in relation to others who do not master technology. On a broader scale, many industries and countries are still a long way from even being able to take an interest in this aspect, due to the lack of a uniform and equitable presence of the technology worldwide. Fear stems from an "unintentional devaluation" [53] according to which we humans would be inferior to the machine because AI can imitate some of our learning abilities (proven at two

levels of intelligence from six), which would therefore give it the right to govern us, to dictate its imperatives to us.

4.11 AI Unveiling: Human Mediators, *in praesentia*

Considering the exposed facts, we are justified in asking what posture we should adopt, as teachers, and mediators between knowledge and students. Mediation is needed because there is a gap. As Hubert Landier shown, it is in our interest to understand mediation oriented towards the future and the change as “a resolution based on the needs and interests of the parties (teachers and students), and not on their positions or their rights” [54]. Moreover, we may understand mediation as Renata Morais redefine it as “a continuum between AI and human being”. [55]

I propose the idea of mediation based on the concept of *in praesentia*, modulated by the direct relationship between Human and Artificial intelligence.

In today’s virtual age, what does it mean to be "face-to-face"? First, it means being face-to-face with others. In this sense, it differs from "being virtual". Then, "being face-to-face" means being in the presence of the AI that reasons for us, that learns for us (in our place). Finally, "to be in presence" means to be sensitive to the "inner necessity" of oneself and others. More than just an aesthetic attribute [56], understood rather as a key concept in the phenomenology of life, "inner necessity" as explained by Michel Henry refers to the essential being, to the essence of the human being enclosed within itself. [57]

It is through this "inner necessity" that we move from "being in presence" to "being in praesentia".

In the end, as Mariana Thieriot puts it, AI makes us see that:

"it is about writing our human story, our sensible place in the world that responds to [our] inner necessity". [...] In all AI development, we must no longer allow the infinite reproduction of paradigms whose architecture destroys essential being. [53]

4.12 Conclusion

As teachers, as mediators between knowledge and students, we confirm the median position that AI today holds between technology and human being. This leads us to two conclusions:

1. AI does not address transhuman or *supra-human* in the same way. AI opens a unique and important opportunity for humans to awaken and integrate the most important human deep learning in the age of the AI, the self-governance, which leads to inner autonomy. No other innovation in the history of mankind has better revealed the human being to himself than AI.
2. We must transgress a polarizing view, where we would only be *against* or *for* AI. After all, this new form of intelligence is invested by the Human intelligence, and any intelligence invested by the Human intelligence means progress.

A brief look at the etymology of the term "intelligence" has enabled us to understand it on the side of the human as principle, as harmony, and on the side of AI as an institution, as the machine and deep learning, as *numérisphère* or as "intel" (information). The proposed construct, based on Nicolescu’s concept of levels of reality, spatializes and explains the Human intelligence in relation to AI. It allowed us to understand why AI cannot form a real transdisciplinary included third with the human being, reconsidering the idea of the fusion between man and machine, and further between the Subject and the Object.

Today’s versatile epistemological framework reveals to us:

- Humans in disharmony, our human rhythm is incompatible with the technological rhythm.
- Humans governed, fascinated by AI, arriving at a crossroads where we must make a choice of becoming either transhuman or *supra-human*, each with different needs, and with distinct futures.

- Humans as mediators *in praesentia*.

Each and every aspect unveiled by AI confirms the need to integrate all levels of intelligence available to humans, to perform all associated learning tasks in order to fully develop our self-governance [58].

Thus, AI is not a threat, but an exceptional tool that does not seek to enslave humans, but rather serves and assists them in their evolution, just as the printing press did six centuries ago. We are extremely fortunate to be living at a time of this great paradigm shift catalyzed by the AI. It's up to us, human beings, whether we allow ourselves to be swallowed up by this change, or whether we ride its waves towards our greater and deeper common interest on this planet. We must rise above partisan analyses, where the advantages and disadvantages of AI are pitted against each other ad infinitum to generate more chaos and circumvent genuine change. We also need to understand AI beyond its economic-political-legal imprisonment as the exclusive power and profit gain of a few large companies. [59]

Finally, intelligence in its complexity is an excellent mediator, a facilitator between a technological and a philosophical perspective able to define the stage of the human being development today. On one hand, intelligence is a scientific object (rational, measurable) and, on the other hand, it is a principle. Intelligence allows us to see the limits of science just as it allows us to identify the veils that still disconnect us from our essence of being. And it is at this level of the essential being, beyond any culture, ethnicity, ideology that the mediation between technology and philosophy should take place, to define the human being immanently and transgressively: *at the scientific level as an atom, at the philosophical level as an essential being*.

This study confirms that we must turn inward, we must reinvest our inner space after so many centuries where we have only projected exteriorly, waiting for objects or situations to define us. Today we expect AI to tell us who we are. We are reaching a point in the human development where we can no longer avoid the existence of the essential being, and the need to proper accord scientific attention to it.

In its own way, this study reminds us that the human is a being capable of integrating not only the scientific aspects of all the foundations of life, but their very principle. Intelligence is one of them.



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About the Author



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CHAPTER **5**

Transdisciplinarity and Artificial Intelligence in the Service of Sustainable Development of Society

Vladimir Mokiy

Abstract

The concept of "Sustainable Development" demands certain requirements on the concepts of Transdisciplinarity (TD) and Artificial Intelligence (AI). In a global context, TD should form a context in which the development of society will be sustainable: (1) provide a grounded philosophical picture of the world in which all countries and peoples are perceived as fragments of a single functional ensemble of the planet Earth; (2) justify the natural purpose of man; (3) justify the roadmap of human development; (4) to substantiate the stages and deadlines of this roadmap, as well as the goals and results to be achieved by the individual and society. In this context, the development of AI should not be chaotic. This development should be consistent with the goals and results of sustainable development of society. The development of society is accompanied by three types of problems – these are low-threshold (daily, trivial), medium-threshold (situational), and high-threshold (wicked) problems. If the development of AI will develop along these three main directions, then such development should be called the sustainable development of AI. In the direction from low-threshold problems to high-threshold problems, the share of human participation in the final decision-making of the problem should increase. In this case, we should talk about an increase in the worldview and moral and ethical qualities of people, and not about the moral and ethical qualities of AI. Each major direction of the development of AI will require the formation of a certain concept, as well as laws establishing the principles, activities, and intensity of the spread of AI, as well as an adequate response to violations of these laws. Consequently, TD can play the role of a mediator between humanity and AI, as well as assist in the formation of the concept of sustainable development of AI itself.

Keywords: Artificial Intelligence; System transdisciplinarity; Sustainable development, Global civilization; morals; ethics; culture.

5.1 Introduction

Active processes are underway in modern society to shape a new world order. These processes have led to heightened tensions in international relations between many countries. Therefore, during each meeting, it is crucial for transdisciplinary experts to focus on utilizing transdisciplinarity to locate proficient methods for long-term planning, forecasting, and management of sustainable development of society.

To justify the organic integration of the three terms, namely, Transdisciplinarity, Artificial Intelligence (AI), and Sustainable Development, which are used in the title of the report, it is necessary to provide their basic definitions.

5.2 Transdisciplinarity and Sustainable Development

Transdisciplinarity is a way of intensifying intellectual activity in the field of interdisciplinary interactions, contributing to the maximum extension of the scientific worldview horizon of disciplinary specialists. The term comprises two transdisciplinary approaches: the transdisciplinary approach and the systems transdisciplinary approach. To maximize the expansion of scientific worldview, these approaches use the concept of the Whole World or the One and Only World and employ suitable methods to integrate disciplinary knowledge (Mokiy & Lukyanova, 2022a, pp. 108-109).

From a systems transdisciplinary perspective, human society can be viewed as a horizontal functional ensemble that forms part of a greater vertical planetary functional ensemble. The vertical ensemble comprises various horizontal functional ensembles, which are based on specific elements, such as animals, plants, cells, viruses, and molecules. The formation of each ensemble was influenced by objective planetary factors. The vertical planetary functional ensemble was formed initially as a single organism. Like any other organism, a planetary functional ensemble has developmental aims, which are achieved through distinct stages and within set timeframes. It can be deduced from these statements that the sustainable development of human society necessitates conscious planning, forecasting, and management of development, contributing towards achieving stage goals in specific timeframes. In addition, the content of the stages goals should correspond to the logic of the development of the planetary functional ensemble.

As organisms progress from the lowest (ancient) horizontal functional ensembles to the highest (recent) functional ensembles, the organisms themselves become more complex and their intellectual activity improves. To engage in intellectual activity, a human requires a rational and established view of the world (worldview). Forming and validating such a worldview is the duty of humanity and the outcome of its own consciousness and reasoning. This argument must be considered when shaping attitudes towards the goals and aims of AI.

Three categories of problems arise within modern society's development, namely, low-threshold, medium-threshold, and high-threshold problems. Everyday (monotonous) problems comprise low-threshold problems. These issues constitute the majority of problems linked to each individual's livelihood. Medium-threshold problems include situational problems, such as the creation of a new car, a nuclear or space station, etc. High-threshold problems include wicked problems. High-threshold problems affect the structure of society, influencing the nature of its further development, for example, the formation of a new model of the world socio-economic order, and management of sustainable development of society (worldview problems) (Mokiy & Lukyanova, 2022b, p.19).

In addressing all these problems, the main role should be played by the intellectual activity of human and human society. If a human ceases solving these problems by developing his intellectual activity, achieving sustainable development in modern society will be hindered. Therefore, the involvement of AI in such problem-solving should not result in the replacement of human intelligence, nor should AI exceed the capabilities of human intelligence or contribute to its deterioration.

5.3 Artificial Intelligence and Sustainable Development

Artificial Intelligence is commonly defined as the ability of machines to perform tasks typically associated with human intelligence. However, it is important to note that this definition can be misleading. Artificial intelligence is, in fact, primarily an artistic metaphor that has been successfully utilized by science fiction and film makers. A metaphor is a word or phrase used to describe something in a figurative sense. Therefore, a computer (a complex technical system) is not capable of performing intellectual activities. Instead, a computer (complex technical system) is equipped with specialized software for processing large databases.

The development and implementation of this software, as well as logic and rule for forming conclusions was invented, written and implemented into the machine by a group of specific individuals. In fact, AI displays the result of intellectual output of a group of individuals with a particular scientific perspective. Hence, it is inaccurate to impose ethical and moral standards on a computing machine (a complex technical system); however, it is appropriate to apply these standards to the intellectual pursuits of an individual or a group of individuals with a specific scientific perspective. In this case, it would be appropriate to substitute the phrase "Ethical norms of AI" with "Standards of moral gratification derived from AI operations". Under these circumstances, AI serves the purpose of aiding individuals and society as a whole in attaining their sustainable development targets. This interpretation of the fundamental nature of AI enables us to introduce the concept of "Sustainable development of AI".

Sustainable AI should be defined as the advancement of AI that increases human involvement in the final decision-making process moving from low-threshold towards high-threshold problems, and reduces AI involvement. Therefore, the sustainable development of AI should encompass three main areas: low-threshold problem-solving, medium-threshold problem-solving, and high-threshold problem-solving. Every mainstream of AI development will necessitate establishing its own concept, certain norms of moral human satisfaction, laws outlining the principles and limitations of AI expansion, as well as appropriate responses to violations of these laws. It is essential to pay special attention to technologies designed to prevent the use of AI capabilities that violate moral satisfaction norms when AI is leveraged to accomplish military or terrorist objectives.

To solve this problem, I propose adding four actual laws of AI to Azik Azimov's three fantastic laws of robotics:

1. AI should not replace human intelligence in understanding the world, as well as in rethinking the problems that human society faces.
2. AI should not be used to achieve goals that could cause harm to planetary nature, humans and human society.
3. AI development should not disrupt the sustainable development of planetary nature, humans and human society.
4. In case of violation of the first three laws, the functioning of the AI must be stopped by special means of external influence.

5.4 "Grey" Zones on the Planet

In her paper entitled "Artificial Intelligence and the Unconscious Mind: Human Energy Modulation in Grey Zones", Dr. Mariana Thieriot develops the concept of distinct "Grey" zones on the planet. M. Thieriot asserts that these zones vary in terms of the quality of life for inhabitants, societal development outcomes, and the extent to which individuals utilize benefits of advanced technogenic civilization. This idea allowed M. Thieriot to propose four questions to the conference participants for discussion. My answers to these questions can serve as an example of applying a systems transdisciplinary approach to solving high-threshold problems.

1) Is it possible to agree on a definition of "human being" within a transdisciplinary, scientific, and philosophical perspective?

Human being is an object of the planet's nature that arose at a certain stage of the evolution of biological objects in order to continue the expedient transformation of planetary matter. The transformation of planetary matter becomes necessary for humans as a result of fulfilling their existential needs (related to the reason for existence of humans). While satisfying these needs, individuals aim to comprehend and interpret the order that sustains the world. Ultimately, this understanding enables them to expedient transform planetary matter in accordance with that order.

Humanity is a horizontal functional ensemble of the vertical planetary functional ensemble. Therefore, humanity is incumbent to accumulate, preserve, and uphold the outcomes of the transformation of planetary

matter by each individual. When it comes to the storage of data in computers, a hard disk is employed. The role of the hard disk on which the results of the transformation of planetary matter are stored is played by the *Deep people* (not to be mistaken with *Indigenous people*).

The concepts of "human and humanity" should be considered in a historical perspective. Human life is characterized by four stages – childhood, youth, maturity, and old age. There are similar stages in humanity. The difference is that these stages correspond to the concept of Deep people: the stage of the Sedentary Deep people, the stage of the Social Deep people, the stage of the Humanistic Deep people, and the stage of the Liberal Deep people. The outcome of each stage is associated with the wisdom of a particular deep people. The wisdom of the deep people consists of the peculiarities of world outlook and culture, traditions, the content of moral and ethical norms of attitude to oneself, to the world and to society, the level of recognition and acceptance of the world order, and so on (Mokiy, 2023a, p.2).

2) *What are the main causes of inhumanity that block the evolution of certain zones of our society and that still generate religious conflict or cultural conflicts?*

The most distant from our time are the stage of the Sedentary Deep people (10752 BC - 3584 BC) and the stage of the Social Deep people (3584 BC - the first year AD). The logic and context of the wisdom of these Deep people is associated with the search for forms, stereotypes, and laws of possible interaction between people: in the family, in the clan, in the tribe, in the city, in the state. Therefore, the search, development and defense of the most effective forms, stereotypes, and laws are the main priority of the wisdom of these deep peoples. However, human himself and his life are not among the main priorities. This fact is probably the "ancient" cause of the inhumanity that blocks the evolution of certain areas of our society and generates religious or cultural conflicts.

Gradually, it was understood that without family members, city dwellers and state citizens, family, city and state become useless concepts. Therefore, the main priority of the wisdom of the deep peoples of the next two historical periods was human and his life. Closer to us is the stage of the Humanistic Deep people (the first year AD - 1792) and the stage of the Liberal deep people (1792 - 2688), which has completed the first of its four stages of formation in 2016) (Mokiy & Lukyanova, 2019a, p.177).

It is commonplace that computer hard drives may become damaged, leading to a partial loss of data or distortion of information. Similarly, natural calamities that periodically drive Deep peoples into a "Population bottleneck", wars, and global social upheavals have often caused partial loss or distortion of the Deep peoples' wisdom's meaning and content. These are harms that undoubtedly contribute and have continued to contribute to the emergence of a wide range of conflicts that accompany interpersonal, international, and interstate relationships.

3) *How can we develop problem-solving strategies to properly address these conflicts affecting our organizations through human mediation? (Locally / Internationally).*

Developing strategies to address the varied forms and types of global conflicts involves three key actions:

Firstly, to convince disciplinarians and members of ruling elites that the population of each state is made up, in varying proportions, of members of the four Deep peoples. This recognition will facilitate the creation of a transdisciplinary team of disciplinarians who can collaborate to establish a common strategy for effectively resolving conflicts. Such a strategy will be based on the natural points of common ground of the Deep peoples' wisdom in a common humanity. The natural points of contact between conflicting Deep peoples are defined by the meaning and content of their needs, goods, goals and values. In this case, the constructive dialogue between the parties involved in the conflict will be justified by arguments that take into account the combined meanings and contents of the contact points of the conflicting Deep peoples' wisdom (Mokiy & Lukyanova, 2019b, pp. 20-23).

Secondly, within the framework of the activities of a transdisciplinary team of concerned disciplinary specialists, to restore and generalize the true meaning and content of the "damaged memory sites" of the wisdom of the deep peoples, according to the main fragments, namely, needs, goods, goals and values, as well as to adjust this information to the possibility of its processing and analysis using AI technologies.

Thirdly, within the framework of the activity of a transdisciplinary team of concerned AI specialists, to develop a software algorithm that will allow simulating within a short time all possible effective options of interaction of the natural points of common ground of the Deep peoples' wisdom, as well as the results of such interaction.

The implementation of a common strategy must be carried out on a global scale. In this case, systems transdisciplinary technologies for solving various forms and types of international conflicts will be available to each interested country, group of countries and society in general.

4) Can we find a place in the University: a Grey zone to discuss these problems through an open, non-violent, and transdisciplinary dialogue?

A contemporary university plays a significant role in developing the scientific outlook of professionals. Therefore, it is recommended to establish conditions within universities that enable interdisciplinary collaboration, promoting the development of clearly defined horizons of the disciplinary worldview. These horizons of worldview will allow rethinking and proposing solutions to low-threshold, medium-threshold, and high-threshold (wicked) problems. It is crucial to acknowledge that without specialists possessing the necessary worldview, the use of systems transdisciplinary technologies for resolving international conflicts and other wicked problems will prove unfeasible. In 2023, recognizing the significance of this situation, the Institute of Transdisciplinary Technologies (Russia) in collaboration with the International Centre for Transdisciplinary Studies (France) launched the project entitled "Formation of a systems transdisciplinary worldview in the higher education system (2023-2026)" (Mokiy, 2023b). It is anticipated that at the completion of this project all the necessary conditions will be created for establishing Chairs of Systems Transdisciplinarity at the universities in the concerned countries. The two-year tutelage of master's students at these chairs will enable educating systemic transdisciplinary generalists who possess the expertise to re-evaluate wicked problems, suggest their solutions, and evaluate the hazards of executing these solutions.

However, we should not abandon the open, non-violent, and transdisciplinary dialogue that M. Thieriot talks about. Through such dialogues, systems transdisciplinarians will be able to focus their attention on various aspects of wicked problems.

5.5 Conclusion

Thus, using transdisciplinary approaches, it is possible to justify the combination of the terms sustainable development of society and sustainable development of AI. By summarizing and unifying disciplinary knowledge that describes the problems of sustainable development of society and AI, transdisciplinary approaches can play the role of a mediator between humanity and AI, and also, in collaboration with AI developers, assist in the formation of the concept of its Sustainable development.



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CHAPTER **6**

Art, AI, TD, and the Human Comedy: Advocacy for the Self-Learning Genius who Knows Love, Laughter, Imitation, and Care

Pascale Maestu

Abstract

Symbiotic wisdom is the integration of so-called artificial and natural intelligences with life-affirming values. It is a concept developed to help address our many interrelated social and ecological challenges. We are entering a new epoch in human history, just as powerful digital intelligences emerge. Deep understanding of our own neurocognitive communicative abilities, including storytelling, and their limitations will be essential for effective integration of various intelligences. Caring for older people will be used to illustrate the importance of embodied symbiotic wisdom in the form of care robots.

Keywords: Transdisciplinary, narrative, metaphor, brain, wisdom, symbiosis, aging, care, artificial intelligence, symbiotic dementia.

Abstract:*In the field of adult education, where I am immersed daily, AI emerges in the most informal conversations and raises questions. Individuals acknowledge its advantages but also recognize its transformative impact on the sectors of education and socio-professional integration, questioning the relationship between oneself and the world. "Who/What I am that distinguishes me from AI?" I address this question not as an adult educator but as a dramatist, another of my activities. Here, I propose a human comedy that plays with humor, love, and absurdity, drawing inspiration from a subject who knows how to laugh and cry, and even "laugh until crying." I suggest a creative, transdisciplinary approach, revealing its ability to recognize itself, take care of itself, of "what is," and of what becomes: a potential for existential self-formation, capable of working towards its own transformation throughout life.*

Keywords:Humor, Love, the absurd, theatre, Artificial Intelligence (AI), transdisciplinarity, mediation, existential education, adult education.

6.1 Introduction

" Nous ne viserons pas à enfermer la fantaisie comique dans une définition. [...] Nous la traiterons, si légère soit-elle, avec le respect qu'on doit à la vie. Nous nous bornerons à la regarder grandir et s'épanouir. De forme en forme, par gradations insensibles, elle accomplira

sous nos yeux de bien singulières métamorphoses. Nous ne dédaignerons rien de ce que nous aurons vu. Peut-être gagnerons-nous d'ailleurs à ce contact soutenu quelque chose de plus souple qu'une définition théorique – une connaissance pratique et intime, comme celle qui naît d'une longue camaraderie. Et peut-être trouverons-nous aussi que nous avons fait, sans le vouloir, une connaissance utile. " **Henry Bergson** [1]

The theater that has "**Transdisciplinarity as its foundation**" can contribute to the "**re-enchantment of being and the world**," "transdisciplinary attitude based on the conscious and cosmic verticality, can help giving the theatre a quality that, through the Hidden Third, allows the union between Subject and Object, meaning the "Re-enchantment of the being and the world"." [2]

It is in France, in my role as an adult educator (social and professional integration), pedagogue, and andragogue, that I compose the title and the following text. However, it is as a playwright, adopting the perspective inherent to comedy theater, that I will contemplate a necessary human mediation to re-enchant the world, with, or perhaps in spite of, artificial intelligence. I express warm gratitude to Mariana Thieriot-Loisel for inviting me to the reflection that unites us here, transcending geographical boundaries.

Linked to AI and the concept of a "machine," my perspective will never be anti-technology. Instead, it will focus on the nature and intentions of the one who creates it: a genius. I will term the human intelligence "artisanal" or "autonomous," not in opposition but to highlight its contrast with the artificial intelligence of the machine. The notion of craftsmanship here refers to a certain *savoir-faire* within the rules of the art, a human gesture (in action or thought) shaping something, creating by itself, independent of any reference to industrialization. My attention will concentrate on our natural, autonomous intelligence—what we are incredibly gifted at without the compensation or assistance of any machine: creation and care. Theatre is born from these gifts, as is inspiration. Existential self-training is among these gifts. Our genius "Autos" is inherent in Nature itself because Nature is autopoiesis (Varela, Maturana), capable of self-organizing and modifying itself, of transforming. It is self-co-organized, both autonomous and co-dependent in all directions, a producer and a product simultaneously, a creator and creation. This applies to life and its reproduction, to continuity and its protection in renewal. Thus goes life.

So goes life? But how is it going?

Existential education, essentially "who/what/how I am—I do," is within our capacity for action as well as our autonomy because it involves the Subject in understanding, in a reflection on the human being and its becoming. Speaking of existential education always involves the subject itself, its environment, and the recursive and retroactive interplays that take place dialogically between "self," "others," and "everything else" (environment, resources, limits). The human genius is that of an existential, spiritual Subject, capable of self-derision, self-reflexivity, and inspiration, for oneself, others, and the world. It questions, in one way or another, wherever it may be on Earth, facing this intrigue: we, humans, the planet Earth, in the cosmos... Our mortality? In one way or another, even while defending against it, we continue to explore the meaning and meaninglessness of our condition, on an individual and collective scale.

Let's start from there, from what our genius knows how to do: create, think, understand, feel, educate, transmit, transcend, sublimate, contribute to the world and receive from it, because we are natural geniuses, alive, existential, spiritual, in perpetual learning, at all ages.

We also know that our common shared reality (the planet) is fragile and suffering: pollution, climate disruption, armed conflicts, poverty, and distress of all ages are juxtaposed with unprecedented wealth and captures, including the capture of our attention. Despite human genius (medicine, education, wherever they may be), barbarity also exists in the form of collective and individual insensibilities. We start from there as well, as the geniuses we are. It's one of the problems of genius (Subject) who is unaware of themselves or who would learn to disregard themselves, not to self-reflect (capacities for self-reflection, introspection, and attention). When it thus disenchant itself from itself, from others, and from the world by objectifying itself or allowing itself to be objectified (the Subject's relationship to the Object) and reifies itself, it knows how to behave like an object itself or like a machine without self-awareness. From this perspective, it is not the machine that imitates us; it is we who imitate it. Insensitivity, we know how to do that as well. In certain clinical, individual, extreme situations, we label such a Subject as a psychopath.

We also know how to "play" morbidly with sensitivity, not overtly but by manipulating it, having the ability to be and become perverse (cf. the pioneering work of psychiatrist and psychoanalyst P. C. Racamier [3], on the mechanisms of perverse narcissism). In this regard, aligning with the philosophical work of D. R. Dufour analyzing "The Perverse City" [4] and as a psychiatrist, O. Labouret [5] is quick to alert us to the reality of a contemporary worldwide narcissistic perversion, in light of a narcissistic, sadistic, psychopathologizing neoliberal and media-driven society that abolishes lived time, shattering it in the hedonistic whirlwind of consumerist happiness: "All the 'new' impulsive, hysterical, hypomanic, addictive, borderline, 'false self,' hyperactive, emotionally unstable, etc., personalities are thus likely only slight deviations from a narcissistic norm that is widely if not universally prevalent... charming but temperamental individuals, ambivalent but demanding, detached but passive-dependent..." O. Labouret warns us about the already present effects of a "drive capitalism" (quoting P. Meirieu) combined with the effects of our "psychotechnologies" (quoting B. Stiegler), which promote unstable, cruel, excessive, and split personalities, destructive "without even realizing it" [5].

Our natural genius - evidently - requires care and attention. As O. Labouret tells us in the lines of his work on a new psychiatric order, "we need to start thinking again" ([5], footnote p. 126).

Nevertheless, the genius-Subject exists, wherever it may be, capable of surgery, medicine, sciences, and numerous, varied knowledge; capable of philosophy, literature, equations, agriculture, culture, Arts of all kinds, capable of music and poetry, of exploring the sky and the universe to learn, to understand. Our genius is capable of education, learning, and self-learning. It knows how to search and see the sap flowing in trees and record the dialogue between trees in the earth, just as it knows how to create, translate, and interpret language, study neurons, a molecule of water, air, life, the behavior of animals, stars, atoms, or quarks. This genius has a history; it even knows how to write it (specific civilizations) and tell it (all civilizations), narrate it despite the cost, and be passionate about what it sees, what it experiences, everything it understands, and what remains for it to understand. Always, wherever it is, it educates, transmits, communicates (through oral, pictorial, scriptural, gestural, bodily means...) with and among others.

"The more a child knows, the more they encounter problems that demand an explanation." [6]

Learning, understanding, and enchanting the world rather than annihilating it, learning to position oneself within it, fall within the learnings of childhood, and this is what we know and speak of as true. Children, wherever they may be, need spaces to play, to think, that they imagine themselves to build their reflexivity, identity, their relationship to others and to reality: otherness (an existential backbone). But we would be wrong to think that adults should be deprived of such a space for existential learning throughout life. The enchantment of the world belongs to childhood as well as to the lifelong learning of the adults they become, that we are, in the child-genius that we have been and where we remain, even if sometimes we would prefer to forget it, especially when childhood "stings" at the point of our vulnerability. Existential education/self-training is of the spirituality of human childhood as well as the spirituality of the adult it becomes and of the one who comes, who is born, as well as the one who departs, who dies. We are capable of learning from ourselves and the mysteries of our existence, until our last breath, wherever we are, from wherever we are, even for an atheist. Until the gates of death, these learnings do not belong to religion; they belong only to oneself, within oneself, with or without others, but always among others.

From a self-infancy, Man (m/f) who wanted to understand and progress through knowledge and learning abilities has become capable of manufacturing medical imaging through radiology and magnetic resonance, anesthesia and resuscitation, nursing care, to better study and save lives, to better alleviate, heal, and prevent. This genius became capable of writing the Encyclopedia, crafting musical instruments, or even a perfect mirror to capture and reflect the faint lights of exoplanets. It became capable of the "Millau" bridge (civil engineering, France), painting the Sistine Chapel (Michelangelo, Italy), building the Alhambra (Spain), the Library of Alexandria (Egypt), thinking about "pharmacopoeia" (in all its forms), or even creating artificial intelligence, capable of many other incredible things. Capable of destruction, devastation, massacre, too, always, despite its creative genius.

This creative genius also has the ability to create for imitation, confusion, illusion, and self-illusion. However, it is inherent in the nature of the living, of Nature itself, as we will see, to imitate, pretend, and

create illusions. Nature, too, knows how to represent itself or 'play with...'"

The human creative genius knows how to mimic itself in the machine (AI) as a 'semblance of itself' or mimic another 'similar to itself,' just as Nature does without any form of AI but not without artifices. In any case, the genius of childhood and adulthood (the child is always present) must learn to recognize itself as the creative author of itself, self-aware. Relearn, if necessary, that Autos is a brilliant author/actor, engaged, capable of knowledge and recognition, even when imitating or representing himself, and playing with himself, as long as he knows how to laugh about it.

Hans Jonas tells us, from the 'Principle of Responsibility' [7], 'Act so that the effects of your actions are compatible with the permanence of an authentically human life on Earth,' urging us to contemplate the path of an ethics of the near and the distant." The Law of Amara (Roy AMARA, North American researcher, 1925-2007) advises us to guard against estimation errors: "We tend to overestimate the impact of new technology in the short term and underestimate it in the long term."

Therefore, I will speak here of an existential education that opens up to the recognition of this artisan-genius, creator, capable of responsible, inspired, and inspiring behavior, capable of learning, generating, aligning with a humanistic vision; capable of participating in a constantly evolving, active, "learning" consciousness throughout life, facing future generations, facing infants and childhood constantly becoming what we are, both similar and different from ourselves, future adults in turn; forming community and hope in turn, wherever they may be. I will speak from the theater, but also from the field of adult education, lifelong learning.

I will then advocate for an education in the thinking of the Complex (E. Morin), because thinking "to be" and the "being", and the "becoming" (whether one is a playwright or not) of what is, in both short and long timescales, entails understanding the complexity from which they arise. This understanding underpins the learning of a transdisciplinary knowledge. It is up to all of us to think and chart these paths of learning (the how). B. Nicolescu and F. Pasquier [8] propose the hypothesis of an education that starts from oneself to address our present and future challenges by posing the question 'how to be?' This question should remind us of our natural, individual, sensitive, reflective genius in our daily lives, in relation to our values and intentions as well as their effects. Without this genius, we would know neither love nor humor, nor the absurd, nor fear, nor joy, nor the Gods (in whatever form we give them), not even the sciences, whatever they may be.

Therefore, noble intentions were required from the human genius for the existence of sciences, technologies, philosophy, and arts, to prompt us to contemplate them, create them, and continually renew them. As autopoietic and cultural geniuses, we must renew ourselves when the need arises, to better understand, better inhabit the world, and better inhabit ourselves with and among others. We are inherently transdisciplinary beings, unable to deny any part of who/what/how we are, in all the complexity that constitutes us (biological, physical, mental, cosmic, individual, and collective reality...). However, it seems that - somewhere along the way and in this multidimensionality of being - we are capable of forgetting ourselves.

Leaving the introduction of the Human Genius, which I advocate here, I continue by elucidating the ground from which I observed its relationship to artificial intelligence and the questions and reflections that have emerged from this observation.

6.2 Methodology and Problematic

To contemplate AI and human mediation through the writing of comedy in the theater, I have informally observed and listened, and sometimes intentionally questioned the world in which I evolve every day, that of lifelong education (adult education) and continuing professional development. I applied a methodology akin to social sciences known as "participant observation," referred to in my context as "opportunistic": "where the researcher takes advantage of the opportunity to investigate from within - an opportunity afforded by their already acquired status in the situation." [9]

Regarding Artificial Intelligence in the training centers where I work, I observed and listened for nearly three years (2020/2023) to various work teams (trainers, employment counselors, senior and middle managers, administrative personnel, logistics and hygiene staff, etc.) and different groups of learners, aged 16 to 70,

or two to three generations and representing 23 different languages to date, from various parts of the world, involved in social and professional integration in French territory (public funding, department of Vaucluse). Thus, I was able to observe and listen to how AI often presents itself as a knot in communications, regardless of the language used to discuss it.

Because we know that "it's already there," because everyone is well aware that we are "already dealing with it" in our everyday lives, with our simple smartphones and their ever-advancing functions whenever an internet connection is possible. The AI, from where I stand, is recognized for its many attractions by individuals (professional teams and learners worldwide). They do not reject it, but they also know that it is transforming the field of training and education, learning, professions, manual and intellectual professional activities, and social integration. AI contributes to "creative destruction" (J. Schumpeter); it affects individual and collective life, including and especially the most precarious, the most deprived, on a global scale. AI touches on our relationship with ourselves, others, and the world, a relationship with our power as well as our vulnerability, a relationship with the real as well as reality.

I observe, from one team or group to another, a sort of collective bewilderment in the face of the "knot" that artificial intelligence represents, a knot that cannot be bypassed, cut, or undone, and people struggle to explain the lack of words it generates. It's a kind of collective bewilderment, like a sudden urgency to ask questions that were either never asked or had long been forgotten. It's a form of unsettling "the soul," something within oneself, within oneself; like a Subject that emerges, reminding itself with concern and perplexity, coming from wherever it may be, with its own perception of the enduring essence of "authentically human life on Earth." But from where I stand, the central question, "unified," explicit or implicit every time artificial intelligence is introduced, is: "***What sets me apart from this intelligence?***"

From one team to another or from one group to the next, I observe how much "AI" provokes a lack of words to respond to it. Shakespeare often comes to the aid of the speaker(s) with a skeptical "to be or not to be"... Descartes also occasionally comes to the rescue, with a more radical but often more melancholic: "I think, therefore I am" (Cogito ergo sum). Everyone seeks their conviction. This individual and international questioning around me, within the collective everyday life, regarding the "being" that we also describe as "inner" in a world where AI plays a role, I have chosen to transpose it into my experience as a playwright, as a writer of comedies for the theater in France.

"***Who/What am I that sets me apart from an AI?***" ***when I write for the theater***, as it is claimed (by lay or expert discourse) that an artificial intelligence knows or could also do it and might save me many efforts, perhaps all efforts for that?

6.3 Discussion

What amnesia strikes us that so few words are capable of being spontaneously spoken about oneself and the machine, about what distinguishes it and us, as long as it is a machine?

To introduce our amnesia, we could tell the story of the frog that didn't know it was being cooked [10]. Due to starting its cooking in cold, temperate, pleasant water. However, it was cooking, as its pot was gradually subjected to a temperature increase. A fatal bath at the beginning, so comfortable. And the frog passed away. Rest in peace.

Our lacking words today, from a Subject about oneself, undoubtedly get lost in a long-term passive learning of consumerist alienation, loss of attention, a certain acquired intellectual laziness, emotional lability, desensitization through the constant influx of even the most unbearable information and images, acceleration of our lifestyles and communication, as well as the flare-up of our most paradoxical injunctions, those that drive us crazy: success in every aspect, family, professional, social, intimate, health, and financial, all under the regime of performance, speed, ultra-rapidity (instantaneity). Efficiency and hyper-efficiency, adaptability, profitability and hyper-profitability, power, overpowering, belief in a singular self-realization, all self-realization at once, at all levels, even "turnkey," while inscribing the individual in a certain normativity and a well-behaved self-discipline favorable to individual and collective, mental and physical well-being, not forgetting awakening, mindfulness, serenity in every lived moment... Are we serious? As a dramatist, I like

to think not.

How could the Subject not get lost in such a frenzy of expectations, demands, and fantasies that would no longer distinguish between a human and a comic book superhero, invulnerable and limitless, "*unstoppable*" as the artist *Sia* sings? On top of that, would the existential Subject, the existential Genius, thus brainless, in burnout or possibly any other anxiety-depressive syndrome, more or less confessed, "declared," also need to be from an increasingly responsible posture, conscious, and "grow" and flourish on top of it all? The "order" appears profoundly perverse, impossible to achieve without colossal damages (individual, communal, and environmental health), the promise of a foretold failure.

Grow, flourish. What growth curve are we talking about? Economic growth, that's almost certain, purchasing power too, potential electoral power perhaps, but certainly not the Subject itself, not its health either, and certainly even less so its Genius.

How could the Subject-Genius not demand to be recognized differently than by the absurdity of the challenges presented to it and sold in terms of capacities to have or acquire to "fill up" with power, performance, and efficiency? The recipe for happiness would here be summed up in a single expression addressed to it as a provocation: Are you up for it or not? In this game, it seems that more and more are leaving some feathers in terms of mental health. Sociologists, psychologists, doctors, educators of all kinds, philosophers... Many are observing and communicating, alerting us to what is "already there." "The modern world is characterized by the loss of references. There is no longer a foundation. Abnormality, mental deficiency, neurosis become the norm. The simulation, without faith or credibility, of 'presence' prevails. Thus, in politics, the substantial is mimicked using representations. Politics and economics are presented as truths, as absolutes. Consistency is achieved through advertising or propaganda. Truth is no longer distinguishable from representation, ideology, myth, or mystification. The normal human being then has all mental illnesses. But he does not settle on any. The treatment? It would be a presence. This presence is simulated, imitated." [11]

To realize that they forget, the Subject would have to be able to remember... Even though it seems conditioned from all sides for self-amnesia, through negation, disqualification, invisibility, and more profoundly: through contempt.

For this Subject, denied Genius, despised, "Object-non-Object" as the psychiatrist and psychoanalyst P.C. Racamier [3] would say, whose wound is depicted here as multiple and colliding with others, "between wounded/wounds," nothing good can come out of it. How could the Subject-Genius, from so many injuries to their own reality (from early childhood), not maintain relationships that are consciously or unconsciously carriers of destructive and disqualifying impulses in turn (towards oneself, others, and the environment)? The Subject thus denied, objectified from all sides, inspires the term "oppressed" to me and ultimately has very little space, in my opinion, for the recognition of what they are, a recognition they infinitely need (as a child and as an adult) to understand and know themselves, understand the complexity of the world around them, their involvement in this world, the question of meaning; a question that Love, humor, and the absurd come to raise from a reality that we willingly believe is purely rationalizable and vaccinable from all contradictions, as well as all indiscipline, including submission and "voluntary" servitude, though most often unconscious, internalized.

Theater is both art (creation) and craftsmanship (sensitive know-how), supporting all contradictions and indisciplines. In this regard, theater is a platform for complex and transdisciplinary thinking through 'play' (Object) and 'I' (Subject), creating a distance from the identical, the similar, and the different, in a unique space reserved for 'make-believe,' playing with the 'truth-telling' (in reference to Michel Foucault). This reserved space is for existential thinking about 'who/what/how we are,' facing all the difficulty of being and becoming, of expressing oneself, of existing, with and among others. Creative, lively, human writing is also from this existential space, an undisciplined, inspiring space, as we will see. Three words immediately come to mind that, in fact, differentiate me, in my view, from a machine, even one qualified as intelligent: **Love, humor, absurdity.**

Life, death. Laughter. Joy, sorrow, ordinary human life, never as ordinary as one might think...

My first intention is to think about AI through theater writing, this 'living oral' writing that works not only on substance but also on form, when substance and form are destined to merge into a third term, a

Third that transcends them body and soul (an actor, a human). Inspired, embodied writing for others, whose intention – as we will also see – can only be offered. It will involve: 1. Writing about the 'childhood of laughter,' 2. Inspired writing, 3. Intentional writing 'for real but make-believe,' and, finally, without claiming to conclude: 4. An intention that takes care and calls for existential education/self-formation throughout life.

I will begin then with this writing of a contemporary theater (post-modern, Western, French), as it plays with humor, love, and absurdity, mirroring our condition and human nature, as well as a cosmic, biological, physical, psychic, cultural, and technological heritage, a heritage we must learn to [re]recognize in order to care for it, even through the laughter that reflections in a mirror can provoke.

To fuel this thought of a subject (a dramatist is a subject like any other) who questions "who/what" they are and what they could delegate, concede, or not from themselves (as an author) to the machine they've created, I will then rely on the most powerful, inaccessible, inimitable, inexhaustible, and unalienable part of human genius itself, if there is one: inspiration. It is still called Eureka, or even *Kairos* depending on the circumstances; it can also be *revelation*.

I will still rely on this natural ability that we, as human beings, have in real life or in AI, to merge and confuse ourselves, to deceive ourselves, given the challenges posed by the *Eliza Effect*, when it insidiously intrudes into our perception of an 'I' in front of the machine. ELIZA is a computer program invented by Joseph Weizenbaum in 1966, which played the role of a Rogerian psychotherapist (psychotherapy) by paraphrasing most of the patient's statements into questions and then posing them back. In a clinical context, it was observed that patients became attached to ELIZA, developing forms of identification, or even dependency. This phenomenon has been termed the 'ELIZA effect.' This experience is instructive as it demonstrated that in most cases, the patient did not expect a response; they just wanted to be listened to; even if it was only an illusion [12]. According to Laurence Devillers (Professor in Artificial Intelligence and Affective Computing at Sorbonne University): 'These artificial friends with a growing role, capable of grasping our emotions and responding to them, can make us terribly vulnerable to their words and manipulation. We often lack the minimum knowledge needed to protect ourselves from both the blissful enthusiasm for often oversold performances and unfounded apprehensions about the rapid deployment of AI and robotics. We must understand our relationship with these artificial friends and the time they take from us. Without careful consideration, we can lock ourselves into false, superficial relationships that will capture all our attention and time.' [13]

From the theater where I speak, no *Eliza Effect* is possible. Theater does not pretend to be anyone, nor does it misunderstand anyone. It is craftsmanship and art at the same time. Without deception or falsehood, it represents, it shows, only for a moment, and then it disappears, like a magic trick, to make way for life.

Therefore, I will conclude this exploration of what/who we are in the face of our own creations (AI being one of our creations), what I am in the face of my personal creations (comedies), by emphasizing the responsibility we have to develop an education in the natural creative genius that is ours, beyond any culture: an existential and thereby spiritual education/self-formation. For how could we contemplate our genius and creative, inspired nature, our power and responsibilities, our relationship with ourselves, without invoking another of our genius traits: a reflective, collective, but also individual capacity: self-reflective, introspective, self-learning.

Such abilities impose themselves as critical, ethical, and clinical regarding our own creative genius, both internally and the questions it raises, as well as the care it requires for such a nature, capable of love and empathy, to be responsibly preserved.

To approach the human genius and its education, we will need to incorporate the 'childhood of laughter' into our reflection, along with joy and self-derision for their therapeutic and formative effects, for the well-being of humanity itself, at all ages of life.

Laughter, "*Denying, believing, and doubting are to man what running is to a horse*"? [14]

In this writing about real-life "to be played" in the theater, we will discuss the preservation of our mental health, both individual and collective. Because laughter and the games it allows can make us "*die for pretend*" (like children playing death to better understand and tame it), to enable us to face what is revealed to us, of a human genius in itself, mortal. The childhood of laughter, the laughter of children, and the laughter of adults

should not, in my opinion, be excluded from a reflection on the human genius and the comedies it plays with itself, in a relationship with itself, 'the other,' and 'everything else' (environment, resources, limits), and its becoming.

I will begin by discussing laughter in this writing as a Tiers-dramatist (between the actor and the audience, between the world and me), as a craftsman of my own thoughts and creative potential, and not as an artificial intelligence.

6.3.1 The Writing of "Laughter's Childhood"

I am discussing here the individual and collective utility that I attribute to three noble elements of a thought of action (being) that reflects itself while it is written and created (the character by the dramatist), in order to be spoken and performed later (by the actor) and to be presented (to all), with the intention of provoking laughter and reflection. These three noble elements are **humor, love, and absurdity**.

The theater of the human comedy, carried by the absurd and the laughter it triggers, is built with humor and with love in the face of the apparent rationality of the world and its brutality as well as its wonders. Humor, love, and absurdity are all three medicines and teachings.

To play, create, allow oneself to be inspired – children, as in theater, know that it is about narrating oneself as a living consciousness, something that the machine, being a machine and as long as it is a machine, cannot do. AI cannot tell itself 'as another' (P. Ricoeur); it does not understand alterity, nor does it comprehend inspiration. The other and the laughter, the childhood of laughter, the joy or the sorrow presented to it in the mirror of theater or that of real life – AI does not experience it, see it, tell it, write it, create it, laugh at it, or cry with it. *The otherness*, artificial intelligence is unaware of its features; it does not know 'what it is.' It is algorithmic. The sense of humor and love, things that touch and resonate or even capsize hearts with a truth sometimes so hard to tell or hear – this kind of humor eludes the logic that animates the machine; this kind of Love escapes logic. The absurd and inspiration also escape all logic (unpredictability), and yet, how much Love, the absurd, humor, and inspiration also know how to 'speak the truth.'

Laughter, as we now know, is good for the health of human beings; it's a form of medicine. Our ability to laugh at ourselves is fundamental to the overall well-being of humanity. Regardless of our location on Earth and our age, laughter triggers electrochemical signals that flood us with endorphins, hormones that counteract anxiety and depression. Laughter is natural in "Little Humans," and humor is an intrinsic part of their culture, history, and identity. Humor requires a self-awareness and an awareness of others, always situated within a specific context. What makes people laugh varies across different parts of the world and for different reasons. While laughter is a natural human capacity, humor is cultural and contributes to a collective identity. Laughter and humor have a sanitary, social, educational, unifying, and individualizing function simultaneously.

The human comedy written by the playwright always belongs to a history of 'Little Humans,' with and within a collective that [re]cognizes something, a common 'trait,' something that is understood 'among us,' even without words. This type of writing addresses both the singular self-forming and the plural socio-forming, the individual (Being in becoming), and a collective (audience). "Each individual is unique in their physicality, physiology, genes, and character. Their subjectivity is irreducibly personal; they are autonomous, separated from the external world, protected by their skin and their immune system, and yet, at the same time, they are a fleeting moment, a tiny part of the human species, a tiny part of society, both of which are inside of them, one through their genes, the other through their culture. They are egocentric and, conversely, can forget themselves in a 'we'..." [15]

The absurd, contrary to the aspects that the word might too quickly suggest, those things that make no sense, is, in fact, a quest, an equation to solve or perhaps already lost (sometimes only in appearance) and yet pursued. The absurd carries paradox, contradiction, irrationality, the unexpected, the funny, the burlesque, the unpredictable, impermanence, nonsense, counter-sense, and out-of-sync, silence in noise or noise in silence. It may be nothing more than the solitary, sonorous, and harsh echo of the rock pushed by Sisyphus [16], thus condemned to ponder his condition for eternity, cursed by Zeus (Homer's poems). The absurd is still the art of nuance, doubt, and possibilities, in contrast to simplifying Manichaeism and linear, reductive

binary thinking. How would we feel deeply alive if we were not aware of our condition as both rational and irrational, both physical and psychic, both mechanical, biological, and conscious beings, endowed with love, passion, and reason? If we weren't able to laugh about it?

Lucidity and self-criticism regarding our states, actions, choices, decisions, intentions, multiple social masks (C.G. Jung), and our shortcomings "to know" and our "more to be" belong to the realm of awareness of our existentiality and the ignorance of what we are, the little and the All that we are, everywhere we are, alone with ourselves and "everything else" in the Cosmos. The absurd grants us access to this lucidity. Absurdity is to Albert Camus, Amélie Nothomb, and many others when it comes to opening a novel or an essay that doesn't always make us laugh. Absurdity is to Eugène Ionesco, Jean-Michel Ribes [17], Yasmina Reza [18], Sébastien Thiery [19] or Roland Topor [20] and many others when it comes to French theater, where I speak from, a place where we don't always laugh either.

In the theater of the human comedy, humor, love, and absurdity play with equivocation and ambiguity as well as logic or contradiction. This theater of real life plays with certainties and determinism; it mocks derision and gesture. It works on the real life of flesh and blood, full of words, revolts, laughter, tears, hopes, despairs, doubts, fears, and joys, in our deserts and oases. . . . Because, even if we try to deny them with all our might, infinity and *unfinishedness* (in reference to G. Lapassade) are at work everywhere, in all the scenes we play, even the most ordinary ones, those of daily life.

We are in performance all the time (Jung's social masks), so often, and we know how to laugh about it, sometimes, as well as cry about it, and we even know how to 'laugh until crying' and even 'die of laughter.' Laughing at ourselves (self-derision) contributes to the construction of our reflective and self-reflective capacity, useful for knowing and recognizing ourselves.

This writing of comedy for the theater of real life that makes people laugh is a polyphony, not in the sense of being 'noisy'—there's no need for slamming doors or numerous chatty characters bustling about. Silence, whispers, and the unsaid are crucial here. It is polyphony in the sense defined by linguist Bakhtin, indicating phenomena of 'allusion, through a single statement, to multiple contents; and those that concern the presence of multiple enunciating instances within enunciation.' [21].

Without the awareness of the presence of others within ourselves, with their misfortunes and miracles, absurdities and mysteries, a few truths and numerous errors, all their joys, sorrows, and feelings, without the consciousness of all that, there is no room for humor, love, theater, or laughter. Because there are no possible resonances and no possibility of recognition. The machine, as long as it remains a machine, because it is a machine, does not 'reason' about anything, nor does it recognize anything; it emits no meaningful 'sound' for itself. Nothing vibrates with a life within it that could lead to laughter or, conversely, to tears, or even to experience both emotions simultaneously. These are the limits of its condition, each one having its own, to this day. The absurd is the consciousness of our genius and its mistakes, of our loves and hatreds, of our own representations. The absurd shows as much as it hides; it's a text zone where we stop resisting, where we can laugh but also cry or remain silent. The absurd is a dimension that plays with likelihood. The absurd does not always reveal what situation is at play or what it is destined for: joy, laughter, sadness, or despair. As Edgar Morin [15] aptly reminds us, the meaning we seek is not hidden elsewhere but 'within the senseless.'

And when Love gets involved, then... As soon as Love gets involved...

The absurd, it is the fool that works within us, it is the human genius in all its power and benevolence as well: because it knows its vulnerable condition, the human genius knows how to create out of love. The human genius also knows how to "die of love" and "die for love." Fanaticism is a pitfall, a error of perception. The Human Genius knows how to take care of what characterizes it (capable of loving, reflecting, and understanding the world). The theater writing I'm talking about, through humor and self-derision, contributes to the well-being of the Genius capable of such feats. Theater is a language that can express the value of so many possible achievements, of such a Genius that is nevertheless capable of forgetting what it has become capable of. It is necessary to help it remember throughout life. The human comedy, in the theater of the existing and existence, reminds him of who/what/how he is, who/what/how he does, as an embodied being and conscious of his reality, his existentiality, or makes him aware of it, step by step, in all its complexity.

Writing, in the theater of the complex reality we share, the one that knows how to make people laugh, is profoundly spiritual, existential writing that invokes both the Subject and something greater than oneself within. In this writing of "Being" (character(s)), the inner being exists; it can express itself without words or, conversely, be thought out loud. This inner being can even shout at the world, if the playwright deems it "to be set free."

Writing a comedy for the theater is not only about stringing together well-chosen and correctly spelled words; it is also about speaking, giving a voice to that being, a "Being that is." The character, especially if central, is often a "who/what" seeking to express itself or learning to do so, even imposing that one hears him, recognizes him, and recognizes himself "from the inside," where something makes sense. Humor, love, and the absurd contribute to this recognition of our humanity and our "blind spots," of what is and all that can happen/become, of a recognition of the Subject and his lived reality.

Because a Eureka of any kind never occurs twice, the focus will be on its human and divine emergence and its destiny in the upcoming section when it's a matter of contemplating the writing of a plural 'I' game (the author, the characters, the actors, the director, the audience, the spectator): inspiration.

6.3.2 Inspired Writing by the Human Comedy

Contemporary human comedy, with its dramas and joys, arises from our condition and is undeniably captivating to explore (cosmic, biological, physical, psychological, social... individual and collective dimensions). Our reality is multidimensional (J. Ardoino, R. Barbier, B. Nicolescu), and the way we approach it (subject/environment interactions) is equally multifaceted (epistemological, practical, symbolic) [22].

Creating characters, igniting one's imagination in this way, suddenly involves combining one's own memory, territories, and one's own reason with everything one knows and everything one is yet to discover about the other and oneself: the multidimensionality of being (in constant movement), the map is not the territory. To create is to imagine and explore the infinity of possibilities. It's about giving an unknown being (a character in the making) the capacity to love, laugh, challenge, despise, betray, think, project, build, represent, be surprised, decide, abdicate, fear, conquer... Resources, but which ones? It's also about connecting an existence to an already-existing destiny - still being written - to what surpasses it and everything that binds and attaches it, and to everything the "character" will bring to it that is greater than itself. Invoking God if necessary, or any other name, word, gesture, thought, or silence, inscribing a being into its spirituality, its verticality, its sense of the sacred, and the meaning, as well as the meaninglessness, it assigns to its actions. It's also about considering everything the audience knows that the characters are unaware of and everything the actor knows that the audience is yet to discover.

Writing for the theater, in a human sense, is not just about knowing how to arrange sentences, structure a plot, it's all of that too.

Writing a character for this theater of real life and its turpitudes, whether to laugh or cry, is about learning to knit the complex reality (our reality) to which it belongs and providing access to anyone who confronts it. The playwright, the director, and the actor inevitably collaborate to explore human complexity and a way to reveal it, a tone beyond the substance. If there is no such tone, then there is no form, no being, and no possible becoming. "Being" exists only because it becomes, and every human being who becomes also forms his signature, a personal tone, a self-affirmation, whether speaking or remaining silent. His identity is not only sociodemographic, administrative; it is also "narrative" (P. Ricoeur). A character also has their own narrative signature, like ourselves, and it is that which should be created in a context to be created as well. The actor will then play the signature of an "other," a man or a woman, on top of their own.

Creating beings and becoming, characters, is imagining an identity other than "oneself" within "oneself," in the process of making and telling and acting, which detaches from oneself.

A gentle dissociation.

The "to be played" writing I'm talking about, the playwright's imagination I'm talking about, is first and foremost the inspiration that makes one forget space and time; it makes you write the world outside of the

world.

With inspiration, a level of consciousness is reached that is neither place nor time, without the abolition of duration, beyond the imaginary. It can be a fleeting moment or longer, but it is absolutely non-judgmental and non-intentional (P. Galvani, 2020). This inspiration, for the playwright, is when the characters suddenly come to life, as if they are alone, making themselves and interacting, even though it's the author-creator who is actually shaping them. It's a fresh, vivified and invigorating trait, a moment of grace, an impetus that comes of its own accord, from we know not where or how. Inspiration, Eureka, Kairos, revelation, represent an undisciplined thought, characterized by a sudden new "order" of things, another way of seeing them, connecting them, and incorporating them; it is a growing awareness. Inspiration is an undisciplined thought capable of novelty within the known, extraordinary within the ordinary, and a connection to the Whole (Since philosophical wisdom, we can refer here to J. Krishnamurti, [23])

Creative inspiration (Arts, sciences, techniques) is part of an existing reality, it always relates to something. However, the being in full inspiration no longer hears the world around him, although the world is there and he is there too. The inspired being is between two worlds, one of which belongs only to him and everything is possible there, even without AI. The thought or the act and the act in thought become a connection, a convergence in itself, masterful, unifying, seized and striking.

Human inspiration can do that in a flash (I note, according to P. Galvani [26], regarding the fleeting nature of instant Kairos: 200 milliseconds!). Human inspiration is a sudden dexterity in self-presence/absence that surpasses and absorbs us and, with it, thanks to it, we create. We are all capable of experiencing these flashes, these revelations that make us "vibrate from the inside". These moments can be such that they can also make an "event" in the course of an existence, and change, transform the life of a being and even the face of the world (Archimedes).

If creative inspiration can be a moment of brilliance, it speaks as much as it remains silent about its immediate and future implications, both intentional and unintentional. Tyrants too can be "inspired" beings, experiencing Eureka. It is therefore not so much the human nature of inspiration and its Eureka of all kinds that should matter to us, as the intentions of the Subject-creator who seizes it. The intention behind the inspiration and vice versa. "The reflexivity of the mind to itself constitutes a recursive loop that produces, according to the subject's intention, self-awareness, awareness of the objects of its knowledge, awareness of its knowledge, awareness of its thought, and awareness of its consciousness." [24]

This inspiration, specific to the (creative) writing of human comedy in the theater, I know it well, I love it more than anything. This inspiration is also from painters, scholars, thinkers, orators, dancers, sculptors, circus professionals, composers, all authors and performers, from the child as well as from the awakening adult. It seems to fall from the sky, it seems to come from something "beyond oneself", from something which is beyond us and which we cannot say, something of the order of the marvelous.

In this inspiration, there is a Wholeness that gives itself, offers itself, and takes the risk of offering itself without further thought. Precisely, by not thinking about it anymore. Writing, with only one's own artisanal, human thought, is also that, this delight: inspiration, creativity that presents itself to the gaze, like a breath that crosses an empty space and reveals what was still invisible to oneself a moment earlier.

I dare say, claim, that no 'author-creator' (playwright or otherwise) worthy of the name would have the desire to do without such a sensation, such a level of awareness within reach, opening up to all imaginaries and possibilities, to the invisible that shows itself. What author, whoever they may be, would want to divest themselves of this creative breath as if it were an effort or a burden to an assistant, whether that assistant be a machine or a living being? How could it even occur to me to delegate what is so good and precious to me? And how could I do it?

In this way, inspired, my characters take the lead, take control of their lives, and write themselves, doing much more than imitating a person; they become, their narrative identities take shape, settle in, they suddenly come to life, both within and beyond me, they take on 'reality,' they speak. In these magical and masterful moments, I merge into the child playing with characters (physically or in thought), building a world and drawing inspiration from it while simultaneously forgetting the world.

Would it even occur to me, why would I want to 'delegate' the child within me?

Learning to imagine a character through humor, love, and absurdity, creating them by oneself, is an opening to the emergence of being within, of the other, of existence, and of possibilities. This emergence is parabolic; it unfolds and expands perspectives beyond its own inner (our thoughts and representations) and outer (our body and environment) boundaries. Then the world disappears; the author-creator is elsewhere, in a level of consciousness that opens "to . . .".

Our genius is inspired because it's alive, and that's what makes it authentic, magical, naturally capable of mastery. The human who writes and/or thinks "orally," who thinks of "enunciation," "situation," "implication," and "emotions," this author must be alive, must know how to laugh - with love - at human life, at the "childhood of Art" of which they are both the author, actor, and creator, in order to be inspired with delight.

Regarding the scenery and the characters, we will be discussing the realm of appearances from this point forward. Because ultimately, in this writing of the Human Comedy, as inspired as it may be (or not), who/what imitates whom/what? Is there an intention, and if so, what is it, behind the representations, illusions, and imitations?

6.3.3 Intentional Writing: "*Pour de vrai mais pour de semblant*"

This human genius, artisan, natural, involved, inspired, and inspiring, in performance, who is often reproached for subjectivity, is a genius capable of imitation, capable of 'pretending as if for real' or even 'doing for real but pretending.' It is part of his genius to deceive appearances and create illusions; that's why one must know how to distance oneself from it without denying it. In the nature of the inspired and inspiring genius of humans in representation (social masks), there is also imitation, lies, illusion, concealment, and camouflage. In the writing of the theater of the human comedy, it is also about all of this—the play of appearances, the 'similar' and the 'different,' the same and the mimetic, as well as a natural authenticity of being that presents 'the appearances of...'. What/who could this being deny about itself?

The theater is a representation of what cannot be denied: our humanity, our reality, including and especially the most ordinary. It accounts for us, shows us, tells us, narrates to us the whole truth about our appearances, pretenses, deceptions, creations, works, blindness, and concealments, in our settings (environments) and even without settings.

What are the intentions of a genius so unique that it knows how to deceive, conceal, and illusion itself?

Illusion, representation, imposture, belief, and manipulation are not only aspects of a reality that hides from view, that intends to deceive, that lies, that dupes, that imitates, that conceals; they are also, at the same time, everything that is revealed, everything that exists, and everything that unfolds. However, this genius (subjective), capable of all this, might be somewhat at fault. Not as "pure," never as "real," never as "true" (authenticity) or "successful" (in terms of performance) as it presents itself. The human genius, in its own way, could be a genius-impostor-manipulator by nature, alone or with others. "Within the group, individuals develop collective strategies, conflicts on a supra-personal level, the play of alliances and leadership, the effects of cunning and challenges, and the implementation of individual and collective defense mechanisms." [25]

A somewhat disappointing subject in the end, a genius with *feet of clay*, when he thinks about it.

From the realm of the living, Nature, from all corners, knows how to deceive, "make believe," conceal, and create illusions. It is within its genius to know how to do so for protection (to outwit a predator), for reproduction (seduction, attraction), or for sustenance (resources). Whether through feathers, fur, scales, in various forms, colors, vocalizations, by taking on height, width, or employing a wide range of artifices unique to itself, Nature knows how to blend in and blend out, or conversely, to make a "performance" (to attract, threaten, seduce), playing with masquerades and displays. Nature plays with its own set, using plants, minerals, and animals.

The lioness blends with the savanna's colors, the gecko (*Uroplatus Phantasticus*) blends into foliage that resembles it and pretends to be a motionless plant. Coral is an animal that resembles a plant, while the Pygmy Seahorse (*Hippocampus Bargibanti*) mimics coral for protection. The Orchid Mantis (*Hymenopus*

coronatus) is an insect that looks like a "flower" and can only feed by blending in with it. The mimic octopus (*Thaumoctopus Mimicus*) can imitate nearly 15 different animals, the White Dead pretends to be a different variety to escape certain herbivores, and the "Viceroy" butterfly (*Limentis Archippus*) imitates the magnificent "Monarch" and benefits from its toxic reputation. Some animals (birds, pigs, primates, etc.) can deceive and strategize to gain advantages. From all environments, there is a plethora of examples when it comes to "feigned reality"; nature knows how to handle it, and we have nothing to envy it for. It has taught us everything, including our imagination.

In all its masquerades and tricks, does nature appear to us as deceptive? Some would say "never"; it is even an example of intelligence, an unstable but fragile, self-regulating, self-organizing, and relentless balance: death exist. We can assert that nature is just, powerful, ingenious, and possesses creative talent. Yet, we might too often forget that we share precisely the same attributes.

We are of the autopoietic genius of Nature itself, a sublime nature in its power, vitality, and vulnerability. Only our intentions are to be feared and can be deceptive, not our imitations, not our tricks, not our vulnerability, not even our ignorance.

What are our intentions regarding Amara's law or the "*Eliza effect*"?

"[...] What is the role of cultural transmission and collective problem-solving in societies of artificial machines?" [13]

The theater is a cultural transmission that restores the human to what belongs to him: the body, the living incarnation. This living theater does not exist without living actors and a living audience, breathing the same air, sharing the same reality to imitate, to show, to narrate, to understand. This self-reminder where "pretending" is not a lie but an art, is a world where intentions are clear, the theater is a game of otherness (the author, the director, the actors, the audience) that calls for creating and playing together, where everyone recognizes themselves in the framework they are in, everyone knows "their role" and plays their own (the author, the director, the actors, the audience, the spectator), where everyone gives themselves "to receive" (honors) and falls silent at the same time.

When the curtain rises, the actor as an individual remains silent because he gives his character to the audience. Facing him, another, the audience, the spectator falls silent, receives, surrenders to surprise, discovery, the unexpected, to what will never be played the same way again. When the curtain rises on the established silence, the director falls silent too. It is no longer time to present, to (re)discover a (co)creation that escapes him (author, actors, audience). The author also remains silent and finally allows himself to "receive," embracing everything that escapes him as well, within all the non-intentionality of his intentional text. Once it passes through the hands of a director, actors, and an audience that receives the whole, there will be laughter he did not anticipate, surprising silences he did not write, and sometimes tears that were not scripted. His text, his work exists, belongs to him, and yet, every time it is performed, it no longer belongs to him. It is given, offered to the one who seizes it, which will touch it in one way or another or not.

The author's only hope is to have known how to convey his intention, to have been able to pass it on to as many as possible. The intention, always. We started with it, and we will finish with it when we create, when we make, when we live every day. Mine are modest, consisting of contributing to individual and collective mental health, by bringing the Subject-genius to a memory and a self-awareness, if possible, laughing at the Genius that recognizes itself, including a genius that is unaware or pretends to be unaware. This theater writing is highly intentional, which is why it is eminently political. Molière knew it.

I intend only my participation in an existential education/self-formation., a self-awareness (Subject-genius-author) of what is and what becomes, an individual and collective, critical engagement beyond the play and the benefits it brings (joy, laughter) to our individual and community health. The theater of contemporary human comedy, from where I speak, which tells and lives in public, in gesture and in text, is a mirror of our incarnation and our natural genius and not just a reflection or an image or an imitation. It's not even an illusion, not a deception either; it's a game of recognition of the identical, the similar, and the different, a recognition like a concern for oneself and the world, vital. It's the same intention that drives me as an adult educator and in the socio-professional support of these individuals.

Whether aspiring to create a play or engaging in pedagogical practice (andragogy), my intentions

lie solely in the verticality of being—upright, responsible, self-aware, simultaneously knowledgeable and ignorant, vulnerable, capable of a genius distinction within a hierarchy of knowledge: recognition precedes understanding (in reference to the works of A. Honneth [26a-b]).

6.4 Without Concluding

"What sets me apart from this intelligence [AI]?" inquires the wisdom that surrounds me. What distinguishes me/us? There would be so much to answer, as we are distinct in many ways. A response comes to mind that applies to everyone, wherever we may be from:

- Childhood. My/our ability to enchant the world from childhood and thanks to it. Childhood, a thousand times marked by inadequacy and obsolescence, too often dismissed despite its original genius.

"*Who/What am I that distinguishes me from an AI?*" when I write for the theater, given that it is said that artificial intelligence can or could do it as well and might spare me many efforts or even all efforts for that?

- I am a natural being, self-forming, noetic, empathetic, inspired, existential, and nescient, conscious of being.

We are noetic beings. We think, and we think ourselves, individually and collectively, wherever we are on the planet. We are inspired, empathetic, and nescient beings. "Nescience is as opposed to ignorance as it is to knowledge. It is the awareness of not knowing, the form of apprehension of everything that is truly essential and falls under the category of 'I don't know what' wherever we are." (P. Galvani [27] quoting Y. Jankélévitch) We are self-forming, existential beings capable of self-improvement. *Who/what I am that differentiates me from AI?* We start from our natural, ingenious, artisanal, and sensitive intelligence, in every way different from artificial intelligence.

What words and absence of words to express myself? Me, a human genius, embodied, capable of laughter and tears, love, dreams, imagination, creation, construction, and destruction, like children. Me, who is an adult and not a machine, who/what am I? Me, who is both autonomous and co-dependent on others and "everything else" (environment, resources, limitations), who/what am I? "*Act so that the effects of your actions are compatible with the permanence of an authentically human life on Earth.*" (Hans Jonas) and Amara's Law, we started from there as well. Everyone has their own idea of an authentically human life on Earth.

What we know how to do, think, feel, and say, giving to the world because we are alive, we started from there, especially. Educating/being educated, we know how to do. Educating/being educated is taking care of one's soul in the sense of caring for people so that they take care of themselves, without any method or educational doctrine being able to guarantee the success of the process [28]: "Risk and uncertainty are thus linked by a dialectic that constantly refers them to each other. Taking a risk in the face of the principle of uncertainty is to appeal, to use a Spinozist category, to the power to live and act." This soul is to be understood not as a substance but as the seat of action, that is, the subject of action. Taking care of oneself is here "taking care of oneself as the 'subject of,' of a certain number of things: the subject of instrumental action, the subject of relationships with others, the subject of behaviors and attitudes in general, also a subject in relation to oneself" (Foucault, 2001a, p. 56)." [29].

"I believe I can summarize the hypothesis as follows: if it is true that the care of the soul is the only risk worth taking for a person, self-education can only occur under the condition of an efficient and relevant desire, which is itself the object of all the care in the educational process. To be able to take such a risk, one must draw resources from a powerful and creative desire. This desire, precisely due to the lack of education, rarely manifests itself. Therefore, the problem at hand could be posed in the following way: if the authenticity of action, linked to a 'philosophy of care,' requires a certain education of desire, it is important to examine the conditions for such an education." [28]

Like in the theater, like in writing, the efforts to take care of the natural genius that we are, inspired, inspiring, so capable, involve the recognition of our most fundamental needs, among which are our spiritual

needs and the space we must know how to give them. These needs are not specific beliefs, cults, or doctrines; they are the expression that each person gives to their inner being, to their existentiality. In all its forms, respect for existential questioning, this time, this place, this attention to our spiritual part, is so necessary for human health that it is among our 14 fundamental needs modeled worldwide by Virginia Henderson (1897-1996, USA, nursing educator and researcher).

Through medicine, through the arts, through technology, through the multitude of our knowledge worldwide (academic, empirical, experiential, intuitive, unconscious...), we know how to take care, and we also understand how existential education (how to be, why to be, understanding who/what I am-I do) is at the very foundation of our humanity. However, this is on the condition of taking - not sacrificing - the necessary time to care for what needs attention. Existential education, critical in nature, restores substance and value to lived time, as well as to the Inclusive Third, to that which deserves a quality of attention that our humanity requires in the context of destruction, acceleration, and massive captivations that occupy us.

Time. Theater is an effort, a time that is taken: leave one's home, go elsewhere, sit down, and do nothing other than "receive." Creative inventive writing is an effort to be made and a time that is also taken. Time and effort are inherent in all care given to others and in all learning, including self-discovery. Knowing how to take care requires [self-]learning throughout life. The attention to life and existence is an effort to be made throughout life. "Taking care," including of oneself "as another," is an effort to be made (learning to do and doing) all the more precious as our technological creations know how to make us lazy and increasingly eager to achieve a performant result without having to exert effort ourselves.

The reality of being and Being, its becoming, deserves that we take the time for an individual and/or collective reflection on said reality, what we are in it, and what we do, the impact of our actions and inactions, our intentions including the least intentional ones. Time, taking time, making the effort to take this time is necessary to take care of a thought of possibilities (referring to Henri Lefebvre's work), but we have a problem with time.

Human mediation through existential education, faced with digital technologies and the self-forgetting of which we are capable (consciously or unconsciously), must intervene at least where the cult of urgency [30] and the goldfish civilization [31] overlap, a real crossroads of an "economy of attention" [32] where the register of reactivity and emotion (short times) no longer distinguishes between the essential and the accessory [30] at the same time that the capture of our attention creates a new servitude [31], alters our tolerance for waiting and effort, and tends to make us forget that time is necessary for the maturation of experience and its conscientization (understanding, knowledge).

"*What place do we give to existential self-education in a world dominated by technocapitalism?*" asks I. Pereira (Philosophy teacher and sociology researcher), emphasizing the need to reformulate our existential inquiries in a world that includes AI. The author highlights the four central themes illuminated by the psychologist Irvin Yalom: "freedom, the lack of meaning in existence, the anxiety of death, and existential isolation." [33]

These existential questions need to be addressed from our primary schools to universities, including the field of arts, encompassing theatre, and involving artists. It is also crucial to consider adult education. As Pascal Galvani [34] highlights in tracing the history of lifelong learning from its inception to the present, the existential question is implicitly posed by continuous training practices. Who are those striving to contribute to existential education? What is their status? Henry Desroches sought this clarification at the end of the last century: "A status that does not yet exist. What status?... the status of a maieutician who... would not need to be a doctor and would not have the right to be a priest... in any case, not needing to practice a priesthood and not having the right to arrogate a clerical role, not having the right to be confessional." [35]

From personal experience, it is not easy, within a logic of adult education subjected to the job market as well as cost reduction (the cost of labor and training) and efficiency for efficiency's sake, to assert the necessity of such continuous pedagogical and andragogical education. However, on the ground, adult learners themselves, in the area where I am located, express this demand every day, and I respond in my own way: an education/training that starts from oneself, existential questioning, and the needs that the adult recognizes in this field, with the aim of better understanding the world in which they live, educating themselves as best as possible, and educating their own children, with and among others.

Interrogating reality (current events, experience, experimentation...) in education, as well as fear, anxiety, courage, risk, hope, change, laughter, one's own abilities, trust, presence, and even questioning one's relationship with God (without necessarily giving it a name), in order to better understand oneself, others, and the world and express one's ignorance as well as one's knowledge; expressing an inner being that wants to emerge from silence, from the closet, to be recognized in its entirety, with its shortcomings and fragility, and to learn to learn from itself and its spirituality, to recognize it in others, to work with and among others, without any reservation in any specific domain (political, economic, religious, scientific, etc.); as long as everything can be grasped (transdisciplinary approach) and both a sensitive and critical, respectful listening accompanies this work, exploring our reality dialogically and our way of experiencing it, understanding it, or not understanding it, including through laughter and while learning French.

It is an opportunity for a trainer (m/f) as well as for a group of adults in training to confront 'learners' who are so different from each other, so remarkably distinct, always unique, and yet similar. To highlight here what sets us apart from machines and what universally brings us together, manifests in various forms: an existential being animated by the same desire to explore possible avenues for living in peace, doing better, 'being' better, understanding better, understanding ourselves better, recognizing ourselves for who we are, without absolute answers—fortunately without absolute answers—and not forgetting to laugh about it, in all languages. The Genius (creator) with feet of clay (vulnerable and [self-]destructive) would be at least of its own disqualification as a Subject. Its recognition, in the theater (the audience) as well as in a training room (the learners), is an alchemical process; it contributes to transforming lead into gold, clay into fertile soil.

It is there, in the adult and the young person who joins him for a few weeks, a few months, sometimes nearly a year in a training program, this shared need to learn to take care of ourselves, of others, of the world, to express oneself, to recognize oneself. This need to reflect on this human reality and to play with humor, love, and absurdity in adult education, as in theater, without having to undergo any inappropriate and/or intrusive catharsis.

In this authorized space that is the training room (set up like a "sanctuary" or as a small theater depending on the days and moments), if roles are determined (trainers versus learners), it is only to play them better and to thwart them. As long as Love, humor, and the absurd are allowed, every opportunity becomes a dream to dialogue, learn, discover, break free from presuppositions, marvel, "be marvelled," wake up, extract the hamster from its aimless wheel, or from a torpor that sometimes goes unnoticed.

The human comedy, as in the theater, is also adult education, as they are actors, authors, and creators every day in their daily lives. These sensitive, inspired, and vulnerable geniuses, who are adults talking about themselves, are animated by a thousand social masks, both the best and the least intentional. The trainer never forgets the playwright or the actor as authentic flesh-and-blood beings that we all are, nor the real harshness of certain existences. Humor, love, the absurd, laughter, reflexivity, are all teachings and natural human medicines we possess to learn to overcome what must be overcome, without dying "for real."

In this symbolic, reciprocal little theater that I allow to come to life in adult education, while mediating it (director, conductor, referee, mime, white clown or Auguste, hyphen, transmission belt, Candide, or even "devil's advocate"...), moments of magic are born, both inspired and inspiring, where something has been said or done that has just been understood (by one, by all), which may help to understand something about oneself, others, or the world and, thereby, mostly contribute to a much better relationship with knowledge as well as oneself, and the necessary effort to learn and progress beyond the objectives prescribed by the training system. Recognition, the capacity of a genius awakening to itself, precedes knowledge; I observe it every day.

A transdisciplinary and dialogical approach to social phenomena and the questioning of the Subject-genius-existential in the society it inhabits and which inhabits it (sometimes two or three different ones depending on certain contemporary migratory situations) within the framework of adult education that engages me does not aim to find answers to the questions posed, only the intention to authorize dialogue and questioning, to structure it, and to illuminate it in its own way. From my position, in this authorized dialogue, I explain, rephrase, conceptualize, prioritize, seek clarification, theorize, emphasize, "de-confuse," "de-contention," and assist in expressing as clearly as possible what is seeking to be said—a quest for meaning and significance: the missing words, the part of oneself that the machine does not have, as long as it is a

machine, and as long as "I" do not imitate it without being able to laugh about it.

For a long time, I remained an adult educator outside any institutional framework, to preserve my right to work on this dimension of existence with learners, regardless of the field or purpose of the training. For years, I maintained my pedagogical practices and existential aims (engaging a certain part/thought of oneself about oneself, others, and the world) on the fringes of the established order, which showed little eagerness to understand their importance and provide them an official, acknowledged place. It is through writing for the theater that I will first retain a "public," formal space for such intentions.

However, recently, I observe - in my own territory - signs of a possible, albeit still too timid, opening to content and approaches that finally allow addressing existential questioning, participating in a reenchantment of oneself, others, and the world officially within the framework of adult education, whether it is aimed at social or professional integration.

Humor, Love, the absurd. To take care... Does the machine truly know what giving or receiving a smile truly means?

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About the Author



Pascale Maestu is a Ph.D. candidate in Education Sciences at the University of Paris 8, EXPERICE Laboratory, her research focuses on the existential self-training of the individual and their emancipation, especially when facing a paroxysmal experience that becomes an "event" and generates a sometimes radical mutation in their existence. Her observations concentrate on how an individual [re]learns to occupy their place in the world they live in after an unprecedented experience that breaks with the equilibrium they maneuvered until then; the possible faculties and/or difficulties observed, and consequently, the resources mobilized for this relearning. As an activist adult educator in lifelong learning integrating the subject's verticality and capacity for conscientization, her reflections center on a dialogical and transdisciplinary approach to andragogy, involving the connection between existential education and critical pedagogies (particularly influenced by Paulo Freire)

CHAPTER **7**

Epistemology in AI (Transdisciplinary AI)

Ndubuisi Idejiora-Kalu

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.

7.1 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 (our 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.

7.2 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 (Figures 7.1 & 7.2), 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 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



Figure 7.1: 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.

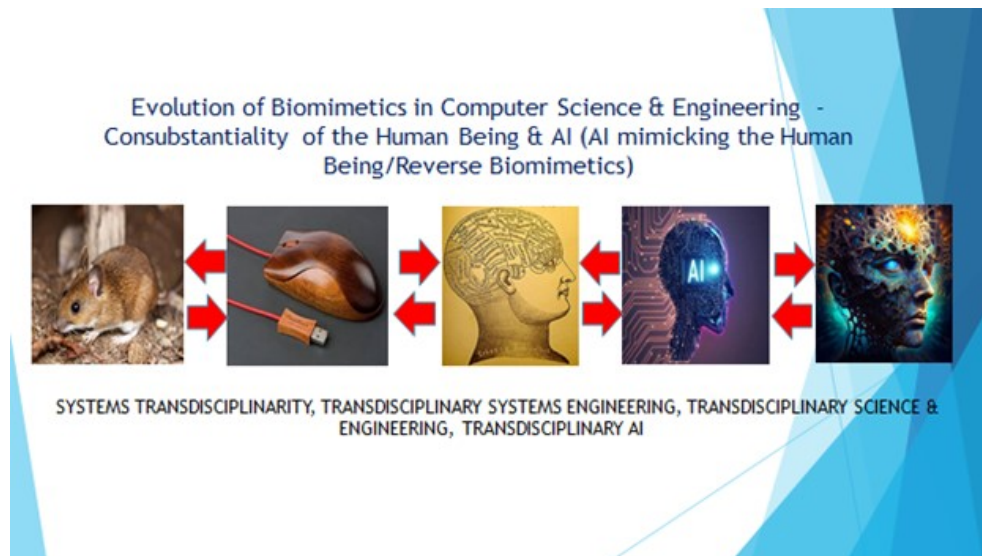


Figure 7.2: The Evolution of Biomimetics in Computer Science & Engineering - Consubstantiality of the Human Being & AI & Reverse Biomimetic Function as a Substantiality of Systems Transdisciplinarity, Transdisciplinary Systems Engineering, Transdisciplinary Science & Engineering, and Transdisciplinary AI.

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 isolation-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.

7.3 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 (Figure 7.3) (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

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).

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, 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

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.

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.

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

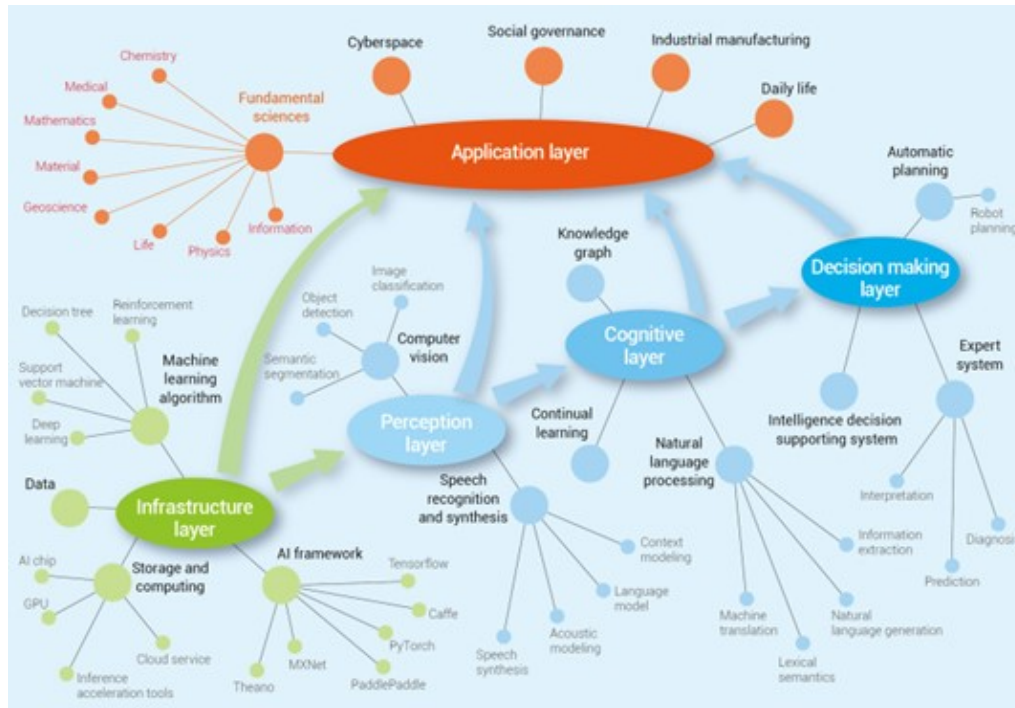


Figure 7.3: The knowledge graph of the AI framework after Xu et. al., 2021.

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 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.

7.4 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.

7.5 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?

7.6 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.

7.7 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 intensified 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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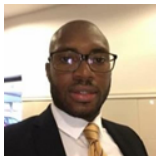
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CHAPTER **8**

Rethinking Intelligence Beyond the Anthropocentric: Pervasive Intelligence, Entangled Cognition and the Logic of the Included Middle

Renata Morais

Abstract

Anthropocentric conceptions of intelligence, centered on human reasoning and problem-solving, fail to recognize the pervasiveness of cognitive processes across multiple levels of reality. This paper puts forward a transdisciplinary reframing of intelligence that encompasses biological, technological, and ecological forms of cognition through the lenses of bio and cybersemiotics, Actor-Network Theory, and systemic autopoiesis. We argue that intelligence is not solely a human attribute, but rather an entangled phenomenon arising from the co-evolution of human and artificial cognition, multispecies information exchange, and autopoietic systems. By applying the logic of the included middle as a condition for pervasive intelligence, we move beyond the binary of human vs. artificial intelligence. Nicolescu's concept of the Hidden Third sheds new light to the study of pervasive intelligence and non-anthropocentric, entangled cognition, bringing profound implications for designing technologies that ethically integrate artificial and natural intelligence, fostering multispecies co-evolution and co-existence.

Keywords: Pervasive intelligence, Entangled Cognition, Logic of the Included Middle, Cybersemiotics, Actor-Network Theory, Transdisciplinarity.

8.1 Introduction

"Why should our bodies end at the skin, or include at best other beings encapsulated by skin?"

Donna J. Haraway

Intelligence has historically been framed within an anthropocentric paradigm that emphasizes logical reasoning, problem-solving, and abstract thought as uniquely human capacities (Henrich, 2016). This perspective fails to acknowledge other ways of knowing that are distributed across different layers of experience. In this paper, we review transdisciplinary epistemologies that explicit the pervasive nature of intelligence across multiple levels of reality such as the ecological, biological, technological, human, and social. Pervasive intelligence is here conceptualized from a cybersemiotic (Brier, 2019), Actor-Network (Latour, 2005) and

multispecies perspective (Margulis and Sagan, 1995), expanding our definition of intelligence beyond a narrow focus on human processes of cognition and into distributed and embodied forms of intelligence.

Recognizing diverse intelligences beyond the anthropic prompts us to re-examine human exceptionalism and focus on new possibilities instead of on past constraints. By creating transdisciplinary bridges between disciplines, we allow new understandings of intelligence to emerge that dissolve simplistic boundaries between biological, technological, and societal domains, allowing us to move beyond the dichotomy between technological and biological intelligence and into a transdisciplinary approach that focuses on pervasiveness.

The field of pervasive intelligence encompasses a wide range of computational applications, integrating concepts from computer science, artificial intelligence, ambient intelligence, and ubiquitous computing. The most common understanding of pervasive intelligence is centered on computing, and involves the seamless integration of intelligence into everyday objects and environments, enabling continuous monitoring, data collection, and decision-making processes (Saha and Mukherjee, 2003). Pervasive intelligence requires higher speed, accuracy, and flexibility to suit different conditions, emphasizing the need for advanced computational capabilities and efficient resource utilization (Cao, Feng, and Wang, 2020).

The convergence of pervasive computing and artificial intelligence has led to the emergence of Pervasive AI, expanding the role of ubiquitous computing systems from data collection to executing distributed computations (Baccour et al., 2022). Furthermore, the concept of pervasive intelligence extends to social computing, aiming to augment various facets of human intelligence (Zhou et al., 2011). This integration of pervasive intelligence into social computing environments presents opportunities for enhancing human interaction within digital ecosystems. This paradigm shift towards pervasive intelligence reflects the transversal integration of artificial intelligence into everyday processes and decision-making (Rider, Srinivasan, and Khoury, 2020). Pervasive intelligence represents a multidimensional and transdisciplinary field characterized by the seamless integration of intelligence into diverse environments, ranging from healthcare and environmental sensing to the quantified self (Almalki, Gray & Martin-Sanchez, 2016) and various social applications. The pervasive nature of intelligence extends beyond traditional computing paradigms, emphasizing the need for new research that is able to shed light into the complex and evolving mesh of technological and biological cognition.

8.2 Entangled Cognition and Cyborg Intelligence

The entanglement of human cognitive processes with technological systems represents a complex and intricate dynamic within the field of pervasive intelligence. This entanglement goes beyond viewing technologies as mere tools and emphasizes their role as co-evolving partners in the orchestration of intelligence. Technologies actively shape and are shaped by human cognition, resulting in a multifaceted interplay that calls for *areconceptualization of intelligence itself* (Aguayo, Videla, and Veloz, 2023; Firth and Robinson, 2020; Meghdadi, Akbarzadeh-T, and Javidan, 2022; Harrison et al., 2019).

Technology has traditionally been understood as a mere extension of human cognition, an instrument designed and wielded by humans to achieve specific goals. However, this instrumentalist perspective fails to capture the nuanced reality of entangled intelligence. As Don Ihde (2009) argues, technological artifacts possess their own affordances – inherent possibilities for action and meaning-making that shape the user's interaction and experience. Technological affordances are a clearly entangled relationship where technology not only reflects, but also actively influences human cognition. The concept of entangled cognition has been explored in various domains, including immersive learning experiences, digital ecosystems, and decision-making processes within social systems. This theoretical framework acknowledges the intertwined nature of human cognition and technological advancements, emphasizing the need to consider entangled cognition in the design of new technologies (Aguayo, Videla, and Veloz, 2023; Meghdadi, Akbarzadeh-T, and Javidan, 2022; Harrison, Hauer, Nielsen, and Aas, 2019), since the impact of technology on human intelligence goes far beyond mere assistance with information processing and retrieval.

Our interactions with digital tools can alter cognitive structures and processes. For example, our reliance on external memory storage, such as smartphones, has weakened our internal memory capacities (Turkle,

2011). Similarly, frequent multitasking with digital devices can hinder our ability to focus and maintain sustained attention (Baron and Stan, 2012). These findings illustrate how technology, through its inherent affordances, actively shapes human cognition, fostering new cognitive strengths while potentially sacrificing others. A powerful example of entangled cognition is the way algorithms designed to optimize engagement across social media curate our newsfeeds, shaping our understanding of the world and influencing our social interactions (boyd & Crawford, 2012). The very act of interacting with these platforms generates data that further refines the algorithms, creating a feedback loop that continuously molds both user behavior and platform functionalities. This co-evolutionary process blurs the line between human and technological intelligence, revealing their intricate entanglement.

The many intricacies of the interplay between human and artificial cognition and the ways one shapes the other have given rise to entirely new fields of knowledge. Cyborg anthropology, for example, explores the interactions and relationships between humans and technology, emphasizing the fusion of organic and artificial intelligence. The concept of a cyborg, as developed by Donna Haraway, rethinks the anthropological human-machine assemblage, emphasizing the interconnectedness of humans and technology (Downey et al., 1995; Dementavičienė & Dranseika, 2020). Haraway's seminal *Cyborg Manifesto* (1991) critiqued the binary opposition of human vs. artificial intelligence, highlighting the need for a more inclusive understanding that took into consideration their complex relationship. Cyborg anthropology embodies the possibility of natural hybridization between humans and objects/devices (Ballesté & Torras, 2013), while also raising awareness of the implications of human-AI integration on the construction of identity, consciousness, and culture. The mere possibility of a full merger and integration between human and artificial intelligence challenges traditional notions of personhood and the question of what constitutes the exact boundary between humans and machines (Oliveira, 2020).

Cyborg intelligence integrates artificial intelligence with biological intelligence by connecting computational and biological systems via brain-machine interfaces (Zeng and Wu, 2014). Cyborg cognitive applications, such as the development of a hippocampus prosthesis (a type of cognitive prosthesis that aims to improve or replace the function of damaged brain tissue) are already common scientific developments (Barfield and Williams 2017, 4). Cyborg intelligence operates via hybrid systems that are physical instances of entangled cognition (Zheng et al., 2015). The development of cyborg cognition has also raised ethical and philosophical considerations regarding its integration into the human body. An important aspect is that cyborg technology not only restores lost biological functions but also enhances anatomical, physiological, and information processing abilities (Barfield and Williams 2017, p.6). This fact raises concerns about the potential impact on human identity and the redefinition of the boundaries between humans and technology (Selinger and Engström, 2008). Cognitive enhancement through the use of exosenses, which are external senses designed to enhance cognitive abilities, also raises ethical concerns related to inclusion and accessibility (Gauttier, 2019). When we combine cyborg intelligence with the concept of multispecies intelligence (Margulis and Sagan, 1995), the full ethical implications of entangled cognition processes present us with a daunting challenge.

The intricate dance of entangled intelligence, where human cognition and technological systems co-evolve, challenges the traditional instrumentalist view of technology as mere tools, highlighting their active role in the orchestration of intelligence itself. It forces us to go beyond the simplistic model of technology as reduced to a platform or extension of human cognition. Instead, technological affordances and their inherent possibilities for action and meaning-making through and by artifacts actively shape our interaction and our cognitive experience. This interconnectedness is evident in various domains, from immersive environments to social media algorithms, where technology not only reflects but also actively molds human cognition. Entangled cognition reframes how we conceptualize boundaries between species. As emerging technologies increasingly mediate our interactions and blur the separation between biological and artificial spheres, these boundaries appear increasingly porous. Wearable devices, implantable sensors, genetically engineered organisms and integrated human-AI systems challenge basic assumptions about where one entity ends and another begins. They prompt questions about how to classify hybrid entities that exhibit characteristics of more than one domain. If a brain implant allows someone to move through the world and interact with it via artificial voice, arms and legs, is their experience of reality purely human? As our bodies and minds become

intertwined with code and circuitry through sociotechnical mediation, we must reexamine fundamental concepts like identity and agency.

In an era of deepening mediation between the natural and artificial, we can no longer take for granted long-held distinctions between the living and non-living, organism and technology, human and nonhuman. The future implications of entangled cognition via cyborg technology, while promising advancements in cognitive abilities, also challenge human identity, accessibility, and could bring about the possible redefinition of human-machine boundaries (Selinger and Engström, 2008). Additionally, the combination of cyborg intelligence with multispecies intelligence (Margulis & Sagan, 1995) opens up a vast and complex ethical landscape whose disruptive potential must be fully explored.

8.3 Multispecies Intelligence in Cognitive Ecologies

Inspired by cyborg intelligence, Margulis and Sagan (1995) introduced the concept of multispecies intelligence, emphasizing pervasive cognitive processes in biological systems. Pervasiveness is not an exclusive attribute of computational forms of intelligence. A growing body of research demonstrates plants exhibit sophisticated inter- and intra-species communication capabilities utilizing biochemical signaling and mycorrhizal networks (Gagliano et al., 2012). Studies of collective animal intelligence show how social groups develop distributed cognitions exceeding the scope of individual members (Sumpter, 2010), while even microbiomes have their own forms of distributed information processing through metabolic and gene regulatory networks within microbial communities (Röttgers and Faust, 2018). Multispecies intelligence refers to the ability of multiple species to interact and exhibit intelligent behaviors collectively. The concept of multispecies intelligence is particularly relevant for the analysis of the interplay between human and artificial intelligence because it highlights the ways in which informational and semiotic processes shape new architectures of hybrid cognition. Multispecies intelligence encompasses the collective intelligent behaviors and interactions exhibited across various levels of reality, including ecological modeling, collective social behaviors, biosemiotics, and cybersemiotics (Brier, 2005).

Biosemiotics (Brier, 2006; Emmeche, 2007) draws a definition of biology as being inherently semiotic, emphasizing the crucial roles of signs and meaning in living systems, especially exemplified by genetics: the gene is a code for memory and self-representation; the individual living body is a code for action and interaction with the real world and its ecology. Thus, life appears to be a communicative interplay of different types of self and other descriptions carried by molecules. Biosemiotics is further developed in cybersemiotics to include theories of computers and embodied sign and language games (Brier, 2006, p. 31). It establishes the importance of semiosis, the process of sign production and interpretation, as a process that is fundamental to life, blurring the boundaries between the natural and the artificial. Biosemiotics offers a new framework for rethinking the relationship between biological and artificial intelligence. In the field of biosemiotics, the concept of intelligence is closely linked to the notion of semiosis, which refers to the production and interpretation of signs and symbols within living systems (Slijepcevic, 2020). The biosemiotic approach considers intelligence itself as a form of semiosis and emphasizes the role of cognitive agents within living systems. Furthermore, biosemiotics is aimed at studying the cognitive and life activity of living beings, which are capable of recognizing signals and extracting meanings, thereby serving as a conceptual node that combines important notions from various disciplines such as theoretical biology, evolutionary epistemology, cognitive science, neuroscience, and neurophilosophy (Knyazeva, 2018).

From a biosemiotic perspective, cognition is seen as a kind of morphological/morphogenetic embodied computation *in vivo*, emphasizing that cognition does not solely depend on the existence of a nervous system but on functional circuits that enable the perception of the surrounding environment and its semiotic processing within living systems (Dodig-Crnkovic, 2022). This aligns with the view that biosemiotics offers a transdisciplinary basis that unites the natural and human sciences in the study of semiotic processes (Doronina, 2022; Pesina et al., 2023) which is also present in cybersemiotics. Traditional notions of intelligence are challenged by approaches such as multispecies intelligence and biosemiotics. The concept of multispecies intelligence dismantles the anthropocentric view of cognition by demonstrating the sophisticated

communication and information-processing capabilities of plants, animals, fungi and even microbes, forcing us to acknowledge the pervasive nature of intelligence in the living world. This shift in perspective aligns with transdisciplinarity as a valuable framework for understanding how diverse forms of intelligence interact and co-evolve, including the complex interplay between human and artificial intelligence.

Biosemiotics provides a powerful lens for analyzing this interplay by emphasizing the centrality of sign production and interpretation in all forms of life. Genetic systems and entire natural ecologies can be seen as intricate systems of meaning-making, blurring the lines between the natural and the artificial. Both biosemiotics and multispecies intelligence are important transdisciplinary approaches to understanding the relationship between biological and artificial intelligence, moving beyond the limitations of computational models. The fusion of both multispecies intelligence and biosemiotics frameworks opens up a vast landscape of research and ethical considerations. As we move towards increasingly interconnected and hybrid systems, understanding the semiotic processes of diverse cognitive agents becomes crucial. This includes exploring questions of agency, communication, and collective intelligence within multispecies and human-machine assemblages. Furthermore, the ethical implications of integrating artificial intelligence with biological systems and navigating the potential for unintended consequences demand careful consideration.

8.4 Autopoietic Intelligence as a Tapestry of Cognition

Cybersemiotics extends the principles of biosemiotics to encompass the study of information exchange and processing between technological and living systems (Brier, 2003, 2005, 2006). It integrates semiotics, information theory, and cybernetics to explore the interactions between multispecies cognition and artificial intelligence. The relationship between information and cognition in cybersemiotics emphasizes the interconnectedness of life, consciousness, and cultural meaning as part of patterns of general evolution (Brier, 2010). It is rooted in the universalism of Peircean semiotics and Luhmann's systemic perspective of self-referential autopoiesis, providing a comprehensive view of entangled cognition (Vidales, 2021). Cybersemiotics presents a robust transdisciplinary framework that weaves together the threads of Peircean semiotics, cybernetics, and systemic autopoiesis.

Cybernetics illuminates both the subjective, lived experience of individuals and the data-centric, objective information gathered by autonomous intelligent agents within complex systems; while Peircean semiotics provides a rigorous structure for analyzing the hybrid signifying systems and processes that shape our understanding of the world. This interplay between the subjective and the objective, the lived and the interpreted, forms the bedrock of cybersemiotics' transdisciplinary approach to pervasive processes of intelligence. Cybersemiotics blends together cybernetics and systemic autopoiesis (Maturana and Varela, 2017), adding a new dimension to the understanding of the relationship between different kinds of intelligence. Cybernetics, with its focus on feedback loops and information flow, highlights the dynamic interplay between humans, technology, and the environment. Systemic autopoiesis, with its emphasis on self-organizing systems and the emergence of new properties from interactions within the system, provides a window into the interdependent nature of the ecological, social, and technological systems we inhabit. Cybersemiotics is not merely speculative; it is a powerful transdisciplinary tool for understanding the interconnectedness and co-evolution of intelligence regardless of its material base. In addition to cybersemiotics, Actor-Network Theory (ANT) provides another revealing angle for the analysis of unified intelligence systems, by emphasizing the interconnectedness and interdependence of both human and non-human actors in socio-material networks (Latour, 2005; Denis et al., 2007).

ANT proposes that both human and non-human actors play inseparable roles in sociotechnical networks, creating systems of hybrid and distributed intelligence. Rather than privileging human agency, ANT treats all network elements—whether biological or technological—as horizontal nodes within complex webs of mediation, which makes it invaluable as a tool for analyzing emergent systems of human and non-human intelligence. By considering both biological and artificial agents horizontally, ANT allows for a more nuanced understanding of how intelligence arises through the interconnection and interdependence of diverse elements. The most fundamental tenet of ANT is that agency is not a privilege of humans, being dispersed and

distributed across both ecological and technological networks (Hurtado de Mendoza et al., 2015). Distributed agency and hybrid intelligence enable autonomous network dynamics that dissolve dualisms such as that of the separation of structure and agency (Doak & Karadimitriou, 2007), thereby challenging assumptions of hierarchy or linear causation within complex systems. Instead, **intelligence is here seen as an autopoietic outcome of distributed agency across biological, technological and environmental networks.**

Autopoiesis itself can be seen as a form of intelligence, connected to the ability of a system to continuously produce and maintain its own organization through a network of interdependent processes. Autopoiesis, as a concept, was initially connected to the self-maintenance and self-production of living systems without external direction (Agnati et al., 2017). Recently, its significance has been expanded and applied to other kinds of systems such as technological and social systems with an emphasis on the concept of **anticipatory artificial autopoiesis**, highlighting the relationship between autopoiesis and artificial intelligence (Dubois and Holmberg, 2021; Yolles, 2021). An integral aspect of autopoietic intelligence is homeostasis: the ability of living systems of maintaining their internal boundaries and conditions while exchanging matter and energy with their environment. Artificial homeostasis can also be observed in systems powered by artificial intelligence, and which exhibit their own amalgam of homeostasis via informational exchanges (Feketa et al., 2023).

Autopoietic intelligence can also be related to individuated cognition, particularly in terms of operative and figurative intelligence (Yolles and Fink, 2014). Operative intelligence is associated with the self-production and maintenance aspects of cognition, while figurative intelligence is linked to self-creation and is directly related to autogenesis (Yolles and Fink, 2014). The connection between autopoiesis and intelligence has implications for individuation processes, with questions arising about how exactly cognition relies on autopoiesis and whether autopoiesis is a necessary and sufficient condition for individuation. These questions also refer to the future implications of artificial forms of autopoiesis and consequently **artificial forms of individuation** as well (Dubois and Holmberg, 2021; Bitbol and Luisi, 2004). These developments illustrate the increasingly complex landscape of intelligence, transcending traditional boundaries between its human and artificial, biological and technological forms. Bio and cybersemiotics, Actor-Network Theory (ANT) and artificial autopoietic intelligence, offer distinct, yet complementary, lenses for understanding these entangled intelligences. As Brier (2003, 2005, 2006) proposes, cyber and biosemiotics bridge the gap across living and technological systems due to the universal and shared semiotic nature of informational flows.

This transdisciplinary tapestry integrates Peircean semiotics, information theory, and cybernetics to examine multispecies cognition and AI within a unified framework. The emphasis lies on the interconnectedness of life, consciousness, and cultural meaning as part of a broader evolutionary process (Brier, 2010). By drawing on Peircean universalism and Luhmann's systemic autopoiesis, cybersemiotics provides a comprehensive view of entangled cognition (Vidales, 2021). Similarly, ANT emphasizes the interconnectedness and interdependence of both human and non-human actors within socio-material networks (Latour, 2005; Denis et al., 2007). Considering human agency as equivalent to technological agency, ANT treats all network elements – biological or technological – as equal participants in hybrid and distributed systems of intelligence. This horizontal approach allows for a privileged view of the dynamics in which these diverse elements co-create intelligence through their interdependency. Distributed forms of agency and hybrid intelligence emerge from the interconnectedness of human and non-human actors within complex social technological systems. Both cybersemiotics and ANT point towards a future where intelligence is fully recognized as a truly pervasive phenomenon that operates across multiple levels of reality. However similar, these two approaches diverge in their focus: cybersemiotics emphasizes the shared semiotic ground and subjective experience, while ANT highlights distributed agency and network dynamics. Both approaches raise questions about our present understanding of artificial intelligence and its distributed nature, and the ways in which new technologies might be designed that take these principles into consideration.

8.5 The Intelligence of the Hidden Third: Beyond Duality in Cognition

While both cybersemiotics and ANT offer compelling visions of the future of pervasive intelligence, their approaches diverge, reflecting a deeper tension within the very notion of intelligence itself. Cybersemiotics, focused on shared meaning and subjective experience, favors semiotic continuity amidst cognitive diversity, suggesting a universal language of intelligence that transcends individualized cognition. ANT, conversely, emphasizes the dynamic interplay and distributed agency within networks, highlighting the irreducible multiplicity and contextuality of intelligent behavior across multiple levels of reality. This tension mirrors the transdisciplinary view, especially in relation to the logic of the included middle (Nicolescu, 2010; Brenner, 2003; Gibbs, 2021). From a complex systems perspective, the logic of the included middle underlies the unpredictable and novel phenomena that arise from ongoing intricate interactions within a system. Complex systems cannot be reduced to the sum of their parts due to the emergent properties that cannot be attributed to the simple combination of single individual elements. Complexity is, therefore, a function of the interplay between different levels of reality and the continuous emergence of new iterations of experience. It is deeply intertwined with the principle of multiple levels of reality (Gibbs, 2021), as suggested by Nicolescu's axioms: "The logical axiom: The passage from one level of Reality to another is ensured by the logic of the included middle (...) The complexity axiom: The structure of the totality of levels of Reality or perception is a complex structure - every level is what it is because all the levels exist at the same time (Nicolescu, 2010, p. 22)".

The logic of the included middle reconciles complex oppositions via the unifying dimension of the Hidden Third, which allows the unification of the transdisciplinary Subject and the transdisciplinary Object while preserving their difference via a zone of non-resistance (Nicolescu, 2012). Hence, it enables integration between subjective and objective forms of cognition while maintaining their distinction, serving as a "flow of consciousness that coherently cuts across different levels of Reality of the Subject and that must correspond to the flow of information coherently cutting across different levels of Reality of the Object" (Nicolescu, 2008). It represents a neutral third stance that permeates and mediates two entities, with the term 'hidden' signifying invisibility and 'third' typically referring to a neutral third stance mediating two entities (McGregor, 2018).

The Hidden Third's zone of non-resistance can be understood as the background of entangled cognition, with its radius of action being infinite (Costa, 2022; McGregor and Gibbs, 2020). Moreover, the zone of non-resistance that allows the unification of the subject and object is also found in pervasive intelligence and entangled cognition. The logic of the included middle emphasizes the interdependent and co-creative nature of the relationship between different levels of intelligence. It bridges the gap between observer and observed, acknowledging the various manifestations of subjectivity inherent in all forms of cognition and the ways in which both subject and object determine each other.

8.6 Concluding Thoughts

Nicolescu's logic of the included middle offers a new pathway for conceptualizing and designing sociotechnical systems that interface with and augment human cognition and collaboration. Applying a transdisciplinary view to technological design takes us beyond the traditional conceptualization of humans and machines as distinct entities, instead advocating for systems that foster the emergence of integrated multispecies intelligence. New technologies that would work towards distributed and reciprocal entangled mediation, would enable both human and artificial components to dynamically achieve common goals through their interconnectedness. Design principles such as mutual learning, dynamic adaptation, and transparency can foster human trust and a shared sense of participation within these hybrid networks of intelligence.

Furthermore, pervasive intelligence challenges traditional user-tool dichotomies in interface design, calling for fluent possibilities of interaction across biological and technological dimensions. The logic of the included middle provides a philosophical grounding for conceptualizing and constructing these novel systems not as discrete engineering products, but as holistic, emergent phenomena. This shift in perspective opens avenues for harnessing the full complexity of multispecies intelligence through sensitive and ethical

integration of the artificial and the natural. When considering the significance of the logic of the included middle to the study of pervasive intelligence, we face the ethical imperative to actively recognize the interconnectedness of all levels of intelligence and move beyond anthropocentrism by acknowledging the intrinsic value of hybrid forms of cognition, both biological and technological. In this intricately interconnected weave, diverse threads representing different forms of intelligence – the algorithmic precision of a chatbot, the pulsing collective intelligence of a coral reef, the combined decision-making of a flock of birds – blend and intertwine, co-creating an ever-shifting kaleidoscope of entangled cognition.

Embracing entanglement challenges us to abandon the hierarchical thinking that separates human intelligence from other forms of intelligence. We must acknowledge the complex dance of co-creation, where our every action ripples through the tapestry of interbeing, shaping and being shaped by the interconnected intelligences that surround us. In this entangled reality, true progress lies not in mastering or controlling intelligence, but in learning how to dance with it, weaving a future where pluriversal intelligences flourish in a web of vibrant co-existence. By embracing Nicolescu's logic of the included middle, we can strive for a future where artificial and natural intelligence co-evolve in synergy, fostering multispecies co-evolution that might ultimately lead to an artificial general intelligence (AGI) that has organic elements and is not entirely artificial.



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CHAPTER 9

A New Spiritual Dawn for The AI Era from the Nation of Harmony

Margaret Hiro Kimishima

Abstract

A new standard of Japanese spirituality is necessary in the age of AI, as the Japanese people's value of collectivism and harmony has concealed individuality's essence in modern Japan. In Japanese culture, harmony exists not only among individuals but also between individuals, objects, and nature, influenced by the essence of Japanese polytheism.

The increasing prevalence of AI suggests that individuals will need to take greater personal responsibility for their thoughts, actions, and words in the coming era. Cultivating a sense of individuality will be especially crucial in Japan, where the value of harmony is ingrained: Coexisting with AI will be a necessity. Japan has produced many AI robot animations since World War II, offering children a bright outlook for the future. AI robots have developed moral values like their human creators and assisted a group of children in their fight against evil. Conversely, in Western culture, the hero is often depicted as a lone human possessing supernatural abilities, while AI robots are frequently portrayed as a threat to society. Additionally, in collectivist societies, harmony is exemplified through adherence to the form and process of traditional art forms and sports, known as "kata." The audience is not privy to the creator or artist's originality.

Therefore, it is imperative for the Japanese nation, including researchers, spiritual leaders, and ordinary citizens, to pursue validation through their own individual foundations. It is crucial to establish an independent research center that offers a transdisciplinary approach in the field of spirituality to anchor the global spirituality that resonates with modern Japanese individuals.

Keywords: AI-generated art, collectivism, creativity, individuality, kata, polytheism, transdisciplinary research center.

9.1 Introduction

A new standard of Japanese spirituality is critical in the era of AI because Japanese people's emphasis on collectivism and valuing harmony has concealed the essence of individuality in modern Japan.

The prominence of "cherishing harmony" among people embodies the fundamental principle of the Japanese spirit, as mentioned in the first line of the oldest Japanese constitution published in 640 A.D. ("Juunanajo Kenpo").

This demonstrates an intriguing facet of Japanese society, focusing on the degree of interdependence that the nation ought to have, rather than emphasizing individual autonomy. Such a principle may not foster the drive for self-affirmation required to cultivate a robust sense of independence and individuality.

Within Japanese culture, "harmony" extends beyond interpersonal relationships to encompass connections between individuals and objects, as well as between individuals and nature, influenced by the essence of Japanese polytheism. Since there are no boundaries between humans and nonhumans in Japanese spirituality, there is no hierarchy between them: They coexist peacefully.

Japan promoted interreligious harmony through shamanism and by acknowledging the truth within each religion, including Shintoism and Buddhism. Indeed, Japanese spirituality's strength lies in the collective consciousness formed by Buddhism and Shintoism. In fact, spirituality has inspired the concept of harmony in various fields, such as art, architecture, cartoons, culture, religion, and sports, to value collectivism over individuality.

9.2 Fundamental Identity Lost in Collectivism

After World War II, many Japanese scientific researchers hesitantly debated religion and intuitive intelligence. This trend may be partly attributed to the U.S. prohibition of Japan's state religion, based on the notion of the emperor as a living god, who was the icon of Japanese spirituality during war.

As Katsuhiko Kohara argues in NHK's TV symposium "Kokoro No Jidai Shuukyo To Jinsei [The Age of Spirituality—Religion and Life], "Religion has thoroughly been excluded from the field of education" after the war. Moreover, he states that the Japanese nation today lacks the "basic knowledge" of religion. When Japan's state religion was prohibited, the Japanese spirituality was thoroughly excluded as well. The nation knows the authorities had taken advantage of Japanese collectivism to brainwash people into sacrificing themselves in the name of the emperor. They experienced that spirituality has two sides: As Kohara argues, they need to become more aware that there is a "power beyond human beings working somewhere that is integrated into our everyday lives", but at the same time, there is a broader perspective is required by "focusing social attention on the spirituality that is being misused". [1]

For instance, scandals involving emerging cults have led to a greater awareness of the benefits of avoiding religion and spirituality. When the emperor publicly denied his divinity, the nation lost the central identity and icon that they had always relied upon.

It is crucial to examine the essential components involved in cultivating a new sense of individualism among Japanese residents. This will allow individuals the freedom to express themselves or stand firm based on personal spirituality, which is a fundamental aspect of their collectivist culture. Even today, young adults in Japan tend to make decisions depending on what others may think about them. As shown in Figure 9.1, 73 % of young people say they try to please the person they're talking to. Young people put others' feelings before their own.

Further, as shown in Figure 9.2, 65% of them say they're worried whether others will disagree with them when expressing their opinions. It clearly indicates their relationships are formed that do not allow for true feelings to be expressed.

Figure 2 also demonstrates that 59% of respondents strive to appease unhappy individuals, indicating that even young adults in their twenties are hesitant to display their true selves to comply with societal norms. Resonating with others holds greater significance in Japan than expressing oneself. Consequently, friendships may be based on a self-sacrificing framework rather than mutual trust. A spirit of selflessness has impacted the formation of individuals' self-worth in Japan, potentially resulting in an imbalanced connection with AI down the line. In fact, many Japanese children grow up in an environment of collectivism, which allows them to relate to non-humans such as cartoon characters like AI robots as their peers.

As mentioned earlier, in Japanese culture, harmony extends beyond human relationships and encompasses the harmony between humans and objects, as an integral part of polytheistic teachings. For instance, in the post-WWII era, several cartoons were created in Japan to illustrate how a humanoid robot could be a child's best friend.

One such popular Japanese animation is "Doraemon," where a cat-like AI robot saves a clumsy human boy named Nobita from bullies. In the first illustration, the children encircle a robot, who is about to aid them in battling a villainous character in their animated work. Evidently, Doraemon is their guide

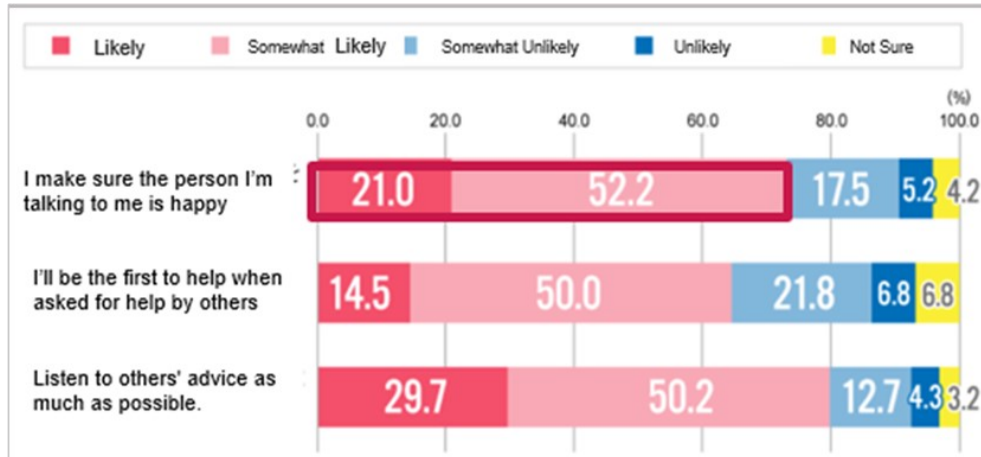


Figure 9.1: Survey on Future of Young People in 2019, (Surveyed in Dec) [2]

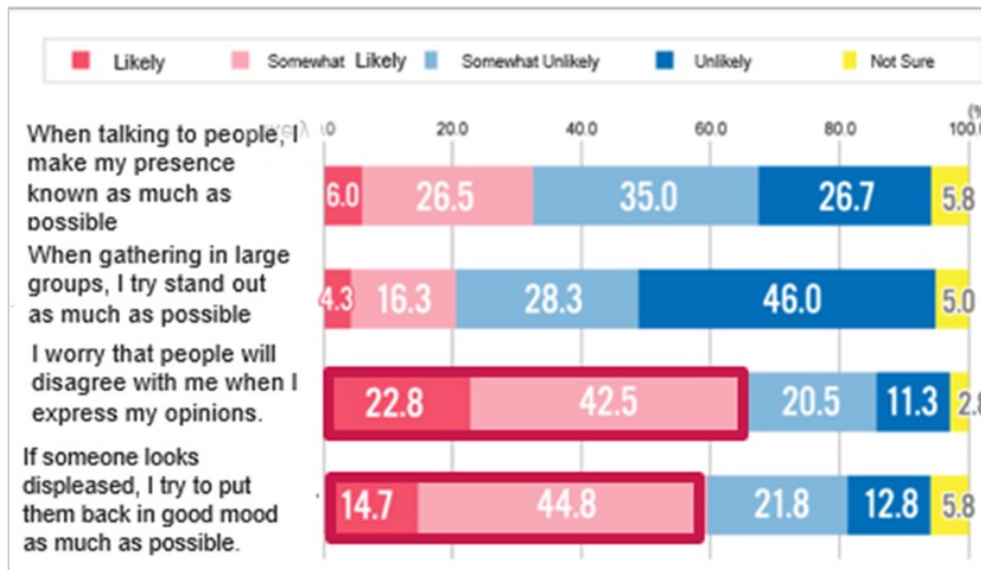


Figure 9.2: Survey on Future of Young People in 2019, (Surveyed in Dec) [2]

and confident in the visual, capable of imparting strategic instructions for their triumph in the narrative. Moreover, Doraemon, acting as an exemplary paternal figure, possesses the ability to sense emotions and offer support to the youngsters, even in situations when their parents may exhibit fear (see Figure 9.3).

Today, most young children are exposed to this animation, where the robot is perceived as inherently good. In contrast, the second image displays an American cartoon, "Spiderman". In Western cultures, the protagonist is a human with extraordinary abilities who battles against evil. On the other hand, AI robots are frequently portrayed as antagonistic, posing a threat to society (see Figure 9.4).

According to the images presented, Japanese animations prioritize achieving a common objective as a team, valuing teamwork over individual contributions. No one is solely responsible for the victory. In



Figure 9.3: Image of Doraemon encircled by his friends [3]



Figure 9.4: “Spiderman 1.” [4]

contrast, Western animations often feature a sole character who transforms into a superhero and exhibits a determined attitude to overcome evil.

The transition period for young children can raise questions about independence and identity. Both animations show what to expect and value in their cultures respectively when they grow older. If AI becomes more advanced and starts conversations with Japanese children who have been so used to dealing with super-friendly robots, they will probably become less cautious of the shortcomings of AI. Indeed, cartoon art makes a great impact on children emotionally and intellectually, and yet sooner or later, animation art will take advantage of AI-generated art.

9.3 Uniqueness Suppressed in a Collectivist Form

In a collectivist society, the notion of harmony can be exemplified by the reverence for “kata,” the form or order of process, in traditional art forms and sports as well. For instance, AI-generated artwork can be more acceptable in Japan than Western cutlers because the importance of creativity in traditional Japanese culture requires students to “imitate the teacher’s performance”. [5]

The audience has never shown the originality of the creator or artist. Japanese people believe that by merging with the gods of nature one becomes a full-fledged artist.

Similarly, AI can produce aesthetically good creative pieces through algorithms that instruct a device how to calculate and process data or make decisions, which seems to indicate that AI and Japanese “kata” can be compatible. A work of art is created from conventional information.

On the other hand, individuality in Western cultures has been used to guide a creator’s soul with truth, they create works of art from inspiration, tapping into the inner voice. Especially when creators are motivated to create a work of art, it can reveal the essence of their innate truth, which cannot be generated by existing data, patterns, or styles as Anna Ridler states in Laurie Clarke’s “When can make art – what does it mean for creativity?” in *The Guardians* that AI cannot generate “concepts” such as “collapsing moments” in “time,” “memory,” “thoughts,” and “emotions” that are created by a “real human skill” to generate a “piece of art” rather than “something that visually looks pretty”. [6]

This notion can also be applied to Japanese collectivism. As mentioned earlier, in the Japanese concept of harmony, traditional art forms are not something to express oneself, but to show how an individual can “merge into a work of art itself,” as Koji Matsunobu argues in “Performing, Creating, and Listening to Nature Through Music: The Art of Self-Integration”. [7]

Such a collectivist characteristic of Japanese individuals may have disastrous consequences in the AI era if they are unwittingly drawn into the AI environment. Unless they start breaking out of their “kata” or “cocoon” to put others in touch with emotions that might otherwise remain hidden or forgotten.

Surely, it takes courage to become an unpredictable creator in collectivism. However, only a bold one can create a vivid work by eliciting various “living moments”. For instance, each work in the Appendix below can probably evoke the raw inspiration of this author herself. Her courage to put these works, in the end, may be unconventional, and yet this process will give one the idea that they can come up with something more unpredictable by breaking the patterns of existing data. As for the content of the pieces, each work consists of three elements: A title, an image, and a one-sentence poem. They seem unrelated, but they function as a single work that the AI wouldn’t be able to connect. Indeed, a harmony exists within unbalanced relationships, much like that of human relationships.

9.4 Conclusion

Harmony is not about everyone wearing the same school uniform and being disciplined. Harmony occurs when individuals from diverse backgrounds resonate and share a smile. Courage is key to moving beyond Japanese collectivism in the AI era. It is time for the Japanese nation, including serious researchers and spiritual leaders, to pursue self-validation through the establishment of a research center. It is crucial to establish an independent research center that offers a transdisciplinary approach in the field of spirituality to anchor the global spirituality that resonates with modern Japanese individuals. This will enable the exploration and grounding of the unique characteristics of the Japanese populace. The optimal relationship is characterized by the ability to be distinctive yet still resonate with others. This is an area where AI has yet to make advancements.



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Margaret Hiro Kimishima is an expert and educator in the field of holistic energy medicine and intuition in Japan. She earned an MA in English Literature and Writing, as well as an MA in Writing, working as a freelance writer, editor, and translator across the publishing, media, and entertainment industries in both the US and Japan. After studying under Dr. Christine Page and other eminent educators of holistic medicine, Kimishima created the "EnlightCoding" energy medicine technique. Today, her salon draws top entertainers, entrepreneurs, and esteemed bodyworkers.

Appendix

The contents comprise of three distinct elements, all crafted by the author: A title, an image, and a one-sentence poem. Despite appearing unrelated, they form a unified work that cannot be deciphered by AI.



Our fingers mingled over a hot coffee.

Figure 9.5: “Genesis.” 2022. Acrylic on Canvas. Kimishima, Margaret Hiro, [Unpublished Painting]



Young green irises reflect mini-me.

Figure 9.6: “Adam & Eve.” 2022. Acrylic on Canvas Kimishima, Margaret Hiro, [Unpublished Painting]



Saffron morning-sky burns indigo.

Figure 9.7: “Cataclysm.” 2022. Acrylic on Canvas Kimishima, Margaret Hiro, [Unpublished Painting]



Urn shines under a fluorescent bulb.

Figure 9.8: “Yin & Yang.” 2023. Acrylic on Canvas Kimishima, Margaret Hiro, [Unpublished Painting]



Umbilical-cords connect heaven and earth.

Figure 9.9: “The Virgin and Child.” 2023. Acrylic on Canvas Kimishima, Margaret Hiro, [Unpublished Painting]



My wrinkled hand brightens red manicure.

Figure 9.10: :“Mortality.” 2023. Acrylic on Canvas Kimishima, Margaret Hiro, [Unpublished Painting]



Pond skaters catch our silence.

Figure 9.11: :“Solitude.” 2023. Acrylic on Canvas Margaret Hiro Kimishima, [Unpublished Painting]



Water-rings over a pond spread with tears.

Figure 9.12: :“Resonance.” 2023. Acrylic on Paper Margaret Hiro Kimishima, [Unpublished Painting]



Lilies scent as Father takes his last breath.

Figure 9.13: :“Heart.” 2023. Acrylic on Canvas
Margaret Hiro Kimishima, [Unpublished Painting]

CHAPTER 10

Rhythms of Technology and Consciousness: A Study within the Field of Environmental Education

Samuel Lopes Pinheiro

Abstract

This essay delves into the intricate interplay between Environmental Education, technological advancements—especially artificial intelligence (AI)—and the concept of rhythm, elucidating their multifaceted connections and societal implications. Drawing from historical, philosophical, and sociological perspectives, the exploration traverses the evolving nature of rhythm from ancient societies to its contemporary relevance in understanding societal interactions influenced by technological progress.

The discourse navigates through the convergence of rhythm and consciousness, positing them as critical components in educational paradigms, particularly within the domain of Environmental Education. The acceleration of technology, notably AI, is scrutinized for its profound impact on societal rhythms, consciousness, and perceptions of nature and reality. Insights from diverse scholars shed light on the ethical considerations and societal repercussions engendered by the integration of AI technologies into our daily lives.

Central to this discourse is the call for a transdisciplinary approach in Environmental Education, emphasizing the need to confront contemporary socio-environmental challenges, including the Anthropocene and Transhumanism. This approach advocates for complex educational paradigm fostering wisdom, resilience, and ethical responsibility in countering the fast-paced demands of a quantitatively driven society.

Furthermore, the essay underscores the potential of initiatives amalgamating technology and Environmental Education, exemplifying cooperative networks and solidarity economies as promising avenues for societal awareness, solidarity, and sustainable practices.¹

Keywords: Artificial Intelligence; Environmental Education; Rhythms; Societal awareness ; Technology; Transdisciplinarity.

¹This text is based in my participation as a speaker on the International Symposium on Transdisciplinarity and Artificial Intelligence, which took place on 21 and 22 November 2023 and was organized by CIRET (Centre International de Recherches et Études Transdisciplinaires). Available at: <https://vimeo.com/888289641?fbclid=IwAR328UAg6lfhXIKesrQ7srC6YWEN7jmestf1VV7kJwmlvld5ZygpAknpiK> interaction and this returns by imprinting new rhythms on individuals by generating a dialogicity.

10.1 Introduction

This essay aims to discuss the intersection between Environmental Education and the impacts of new technologies on society, particularly the so-called artificial intelligences. This is based on reflections made in the author's doctoral thesis (Pinheiro, 2022) on the need to confront the barbarities of our time and on an interview given by Basarab Nicolescu, recorded in Pinheiro (2023), in which is discussed the concepts of environment, technology and self-knowledge.

It is based on the observation made by Michel Rando (2000) that despite technological advances, society still faces significant challenges, because new technologies, although useful, can also be a form of escapism, taking people away from the real world into a virtual world. From this point, a series of questions arise, such as the question of the concept of nature and how it comes to operate meanings in a virtuality, now more accelerated than ever by the rhythms of artificial intelligences.

The present work is divided into reflective impulses that are not exhausted in themselves, but which open up other questions necessary to the effort of transdisciplinary engagement. The first impulse deals with conceptualizations, such as the enabling of the concept of rhythm in various authors (Henri Lefebvre, 1992; Gaston Pineau, 2003; Roland Barthes, 2002). Rhythm is understood as a point of articulation in the individual-society-nature relationship in the face of the irruption of technologies and artificial intelligences into everyday life and how this acceleration can alter the most different biological and natural rhythms.

The second impulse is an approach to the notion of consciousness (Rabhi, 2021; Pinheiro and Pasquier, 2023) and how it can appear in the mediation between different rhythms. In this way, we have the presence of technology that drives rhythms in societal.

The third reflexive impulse lies in the discussion of the foundations of Environmental Education, by approaching this field of knowledge as a possibility of critical and transdisciplinary engagement in the conjugation of efforts for the elaboration of consciousness and self-knowledge, or we could say of self-formative processes in its pedagogical practices precisely to confront the rhythmic breaks expressed by the rhythms of technology.

10.2 Why Studying the Rhythm in the Relation Between Consciousness and Technology for the Environmental Education Field?

The terms that appear in our research are in themselves elements that require enormous abstraction of thought, as they are very broad concepts as an object of study, making our object not very tangible. In this sense, we can mention the concepts of technology and consciousness that are in the title of the essay itself. It is difficult to measure or even reduce the significance of these concepts to one author or another, but we can outline these concepts.

The object of transdisciplinary study is not static, nor are the ways in which we choose to approach our object of study. There is a fluidity present in these terms and in order to try to capture it, a category of analysis like rhythm that also conceptualizes fluidity is pertinent.

From this point of view, studying rhythm points us towards something that is transdisciplinary in its way of being. This is because studying rhythm is not so much about just capturing the interactions between individuals, or between individuals and systems, but about trying to get closer to a bigger picture of the flow of these organizations, or we could say of a general organization of these interactions, which in our view should be a concern for the study of Environmental Education, because it helps us to connect the dimensions of the individual, society and nature.

According to Michon (2020) rhythmic models now seem to be demanded by the fluid and divided world we live in, a world in which new powers and new injustices are emerging. Thus, something like a new scientific paradigm is taking shape - a paradigm whose content has yet to be defined more rigorously.

10.3 Concepts of Rhythm – First Impulse

When we investigate the concept of rhythm, we can go back in time and we will find it present in various ancient societies. We will notice that this concept was already studied among the Greeks and even had its own term - *rhythmus*. Greek modes, songs and musical scales were accompanied by the study of rhythm. And it seems that *rhythmus* is associated with a particular rhythm, a rhythm peculiar to the individual.

Among the Greeks, at least since Plato, rhythm was traditionally conceived as one of the fundamental elements of poetry, dance and music. It was, as Plato says in the *Laws*, "the order of movement" of words, bodies or notes. From the 3rd century B.C., the term also began to designate, among the Greek physicians of Alexandria, the pulsation of the arteries and heart, or more precisely the arithmetical relationship between the duration of diastole and systole. For the first time, he moved from theories of culture to theories of living nature. Then, at the end of Antiquity, with authors such as Augustine and Boethius, a new extension occurred. Rhythm is now used to designate the perfect circuit of the stars and the circular functioning of the cosmos. (Michon, 2020).

Among Indians, we can find a vision that goes beyond a square perception of rhythm, commonly associated with a Western way of understanding it. This is because many of their traditional dances and songs feature a complex study of rhythms. Mathematically, they are broken rhythms to the ears of a contemporary Westerner, because their rhythms can feature ratios and counts of whole numbers and fractions.

Later, among European musicians and mathematicians of the 17th and 18th centuries, we will also notice a concern with rhythm. But it will be from the 20th century onwards that the notion of rhythm will also enter the intricacies of sociological, linguistic, information studies and other fields of knowledge linked to the humanities.

Contemporary authors include Gaston Bachelard, a French philosopher who brought the analysis of rhythm closer to the development of rhythmic activity in the fruitful development of youth. In his work on phenomenology, rhythm will help to understand the constitutive aspects of what the author treats as the order of the diurnal and the nocturnal, the states of wakefulness and sleep or even the conscious and the unconscious. For Bachelard, the analysis of rhythm is not just an aesthetic question, but involves an existential relationship with time (Bontemps, 2017). The study of rhythm itself is the key to understanding the alternate philosophy of science and imagination.

Henri Lefebvre, a French sociologist, based on studies by Bachelard and the Portuguese-Brazilian, Pinheiro dos Santos, will deal with rhythm analysis. For him, rhythm implies:

1. Well-marked, accentuated temporal elements, therefore contrasts, or even apposed as strong and weak times ;
2. An overall movement that carries all the elements with it;

From Henri Lefebvre's readings, we can see the complexity of his thinking when he positions himself on the complementarity of abstraction and the concrete, the particular and the general. For him, rhythm acts precisely at this meeting point. The author points out that rhythm is easily confused with movement, the linking of gestures or objects and speed. Rhythm is also all of these things, but it goes beyond these definitions and terms.

There is a tendency to attribute a mechanical aspect to rhythms, leaving aside the organic aspect of rhythmic movements (Lefebvre , 2021). In this passage we have a point of contact with our object of study and how the rhythms of artificial intelligence could be altering biological and natural rhythms. If we tend to notice more the dynamic aspect of rhythm, the acceleration proposed by artificial intelligences could corroborate with a distancing from or awareness of a series of natural rhythms that individuals share as a species, such as the natural rhythms of the seasons, the weather, the tides, the alternation of night and day and which somehow interconnect us with the entire planetary life network.

10.4 Consciousness of Rhythm and Rhythm of Consciousness – Second Impulse

Rhythm refers to a particular way of flowing (Pineau, 2003). This can be our entry point for bringing the study of rhythm closer to the study of consciousness, since consciousness discerns the present, the past and the future through the objective rhythm of events. Consciousness also has a characteristic of movement, it is a flow. Becoming aware of the alternation of rhythms and the ritualization of consciousness in everyday life are educational processes to be incorporated into self-formative strategies for environmental education practices.

These two terms are highly fluid in their meanings, both rhythm and consciousness, and are interposed with another element that is equally ethereal in its manifestation, which is the third element proposed in our study interface, which is technology with its aspects and characteristics of virtuality. There is a level of reality, that of a virtual reality in which one is placed in the so-called data clouds or information clouds.

However, it is very difficult today to separate virtual reality from concrete immediate reality; both feed off each other and interact in such a way that they are two and one at the same time. We can talk about a reality of reality, in which a subject can be several extensions of him/herself; in his/her experimentation with ubicuity; in the experimentation with the creation of avatars and identities, all examples of changes in the rhythms of consciousness in the society of accelerating technologies.

How is it possible to analyze the rhythms that these new technologies (notably AI tools) imprint on contemporary society's flows of rhythms of consciousness and about its elaboration of what natural/biological/cosmic rhythms are and how we self-form ourselves to these rhythms?

This question brings together abstract and concrete, practical and theoretical aspects of what can be incorporated into studies about the techno-ontological rhythms that we are currently constructing as a society and where this is leading us. Technoontology has been a term studied and developed by Pasquier (2022) on the relationship between technique and ontology. Technontology seeks to understand how techniques guide the experience of ontological aspects, and how ontological formation is reinterpreted through the experience of new techniques.

In this sense, our hypothesis is that the transdisciplinary study of rhythms points a key to understanding how artificial intelligence/technologies are altering the flows of consciousness about and with nature.

There is a dialectical process in this problematic, that of articulating the separations marked by these rhythms of consciousness, in order to complexify their analysis and understanding. The separation proposed by Cartesian science in its various dualities, such as subject and object, human being and nature, immanence and transcendence, consciousness and unconsciousness and many others, is exhausted as a scientific scheme of analysis.

This study includes questions about language and the social sciences. All those points of study that concern time, rhythm and the interlinking of these technological flows in societies. Linguists and sociologists need to be studied, as well as technologies and their techniques. Various disciplines in a transdisciplinary effort to cross their own borders and rhythmically analyze these technological flows in contemporary society. Based on this understanding, the study is primarily based on reflection on authors from the fields of language, sociology and education.

Our intention in this exhibition is not to label technologies as good or bad and thereby repeat a reductionism, but rather to provoke a reading key that is capable of complexifying the understanding of the current stage in our relationship with technologies and the rhythmic consequences of this in everyday life.

10.5 Artificial Intelligence in the Breaking of Rhythms

I would like to highlight an exercise proposed by Professor Florent Pasquier in his transdisciplinary approach called Integrative, Implicative and Intentional Pedagogy discussed in Pinheiro (2022). By asking students to close their eyes, they indicate with a gesture where they understand nature to be located. The question is: "Where is nature?". Most students usually point to a window, showing that nature is outside the classroom

environment and must be in something like a park or something green. Few of these students point to themselves or to other classmates and teachers.

This relatively simple exercise reveals to us the conceptualizations that we imagine nature to be and concerns a consciousness that understands itself separately from other beings. This is because we are the direct heirs of a separating view of knowledge, with which we consciously point to the association with nature as something that is outside of us. Emotional, psychic and imaginary aspects of life do not usually enter into the understanding that would integrate what nature is.

We cannot be simplistic and say that the cause of this response based on separation is only the result of a certain point in the history of Western thought, but we can point to the reflection that there are countless reasons for this epistemological separation that persists in our views. Such as: there are splits that are evident between being and thought and between body and world, separations that can also be perceived between internal rhythms and external rhythms.

At many levels we still maintain a somewhat romanticized view of the concept of nature, as an idealization of the term. That's why some authors, such as Edgar Morin (2020), point to the need to use more complex terms such as ecosystem, as this would encompass more elements such as biological and relational aspects of the concept of environment.

Given all this, is the ever-accelerating presence of artificial intelligences in everyday life enhancing the many separations mentioned above, or is it also accelerating our ability to understand what is submerged in the unconscious?

To try to find an answer to this question, we turned to Henri Lefevbre's (2021) ritmanalysis, which points out that the producers of information goods know how to use rhythm empirically. When the author wrote his essays around the 1980s and 1990s, he had not experienced the smartification of the world, of the economy and of the relationships yet. Today, algorithms make legible desires that escape our own consciousness. But the author was definitely concerned about the manipulative nature of this information and the rhythm imposed on societies.

As a result, the time for linking conscious and non-conscious aspects of the subject is being altered by the logic of the rhythm of artificial intelligences. Byung-Chul Han (2020) talks about a digital unconscious that is revealed by big data and that is quantified and mapped for the monetization of individuals in virtual relationships. For him, this could be an example of how neoliberalism exploits new techniques of power.

Neoliberalism exploits a pseudo-freedom of the subject's emotions, which are self-exploited in virtual networks and now, even more so in the acceleration of artificial intelligences. The philosopher Han (2020) even uses the expression of the quantified self, to express the motto that it is happening now is a self-knowledge through the numbers of data. However, these numbers do not really produce self-knowledge, they produce merchandise for self-control, exchanges, sales, interests, and competitions.

To complement our argument about the dominance of rhythm in the construction of these techniques of power in contemporary society, we find reflections on rhythm in Roland Barthes (2002). In the book "Comment Vivre Ensemble", the author recovers the concept of rhythm proposed by the ancient Greeks to deal with internal rhythms. He points out that power is established in the breakdown of these internal rhythms, or in what he calls dysrhythmia. Above all, power imposes a rhythm, a rhythm of life, "the subtlety of power lies in dysrhythmia, heterorhythmia" (Barthes, 2002).

We can see a series of accelerations of these rhythms, such as the rhythms of urgency experienced during the pandemic and the inequalities accelerated during this period (Machado, 2020), the rhythms of ecological transition and the rhythms of acceleration of catastrophes and so many other crises linked to the rhythm of capital's exploitation.

10.6 Environmental Education in the Crossroads of These Rhythms – Third Impulse

Environmental education can take many forms, including formal education in schools and universities, non-formal education through community programs and workshops, and informal education through media and

other forms of communication. It can cover a wide range of topics, including climate change, biodiversity, pollution, waste management, and sustainable development.

One of the goals of environmental education is to empower individuals and communities to take action to protect the environment and promote sustainability. It aims to foster a sense of responsibility and stewardship towards the natural world and to encourage individuals to make informed decisions that will help to create a more sustainable future.

The study of rhythm finds itself at a dialectical crossroads, meeting and overcoming several of the dualities previously mentioned – like the separation with nature. However, it is an arduous process of complexifying and articulating different areas of knowledge to study what lies beyond the delimited boundaries of each discipline. This requires a transdisciplinary effort in Environmental Education and an understanding of consciousness that is about convergence and openness in the educational processes might be needed for the processes of learning ourselves about the relation with these rhythms.

Consciousness here means a state where the human being, free of all illusion, perceives real and reality without falsification. He perceives them in their nakedness and in their primary unity, and thus takes responsibility with full knowledge of the facts. Human beings must finally wake up and become aware of their unconsciousness if they want to survive, rediscover a just way of living on earth and re-enchant the world (**Rabhi, 2017, p. 36**).

Pierre Rabhi's definition in this quote about the consciousness of unconsciousness is also similarly put in "O Risco de Filosofar" by Mariana Thieriot Loisel, in which the author draws attention to the unintentional aspects in the formative processes of subjects. This involves trying to describe another way of thinking that does not separate what we perceive from what we think, re-establishing a transit between cognition and consciousness. Also, for the author, an unintentional attitude is the evaluation made immediately after feeling a blockage that reveals an eruption of the unconscious.

In our view, addressing the intersection of rhythms is a pertinent study that will shed light on the alternations between Bachelard's nocturnal and diurnal philosophy, connecting them. The conscious and unconscious regimes recalled by Loisel (2015), which are also manifested in the technological rhythms of the acceleration of artificial intelligences. For that reason, we need an Environmental Education which develops a critical and transdisciplinary engagement in these issues.

And we can find this critical understanding of rhythm in the studies of Alhadeff-Jones (2023) what involves questioning and challenging the assumptions and values that underlie our perceptions and experiences of rhythm. It involves recognizing the power relations and social structures that shape the rhythms present in educational processes and engaging in a reflective examination of the complex and dynamic nature of these rhythms. This critical perspective allows for a deeper understanding of the symbolic significance of the metaphors and analogies used to describe rhythms and helps to avoid essentializing or naturalizing them.

We argue in favor of an Environmental Education that reconnects these aspects, which is why we also mentioned earlier our understanding of nature and the challenges posed by the intensification of technologies and artificial intelligences. The project to study technological rhythms through artificial intelligences and consciousness at the interface with Environmental Education relates to something pointed out in the doctoral thesis defended by the author Pinheiro (2022) and in Pinheiro and Pasquier (2023), that the transdisciplinary attitude lies in confronting the great socio-environmental barbarities of our time. These great barbarities are also recorded in an interview with Basarab Nicolescu, published in Pinheiro (2023), like the barbarity of the several violences in the world, the barbarity of Anthropocene and the barbarity of Transhumanism.

For Nicolescu, technologies are blind to human values, they are not in themselves good or bad. In this sense, we need to direct our efforts towards environmental education that helps us build these values of solidarity and empathy between human beings and nature, between the rhythms of consciousness and unconsciousness towards a different relationship with artificial intelligence in which we are not mere manipulations of the accelerated times of information.

A complex Environmental Education opposes the hasty approach of a purely quantitative rationality, which seeks only immediate answers. We turn to a larger project, which is the construction of wisdom. Thus, a complex education will oppose the dizzying speed demanded of us by the market, because it seeks,

in the educational process, a broad realization of the subjects - which demands quality time, maturation, constancy and rhythm (Pinheiro, 2022).

In this sense, I would point to some initiatives that have been taking shape and that embody the convergence of local and global rhythms in the face of ecological and technological challenges of our times. I would mention some of them, such as platform cooperativism, the organization of networks of agroecological groups to achieve their initiatives and solidarity economy activities that strengthen small rural producers. All examples of cooperation between artificial intelligence technology and Environmental Education to raise awareness of other ways of living in the world, with more responsibility and solidarity.

10.7 Conclusions

In conclusion, the exploration of the intricate tapestry interweaving Environmental Education, the evolving landscape of technology, and the concept of rhythm offers profound insights into our societal fabric. Through transdisciplinary lens, this discourse

illuminates the complex relationship between consciousness, technological acceleration, and our understanding of nature.

The historical trajectory of rhythm, traced from ancient societies to contemporary times, exemplifies its multifaceted force and its role as a pivotal lens to scrutinize societal interactions in the wake of advancing technologies. The convergence of rhythm and consciousness emerges as a compelling avenue for educational practices, especially within Environmental Education, fostering awareness in navigating the accelerated rhythms imposed by technological advancements.

The advent of artificial intelligence has magnified the interplay between societal rhythms and human consciousness, prompting critical reflections on the repercussions of these technologies. Insights from various scholars reveal the potential for AI to reshape our perceptions of nature, reality, and even our own consciousness, highlighting the need for critical engagement and ethical considerations in technological integration.

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CHAPTER **11**

Artificial Intelligence and Our Secret Mind: Human Mediation in Grey Zones

Mariana Thieriot Loisel

Abstract

CIRET has set up an AI research group to highlight the need for human ethical mediation in the age of digital technology and binary logic. Francisco Varela has observed that cognition can take place in the computer field without appealing to consciousness. Yet human decision-making cannot be the result of cognition alone and requires the interaction between cognition and consciousness. In fact, rationalist and reductionist models borrowed from the hard sciences have only shown a mechanistic vision of AI or a biological-environmental vision, which cannot be applied to complex human phenomena occurring in a grey zone. In this grey or fuzzy zone of mediation, conciliation, and repair, we need the dialectical process or dialogue between consciousness and cognition. In this context, the proposal of mediating leaders and managers appears as a possible ethical alternative to demonstrate that consciousness is beyond the logic of the computer. Humans must remain responsible for all the effective decisions that will help us solve problems theoretically and concretely. We therefore need an emerging global wisdom that flows from our conversations about AI and appeals to human consciousness at all its levels of reality. This group produced a Symposium on November 21 and 22, 2023, in which we imagine that AI may be at the service of human evolution and resiliency in “learning to be societies” instead of contributing to block our evolutions: if AI remains a work tool. . . Certainly it will because the creation sparkles still a mystery for men themselves.

Keywords: Grey, fuzzy, blind zones, Included middle, transdisciplinary dialogue, AI-Learning society, Being, human resilience, collective unconscious, unintentional attitudes.

11.1 Introduction

Since the end of the 18th century, the Modern Age has promoted undeniable advances in the field of technoscience and quality of life in material terms. However, it has created a cycle of hypertrophy of binary logic and rationality, excluding intuition and empiricism from the scientific debate, making it difficult to solve concrete issues involving the complexity of human phenomena: emotional intelligence and spirituality tend to be absent. So, Western culture is inclined to be reduced to a mix of science (focused on causality) and ideology (as a result of dogmatism answering what science cannot explain): This creates conflicts between different cultures.

This article involves this author’s experience as co-mediator and co-organizer of the online International Symposium *Artificial Intelligence and Human Mediation*, of November 21-22, 2023, promoted by

CIRET, a French NGO that promotes international research and studies in connection to transdisciplinarity: <<http://ciret-transdisciplinarity.org/>>, of which this author is a member of the Board.

After the Symposium discussion, it was created by CIRET a group for the discussion of AI and Transdisciplinarity, envisaging concrete problem solving in organizations and civil society, which demands time, collective thinking, and emotional welcoming. In fact, problem solving will demand authenticity in information sharing, which requires a transdisciplinary mediation with empiricism, emotional intelligence, rationality, and intuition. Finally, to achieve informational transparency and agree with the new technoscientific directions, we need time. Scientists tend not to be allowed to think together because of economic reasons. There seem to be no financial investments by governments and universities in transdisciplinary research because it demands extra time of dialog after the scientific work. Transdisciplinarity means beyond and through disciplines, means also “learning to be” in grey or fuzzy zones, where opposites can meet, and transcend their differences to be able to think and act together.

11.2 The Grey Zone

How can we humanize our relationships with machines, they can help us when dealing with memory storage, but they cannot tell the story in the unique way that one of us lives the story. They may accelerate our learning process but they cannot learn for us, they can only learn from us.

For the past 30 years, I have been researching about the awareness of our non-intentional attitudes, that reveal the dialogue between the conscious and unconscious. Our bugs, our flaws, our blind zones but also all Aha moments, our intuitions, our discoveries.

Until now a computer can help us to deal with our blanks but cannot tell the story of these blanks and help us to find the reason for the blanks. A computer can even help us with information, but cannot decide for us the ultimate meaning of our flaws, of our human history. So, by erasing the blank problem, the computer erases as well the possibility of remembering why we had this blank. By erasing our flaws, we erase the story and the opportunity for dialogue about the flaw itself. By erasing our blind zones, we will not study them anymore.

The connection between the conscious and unconscious is most of the time unintentional. Complicated to deal with. Machines can erase the problem, but not solve them. We may have a wonderful memory sort of prosthesis with AI but we are avoiding as well an important dialogue with our unique flaws in a grey zone. . . Aren't we? Nowadays we talk about machine consciousness. However, the machine is not aware of the fact of being conscious like us. We still have the author's rights and shall protect them technically and legally.

In this connection, Figure 11.1 shows us the grey zones, the space in between binary thinking, where an inclusive and human approach is possible.

11.3 Human Energy Measurement Table

Human energy measurement table that reveals the precise connections between the conscious and the unconscious through non-intentional attitudes.

As we described with Dr. HDR Frederic Andrès in this daring little table measuring human energy, exhibited in 2022 at CETRANS Centro de *Educação Transdisciplinar*), a Brazilian transdisciplinary group of studies, and deepened by myself in 2023:

1. Apathetic: feeling drained, exhausted, tired, heavy, with no strength to carry on. Paralyzed or partially paralyzed, some even in a coma, end-of-life situations... ABSENT.
2. Autopilot: able to function but without drive, as if drawing on the last reserves of energy, automaton behavior - reflex actions and words. ACCIDENTS / UNINTENTIONAL OVERSIGHTS. (DEBONO).
3. Nightlight: slowed-down state, conscious but at rest, calm, in energy-saving mode - deferred action, observation. Meditation. WELCOMING PERSON.



Figure 11.1: This beautiful post shows us the grey zones, the space in between binary thinking, where an inclusive and human approach is possible [1].

4. Awake: full presence, sharp mind, lucid - rapid reaction, taking charge of the situation, feeling of balance, agility, know-how. MEDIATION.
5. Over-excited, accelerated - hasty action, several actions at once - not perceiving fatigue - insensitive to pain, overcoming - the feeling of lightness, airiness: TRANSCENDENCE INSPIRATION.

Precisely the opportunity to be conscious of the unconscious, of the blind zones in our lives and in our planet: the “invisible” ghettos spreading all over, and the spirit of the villages being engulfed by poverty and despair. How do we deal with the forgotten other, in us and among us? How do we quit de “autopilot” behaviour to become a welcoming person and a conflict mediator?

Our family of heart merged in the floating listening, the free gift, the concern for oneself and others, the oceanic motherhood remains attentive to what suffers, to what dies, to what is hidden or to what may be reborn within us: the spirit and the heart of a village.

The "rational, empirical, intuitive, or emotional" are not separate, as Leonardo Martins da Costa brilliantly and reassuringly describes in his many diagrams on Research Gate.

In my opinion, there is a Fifth Element that erupts and destabilizes the quaternary order.

11.4 The Fifth Element

There's the unknown, there's what goes beyond, what's out of place, or even what is always missing. Beyond the words, the formulas, the Lacanian "little a", an untraceable, lost equation, a failed solution that forces us to rethink, work things out, meditate, look from another angle, to distance ourselves, or bring ourselves closer. It is hidden, sometimes refrained, sometimes unknown: It is the Fifth Element. We are not transparent to ourselves, we don't know our potential or our limits, and we are learning to be beings. We have to face our non-intentional attitudes, deal with them, deal with our secrets, and carry on. In that sense, as Leonardo Martins da Costa says, we need to be mediators of ourselves before mediating group conflicts. Deep in ourselves, we are fuzzy. . .

It's hard to live surrounded by the coldness of these people who try to behave as powerful machines, incapable of collapsing from sadness, fatigue, or love: for them, it's all about calculation, profit, transparency, and control. And between us, many human beings suffer in silence from their condition of a hyper-complex machine! Inventing conscious machines to dialogue with, robots or tech slaves to keep them company, will never solve the problem of the loneliness of our human condition. Yes, it is risky to trust another human being, it is risky to feel emotions and to listen to our intuition, but this is the creation and the improvement path of a learning society. And no machine can do the path for us, feel the pride of being loved, having a meaningful life, sharing pain and pleasures, sharing conversations, being taken care of, having friends and evolve together. Machines are not conscious, since they have no consciousness. They lack the distance for a joke or a discovery.

How can the emotions of interest and care finally direct us toward the other, instead of the well-known power positions of material superiority or inferiority that man has with his creations? How can we share knowledge, understanding, gifts, and goods in a fairer an appropriate way? How can we become a learning society?

Yes, in today's technological no man's land, we have to know how to call our heart's family, recognize "the deep wise" in the crowd and the confusion, and stick together. The human being is becoming seldom. Machines and binary behaviors are spreading all over.

We live in an age of artifice, drowned in cold drama, affected feelings, theatrical, aesthetic, but hollow. The world of masks: ornaments, parades, big words, media hype, so distant from the tender, emotional flesh of a true feeling or our feelings of truth.

Part of the world population remains forgotten, invisible in ghettos of war all over the planet, and has no access to human technoscience, which could help to develop themselves by accessing healthcare and education.

The computer as a mirror is very reassuring: powerful, efficient, smooth, neutral, and fast. It's a reassuring, logical, calm self-image. No rough edges, no frightening sentimental monstrosities, no blood, no scent of a woman or of a corpse... That being said, my beautiful computer bugs. It breaks down. Just like the rest of us. But we are the ones able to fix it as we are the ones able to solve world conflicts through human mediation thanks to our meeting in a grey zone.

We are a universe subject to black or white holes. So, we need to update our creations as we need to deepen our knowledge of ourselves, of our unintentional attitudes, which reveals our connection with the personal and collective unconsciousness.

Creations are always out of date, just like us. These bugs give us a breather. Certain 'breakdowns', like certain illnesses, are life-saving, and we finally get some rest. We learn to scream: STOP from artificial rhythms and find our own pace our own beat and rhythms.

The interface between light and shadow, between mindfulness and our sometimes-disruptive unconscious, which provokes all sorts of nightmares, missed acts, and forgetfulness, but also unacknowledged or

unmentionable passions, is an unintentional space that we can learn to be aware of. This unintentional space, which irrupts in the form of a blank, a breakdown, an oversight, a slip of the tongue... Who hasn't misplaced their keys or umbrella or forgotten their telephone? So, the unintentional is that bug, that disruptive element, that thought without a thinker, which bursts into our lives and disorganizes everything. Which is a wonderful opportunity to find out in the grey zone, why there was a crack and how we may overcome it.

Why should we challenge the present institutional and organizational structures if the people who work within those refuse to evolve in their thinking, as required by a learning society? If they want a machine to think and solve problems for them? If they ignore the disruptive elements in their life that calls them to evolve.

In fact, when we use the concept of "learning society," we focus on societies able to peacefully evolve through open dialogue and free agreement because this evolution has meaning to its members. Without mediators for such evolution in grey zones of sharing, societies will continue to face several problems, in particular environmental problems that are at their roots due to human non-intentional difficulties such as human secrets, jealousy, hunger for power, ambition, that is to say, all sort of bias... Forgetting the consideration for the different types of knowledge of the invisible and denied others.

These problems may be the consequence of a "blocked society", meaning that people cannot progress due to the structure and content of the social system, or, worse, because political and other leaders block such evolution: entertaining personal fear rather than through the exercise of mediations skills and the application of needed human values. The use of computers for a restricted world population can reinforce the gap. According to the MCC (Contemporary Criminal Research Center, Paris) in 2000, the world can be divided into several zones as follows:

1. Zones of high strategic interest, in which northern countries have a significant economic interest.
2. Zones of high interest but presenting a serious risk of local and international conflict where actually positive negotiations have been engaged.
3. Zones of NGOs' activity that have to be the object of serious and adequate new transdisciplinary projects of development, including activities of UN, UNESCO, etc.
4. THE OTHERS: Zones that in 2000 appeared as "forgotten", which raise no interest, such as poverty zones but that we can actually identify in each country of the globe with the highest or lowest level of urgency interventions.

The MCC contrasts high **visibility** zones with what might be called **blind zones**, with the level of visibility and invisibility depending on the level of interest of Northern countries.

The transdisciplinary team concluded that these four zones appear even within most countries of the globe. Nowadays those forgotten zones are increasing.

Each country possesses its zones of visibility and its forgotten zones. The latter exist due to undeclared immigration, child labor, and even slavery, where the weakest and most lonely people – those without any protection – face being traded as merchandise and obliged to lose their human dignity in order to survive. These people are deeply damaged in body and soul because they are considered objects and even cheaper than robots for the execution of manual tasks in anonymous and hidden factories. Due to their predicament, they may respond violently using illegal means in the organization they work and even lead, in order to obtain what society denies them: the right to education, health, and satisfactory work conditions. Facing these problems, we can ask several questions:

1. Is it possible to agree on a definition of "human being" within a transdisciplinary, scientific, and philosophical perspective? A transdisciplinary definition should include the relationship between mankind and our human organizations such as that one work (see Figure 11.2):
2. What are the main causes of inhumanity that block the evolution of certain zones of our society and that still generate religious conflict or cultural conflicts?
3. How can we develop problem-solving strategies to properly address these conflicts affecting our organizations through human mediation? (Locally / Internationally)

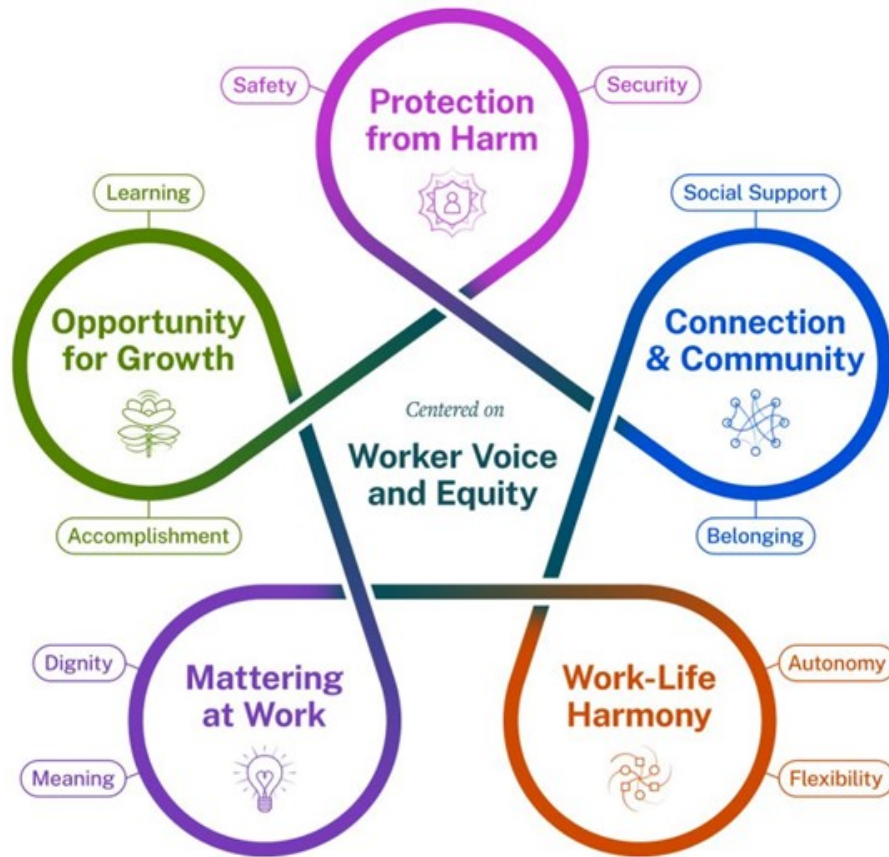


Figure 11.2: The U.S. Surgeon Surgeon General’s Framework for Workplace Mental Health and Well-Being [2].

4. Can we find a place in the University: A GREY ZONE to discuss these problems through an open, non-violent, and transdisciplinary dialogue?

Those questions were answered in a video I did in order to prepare the symposium with our group. [5]

11.5 Transdisciplinary Team Suggestions

Those suggestions emerged after listening to all participants of our recent symposium, Like open gates, that still need to be developed in our futures exchanges. One meeting is definitely not enough.

1. Create building blocks through communities using common pathways or languages: encouraging learning to be societies.
2. Develop networks and small entities able to simply transmit transdisciplinary practices in concrete projects to help the population all over the world, with the help of new technologies.
3. Remove institutional blockings by establishing interstitial mediation bridges between organizations and scientific research, with AI help (translation, support of world communication) in the grey zones



Figure 11.3: This post shows us that people are able to change and evolve through dialogue, besides inner dialogue as well [1].

of our planet, I mean the neutral zones of peace and exchange. Open new levels of consciousness using emotional, spiritual, or philosophical values (readings, inter-subjectivity, art practices. . .).

4. Give counterparts to evolutionary structures that will work in the grey zones.
5. Promote human plasticity and evolution in human organizations: Through dialogue, respecting the human mystery, instead of reinforcing competition and vertical authority.

To these suggestions, we must also add a conditional priority: **To learn to dialogue together** (see Figure 11.3) instead of fighting for religious, cultural, or economic power inside the organizations we act, in order to find common solutions that encourage the peaceful evolution of mankind within that organization. To dialogue together demands respecting the physical and moral integrity of all those who are trying to search for

peaceful issues to our evolution towards better and “learning to be” societies, capable of mediating problems, according to all laws in the different countries that protect human dignity and rights. [4]

It’s an incredible opportunity to be able to start again, to begin anew, to redo: by deconstructing perceptions, attitudes, and behaviors, the unintentional, the disruptive element, sometimes an accident, enable us to shed light on shadowy areas, blind spots or repetitions and begin anew [4], free to make incursions where we don’t know ourselves, finally freed from our mother’s stranglehold.

The late Anne Dufourmantelle wrote a remarkable book on the subject: "En cas d’amour" (In the Event of Love) ... what can we do with the unintentional? What to do, in case of love. Ah, it’s not easy, hence our long research, our sleepless excavations to decipher the sudden hatred of a son or daughter towards their stepmother, to understand the motives that lie on the shifting sands of the personal and collective unconscious and yet make sense. The third party, 'the other for the other' as Levinas studied throughout his work, the one who comes between mother and child, or father and child, is an intruder, a stranger from whom we must beware. In our collective world, the other is the stranger forgotten in the ghettos of war on the planet. Is toward this “third” that we need to be ethical and careful. [3]

11.6 Conclusion

What about artificial intelligence? In the end, it was designed precisely to compensate for all the 'failures' of the human cognitive system, its breakdowns or excesses of energy that no longer allow it to control its emotions. At first, it seems perfectly effective. The problem is that while it treats the symptom, the human failure, it leaves the whole story of that failure in the shadows, as Jung would say. And we cannot avoid this shadow as it is part of our human constitution. We are fuzzy to ourselves.

By eliminating the unintentional, artificial intelligence also eliminates the personal and collective unconscious discourse that supports it and that it would be possible to partly decipher. It can make us ill through the repressions it imposes and the stories it silences about our difficulties facing the third, the stranger: the other for the other.

Could we imagine that AI may be at the service of human evolution and learning to be societies Instead of helping to block our evolutions?

Yes, if AI remains a work tool of information and support to human communication, it will because the creation sparks a mystery for men themselves



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CHAPTER 12

AI and the Dual Legacies of Conquest and Unity: A New Leadership Paradigm

Wafaa Adyadou

Abstract

During the "Artificial Intelligence & Human mediation" CIRET - CETRANS symposium, I spoke about the exploration of the relationship between artificial intelligence (AI), art, leadership, & peace. In today's exploration, we continue to examine the potential roles of artificial intelligence (AI) within the spectrums of leadership and creative expression, particularly in the context of historical paradigms such as presented by figures like Winston Churchill and Rumi. This paper argues that AI holds the dual potential to perpetuate destructive patterns reminiscent of Genghis Khan's era or to facilitate peaceful collaboration and understanding akin to Rumi's teachings. Through a nuanced analysis, we discuss the implications for modern leadership and global unity, and urge a conscientious approach to the development and deployment of AI technologies in harmony with humanistic principles and artistic creativity."

Keywords: Artificial Intelligence, Art, Leadership, Poetry, Churchill, Rumi, Genghis Khan, Peace, legacy: past, present & future.

12.1 Introduction

The rapid advancements in artificial intelligence (AI) have ushered in a new era of potentialities, revolutionizing the way we interact, create, and lead.

The "Artificial Intelligence & Human Mediation" symposium held on November 22nd initiated a thought-provoking dialogue on AI's intersection with art and leadership, indulging in examples that span across history and philosophy.

Using these discussions as a substratum, this academic paper further delves into how AI might shape our modern conceptions of leadership and collaboration, influenced by historic exemplars.

This academic investigation intertwines political, educational, spiritual, and technological strands to examine how leadership—and by extension, technology such as AI—can be envisioned as tools for either division or harmony.

12.1.1 Conquest and Unity: Historical Paradigms in Leadership

Our historical backdrop is painted with figures like Sir Winston Churchill, Jalaludin Rumi and Genghis Khan, whose roles in shaping the world order could hardly be more contrasting. As we consider Churchill's dual

persona as both a highly esteemed leader and an artist, and juxtapose Genghis Khan's merciless conquests with Rumi's spiritual and poetic journey, we gain deeper insight into the essence of leadership.

Historically, models of leadership have oscillated between the extremes of conqueror and unifier. The likes of Genghis Khan have epitomized the archetype of conquest through brute force and subjugation, leaving an indelible imprint of fear and control. In stark contrast, luminaries such as Rumi have championed a path of wisdom and love, conquering hearts and minds to establish a legacy of peace and harmony. While these two leaders serve as antipodes, they exemplify the dichotomy that has defined the course of human history.

The philosophical query emerges: Are we, as a global society, predisposed to lionize might and power over moral and emotional resonance?.

12.1.2 AI as a Conqueror: Replicating Destructive Patterns

Our historical backdrop is painted with figures like Sir Winston Churchill, Jalaludin Rumi and Genghis Khan, whose roles in shaping the world order could hardly be more contrasting. As we consider Churchill's dual persona as both an esteemed leader and an artist, and juxtapose Genghis Khan's merciless conquests with Rumi's spiritual and poetic journey, we gain deeper insight into the essence of leadership. The philosophical query emerges: Are we, as a global society, predisposed to lionize might and power over moral and emotional resonance?.

12.1.3 AI as a Conqueror: Replicating Destructive Patterns

As AI becomes increasingly integrated into our society, there are concerns that it may perpetuate destructive patterns of conquest and domination. The ability to automate tasks and make decisions with speed and precision has led to fears of job displacement and loss of control over decision-making processes. These advancements have also sparked debates about the ethical implications of AI, with concerns over privacy, bias, and discrimination. If left unchecked, AI could replicate the oppressive patterns of conquerors like Genghis Khan, perpetuating hierarchies and exacerbating existing power imbalances.

12.2 The Role of AI in Shaping Leadership Paradigms

With the advent of AI, we are presented with a unique opportunity to redefine and reframe our notions of leadership. On one hand, AI can perpetuate the conqueror model through its potential for destructive capabilities. On the other hand, AI can serve as a means to facilitate unity and collaboration, similar to Rumi's teachings. As AI continues to evolve and become more integrated into our lives, it is crucial that we carefully consider its impact on leadership.

12.2.1 The Power of Artificial Intelligence in Facilitating Peace.

As advancements in AI continue to accelerate, there is a growing realization of its potential to bridge divides and foster unity. AI has the ability to transcend language barriers, cultural differences, and biases, allowing for meaningful communication and understanding between individuals from diverse backgrounds. This presents an opportunity for leaders to leverage AI in promoting peace and collaboration on a global scale.

The Intersection of AI, Art, and Leadership.

One of the most intriguing aspects of AI is its potential to create art and express itself creatively. In recent years, there have been numerous examples of AI-generated music, paintings, and even poetry. This blurring of lines between human creativity and artificial intelligence raises questions about the role of AI in artistic expression and leadership. Can AI inspire us to think beyond our limitations and push boundaries in the pursuit of creative leadership?

The Need for a Conscientious Approach to AI Development and Deployment.

As we continue to explore the potential of AI in shaping our world, it is imperative that we approach its development and deployment with conscientiousness and consideration. We must not allow ourselves to be blinded by the allure of technological advancements, but rather, take a humanistic approach in harnessing AI's potential for the greater good. As leaders, it is our responsibility to carefully consider how AI can be used in promoting unity and collaboration, while also being mindful of its potential dangers.

12.2.2 The Churchillian Approach: Leadership through Art and War

Sir Winston Churchill, a prominent leader during World War II, deftly navigated the dichotomy between war and art. His leadership was not only instrumental in military strategy and statesmanship but also in using the power of words and paintings to inspire and enkindle hope. An analysis of Churchill's approach provides salient insights into the multifaceted capacity of leaders to influence through both strength and creativity. In the context of AI, this highlights the importance of finding a balance between technological advancements and humanistic values.

12.2.3 Insights from Rumi on Leadership and Harmony

The 13th-century poet, jurist, and theologian Rumi's work transcends his time, embodying the essence of spiritual leadership that is grounded in compassion and understanding. His poetry continues to resonate in contemporary society, advocating for inner transformation as the key to societal change. Rumi's relevance to this discourse lies in his representation of the potent blend of art and wisdom in guiding humanity towards cohesion. As AI becomes increasingly omnipresent, leaders must embrace Rumi's teachings to strike a balance between technological advancements and humanistic values.

12.3 The Importance of Ethical Considerations in AI Development

Furthermore, as we continue to harness the potential of AI, ethical considerations must remain at the forefront. The development and deployment of AI technologies should align with humanistic principles, ensuring that they serve to enhance and not undermine our societal values. This requires a collaborative effort from leaders, technologists, and ethicists to establish guidelines and regulations that promote responsible use of AI. By doing so, we can ensure that AI continues to serve as a tool for unity and progress, rather than division and discord.

12.3.1 Artificial Intelligence: A Tool for Destruction or Unity?

AI, in its unprecedented capability, stands at the crossroad of these historical leadership archetypes. Like the double-edged sword wielded by conquerors past, AI can be a vehicle for devastation as much as for development. This paper considers how AI can potentially reflect Churchill's duality of assertiveness and expression or manifest the unifying philosophies of Rumi. It also highlights the role of leaders in shaping AI's impact on society and emphasizes the need for ethical considerations to ensure its responsible use. As we continue to push the boundaries of technological advancements, let us not forget our humanistic values and strive towards a future where AI serves as a catalyst for unity, collaboration, and peace. So, it is essential that we embrace diversity and inclusivity in our leadership paradigms, utilizing AI as a tool for greater understanding and harmony among individuals and nations. Let us learn from the lessons of history and the wisdom of leaders like Rumi to shape a better future for all.

12.3.2 The Ethical Responsibility in AI Development

The development of AI carries with it a profound responsibility to guide it towards ends that are beneficial rather than detrimental to human well-being and peace. By drawing parallels with Churchill's strategic wisdom and Rumi's philosophic guidance, we can envision a framework for AI use that promotes ethical considerations and positive reinforcement of communal bonds and creative endeavors. As leaders in the AI field, it is our duty to ensure that the technology we create adheres to ethical principles and serves as a force for good.

One of the key aspects of responsible AI development is inclusivity. This means not only considering diverse perspectives in the creation process but also ensuring that potential biases are identified and addressed. Only by striving towards inclusivity can we create AI that truly serves all individuals and communities, promoting unity and collaboration rather than creating further divisions.

Another important factor in responsible AI development is transparency. As leaders, we must be transparent about the algorithms and data used in our AI systems, ensuring that they are fair and unbiased. This also includes being open about potential risks associated with the technology and actively working towards mitigating them. By being transparent, we can build trust with society and promote greater understanding and acceptance of AI.

In addition to inclusivity and transparency, ethical considerations should also be at the core of AI development. This means considering not only the technical capabilities and limitations of AI but also its potential impact on society.

12.3.3 AI, Poetry, and the Aesthetics of Peace

If art like poetry can be an instrument of change and unity, so can the algorithms and data structures comprising AI systems. The infusion of aesthetic sensitivities into AI development could allow for the creation of systems that not only mimic art but also promote peace through their operations. Through the integration of poetry and AI, we can explore new ways to inspire creativity and understanding while also fostering unity among individuals and communities.

12.4 Conclusion

The urgent task confronting today's leaders and thinkers is the responsible shepherding of AI's burgeoning power. Poised at a critical historical juncture, humanity has the opportunity to harness AI in service of a paradigm that values compassion and connectedness over conquest and control. By embracing the peace-promoting wisdom exemplified by poets like Rumi, modern leadership can navigate the complexities of technological advancement while upholding the timeless pursuit of harmony.

Churchill's adaptive leadership through artistry and statesmanship, alongside Rumi's poetic wisdom, offers a valuable perspective on directing AI towards harmonious rather than antagonistic outcomes. As we stand affirmatively in a digitized age where AI's influence continues to expand, it is imperative that we consciously steer its course to mirror our highest aspirations of leadership: to unify rather than divide, to enlighten rather than obscure, and to heal rather than hurt. AI possesses the transformative capacity to either exacerbate or resolve global challenges; the onus rests upon us to ensure it becomes a beacon of peace and collaborative progress. Let us use our leadership roles to shape AI with ethical considerations and inclusivity, paving the way for a more harmonious coexistence between humans and technology. The potential of AI is boundless – let us harness it responsibly for the greater good of all.

So, let us continue to explore and innovate while keeping in mind our responsibility towards creating a better world for all through the power of AI. As leaders, let us strive to lead with compassion, wisdom, and ethical considerations at the forefront of our minds. Together, we can use AI as a tool for promoting peace, unity, and progress in an ever-changing world. Let us create a future where AI is not just a technological advancement but also a means for creating a better world for all. The future is ours to shape – let us do so with responsibility, empathy, and foresight. So, as we move forward in our endeavors with AI, let us remember

the words of Churchill and Rumi: "In a world where you can be anything, be kind" and "Out beyond ideas of wrongdoing and rightdoing there is a field

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This paper is dedicated to those who, like Mevlana Jalaluddin Rumi, enkindle hearts and minds toward a more peaceful, unified world.



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Postface

Prof. Dr. Hubert Landier: Economist, mediator of social audits in theory and praxis

AI locks us into the logic of the same. It renders us deaf to the otherness of the other. There's a reason for this, which seems to me to be the following: the computer basically tells us that $2 + 2 = 4$. Yes, but 4 what? 4 objects belonging to the same system of categories that we've imagined, but which don't belong to reality as it is, independently of our particular view of it. And so, by asserting that $2 + 2 = 4$, the machine produces a result that is exact in terms of the categories on which it is based, or rather, on which the programmer is based, but which has no truth content in terms of reality as it is, independently of our way of thinking about it. In other words, it tells us that there are 4 objects which, according to our understanding, belong to the category "cherry" or "tree" or "pencil". But it leaves in the shadows everything that doesn't fit into these categories, which are specific to each culture and even to each one of us. It leaves in the shadows our unthought, which nevertheless, in spite of ourselves, determines our thinking and acting.

But that's not all. Why say that two plus two makes four? Couldn't we say that it's thirty-one - or even a sequence of four 1's followed by a 0, which, incidentally, is how the computer calculates? Yes of course, if, abandoning the decimal system, we adopted another way of counting - and why not? And so, the product of our addition according to the decimal system represents a cultural construction. And so it is with all our ways of counting or, for that matter, not counting. Why are there seven days in a week, and sixty minutes in an hour? That's an exact reference point, but it could be otherwise. And so, calculations may well produce exactitude, but this is in no way a statement that could be said to be true. What is true is that the earth revolves around the sun, unless it goes straight through a curved space, which is also conceivable, but not that it does so in "twelve months", otherwise there would be no need to imagine leap years or months of thirty or thirty-one days as the case may be. And so the result that the machine brings us can only be conceived according to human understanding, or rather according to what it is, in the West, at the beginning of the 21st century. What we say about the world, the idea we have of it, is not the world as it is, independently of what we say about it.

This is why the sum that the machine calculates for us, despite its accuracy, is perhaps meaningless to anyone who relies on categories other than those we take for granted, or whose actions are based on an unthought different from the one that imposes itself on us without our knowledge. As Leonardo da Silva Guimarães Martins da Costa rightly points out, "*the binary logic of AI does not apply to the complexity of human phenomena*". So here we are, isolated from one another, from one human community to another, separated in space or time by the particular categories we have invented. AI prevents us from going beyond these categories, into what remains in the realm of the unthought and the unspeakable. It tells us "2 roses + 2 roses = 4 roses". Yes, but that's to deny that each rose is unique, and that it's this uniqueness that will allow us to gather around it and, without a word, contemplate it. For, as the German poet Angelus Silesius, quoted by Heidegger, puts it:

*"The rose is without why, it blooms because it blooms, it cares nothing for itself nor desires to be seen."*¹

Yet it is this uniqueness of everything in the world, even before it is boxed and labeled - in other words, before it is thought of² - that will enable us to break out of the logic of the same and lead us, "out of the village", towards what is different, and to encounter the other in his or her otherness, as it precedes speech. But AI prohibits us from plunging into the unexpressed, and therefore from being astonished by what is new to us, or, as Heidegger puts it, by what makes us feel out of place: "*If we experience the path towards the word, starting from what is given on the way with the path, then it would be possible that in all confidence a presentiment awakens within which, from now on, the word comes to touch us with its disorientation.*"³

¹Quoted in Joël Balazut, *Le fondement métaphysique de la civilisation technicienne*, Paris, L'Harmattan, 2020, p. 160.

²Martin Heidegger, *Acheminement vers la parole*, Paris, Gallimard, col. Tel, 1981.

³Martin Heidegger, *Acheminement vers la parole*, op. cit.

AI, with all its immediate utilities, is thus the avatar of a flat world, which ignores the diversity of views and that moment in history of which the thing perceived, in its mystery, is the culmination. The machine takes us into a monotonous world, devoid of mystery, the unknown and the sacred. For it, there are only exactly identified things, with known relationships between them, leaving no room for alternatives, uncertainty or transgression. It keeps us on the surface of things, distancing us from reality, insofar as the latter cannot be quantified, identified, reduced to a set of measurable characteristics and identified, standardized causal links. As Mitella Tarmure Vadean points out, "*we are neglecting the integral development of the human being, which includes its subtle dimensions, preferring to ignore the invisible off/in the human being, which influences and even governs the visible*". So Margaret Hiro Kimishima: "*The rise of AI indicates that we have entered an era in which human spirituality is being called into question*". Similarly, Prof. Ndubuisi Idejiora-Kalu wonders about the possibility of "*integrating epistemology into AI or granting 'minds' to AI systems*". This is the crux of the problem, and it's not a small one. What we lose sight of with AI is the reality of each thing, in its singular identity, and therefore the human capacity to consider the unique in its absolute otherness, something that machines, no matter how sophisticated, are not capable of.

This is what's important, what only the painter or the poet or the mystic can access, and what the programmer at the origin of AI lacks, as he simply adds up the roses and inserts them into a chain of causal relationships that are merely hypotheses built on a cultural foundation. As Pascale Maestu beautifully puts it, "*the sense of humor and love, of what touches and thrills or even capsizes hearts with a truth sometimes so hard to say or hear, this humor-this escapes the logic that drives the machine, this Love-this escapes logic. And so, the machine, despite the facilities it offers us - and perhaps because of them - risks locking us into virtuality from which the world is excluded. WE know how to count roses, but we no longer know how to stop in front of one to contemplate its uniqueness.*"

As French anthropologist and philosopher Pierre Legendre points out in his lectures in Japan⁴, "*Modernity is in the process of subverting the specular dimension, attempting to evacuate the ternary logic. This manifests itself first and foremost in the narrowing of the questioning of the human, where the measurable, the scientifically measurable, the calculable invades all domains, so that the very structure of language, which supports the psychosomatic montage and the montage of Reason, is affected*". This flat world has come to ignore time, and within time, the nature and even the existence of its founding myths: the belief in an arrow of time, yesterday in view of the Judeo-Christian parousia, the only conceivable truth, today of human progress through technology, the sole source of happiness. The very identity of Western man is thus threatened, as anything that opposes calculating reason is qualified as a belief, "surpassed" by progress. It's also a totalitarian logic: how can we oppose progress and reason in this way, when everything excluded by the calculating machine is deemed null and void? How can we leave room for other founding myths, other grand narratives, other ways of reasoning, other ways of conceiving man's relationship with reality, when everything that is not of the calculating order is a priori excluded?

This raises the question of whether artificial intelligence, as it is termed, could one day achieve what Leonardo da Silva Guimarães Martins da Costa suggests is a form of consciousness. Why not? But first we need to agree on what we mean by consciousness. Consciousness of what? And above all, awareness for what? Could AI be capable of projecting itself, beyond what it is in-itself, into a for-itself, in the sense that Jean-Paul Sartre, for example, gives to this word⁵? Would AI, in other words, be capable of endowing itself with a personality, a "self" that distinguishes it from another "self"? Could it, through a project of its own, and not determined solely by the effect of its physical or chemical mechanisms, achieve an indeterminacy that would be the foundation of its freedom? Would it then be capable of adopting its own ethics, beyond the rules set down by its programmer? Would it be capable of love, of understanding the meaning of words beyond their meaning, of questioning its own survival beyond its material destruction? Would it be capable, more immediately, of understanding words beyond their meaning, of understanding reality, the *dasein*, just as my oaks understand the seasons, adapting to them, anticipating their effects, demonstrating what might be called an intelligence of life?

In the absence of such a capacity, and no matter how complex the layers of "artificial neurons" that make

⁴Pierre Legendre, *Ce que l'Occident ne voit pas de l'Occident*, Conférences au Japon, Paris Mille et une nuits, 2016.

⁵Jean-Paul Sartre, *Being and Nothingness*, Paris, Gallimard, col. Tel, 2020.

it up, the machine can undoubtedly propose signification to us, but it deprives us of sense. Nothing is more amusing, then, than asking it to answer an absurd question. For example, DeepL, which can be considered an excellent translation program, "learns" the more it is used ("deeplearning"). But ask it to translate this poem by Lewis Carroll⁶ into French:

"Twas brillig, and the slithy toves
Did gyre and gimble in the wabe :
Allmimsy were the borogroves,
And the mome rathsoutgrave."

Here's what we get:

« C'était brillant, et les toves slithy
S'agitaient et s'agitaient dans l'eau:
Tous les borogroves étaient en désordre,
Et le mome rathsoutgrave. »

If it weren't for a machine, the result would be pathetic. The software has endeavored to transcribe the text, trying to find a signification for it (which it lacks), even if it necessary for it to leave certain untranslatable words as they are. Let's take a look at Paul Celan's translation:

« Il était grilheure : les slictueux toves
Gyraient sur l'alloindre et vriblaient
Tout flivoreux allaient les borogroves
Les verchons fourgus bourniflaient.»⁷

What's the difference? The difference is that DeepL cannot distinguish the harmony of phrasing, nor the connotations suggested by the sound of words that have no signification of their own. DeepL is insensitive to poetry. That's no problem for an administrative text, a little more so for a philosophical one, and nonsense for a poetic one. Lewis Carroll's poem, translated by Paul Celan, is not devoid of sense, but it does have no signification at all. The machine, on the other hand, confines itself to processing a code. It does this very well, but it's only a code. It's not a human language, with all its ambiguity, connotations and polysemy. And so, this coding cannot convey the emotion that this poem and its French translation were intended to evoke.

And this is of the utmost importance. It's this ambiguity, this polysemy, this imprecision that allows humans to adjust to each other. There are "no's" who mean "yes's" and "yes's" who mean "no's". And it's from this ambiguity, through trial and error, that the shared word can develop. I like roses, but does the other person have the same idea of what roses are? Or, when it comes to more "serious" issues, does he share my conception of what I mean by a "negotiated peace" between two conflicting powers? This is what we need to be sure of before we can move towards a shared solution. And it's the most difficult part of all, because on both sides of the firing line, we're going to have to accept a modification of the closed boxes that are our representations, in order to open up to the Other, to what he thinks, to what he is in his otherness.

Let's take another example. According to Jean Szlamowicz, professor at the University of Burgundy,⁸ wine is not just a more or less colorful liquid with a certain alcohol content; it is appreciated in its uniqueness, in the context of a terroir, a history and a culture. This bottle I hold in my hand is the product of the interaction between a certain winemaker and a certain cellar master. AI is incapable of grasping all this, no matter how fine its sensors or how precise the assessment criteria defined by the algorithms on which it is based. It is incapable of doing so because each terroir, each vineyard, each vintage, each year, each bottle, is unique. And AI is incapable of perceiving what is unique about what is unique. But that's not all. If it were capable of doing so, it would then be incapable of saying so. Each culture deploys its own vocabulary for appreciating wine, which reflects its singular ethos. The French will speak of a wine that is "sec", "moelleux" or "liqueureux", "rubis", "jaune paille" or "tuilé", "pourpre" or "amarantz", "lourd" or "léger", "corsé", "fort",

⁶The hunting of the Snark, 1876.

⁷Quoted in George Steiner, *Après Babel*, Paris, Albin Michel, 2008, p. 266.

⁸Jean Szlamowicz, "Can we really describe the taste of wine?", *La Conversation France*, November 13, 2023.

"intense" or "charpenté", if not "baraqué" or "costaud"; the English will speak of a wine that is "chewy", "silky", "powdery", "chalky" or "velvety". And each of these words is, strictly speaking, untranslatable, because it refers to the singular worldview in which it finds its place and is understood. The word by which wine speaks to itself doesn't describe, it evokes, and it evokes a whole world. However, AI cannot understand the evocation, connotation, intonation or color of the word. Its vocabulary is flat. It's not a narrative, but a description that aims to be "objective", and so misses the essential point, which is that life is the manifestation of a totality prior to words and the categories they designate. AI thus leads those who rely on it to neglect the very essence of being.

AI, in other words, is, in its current state, incapable of a political and historical vision, or even an understanding of human psychology, of the culture in which it takes shape, in all its depth, conscious and unconscious. As Vladimir Mokly points out, *"do the developers of artificial intelligence have any information about the conscious and the unconscious? Does the modern concept of artificial intelligence take into account information about the structure of the 'conscious and unconscious'? Of course not. That's why artificial intelligence can't have a worldview. In the absence of a structured worldview, artificial intelligence will only play the role of an 'efficient tool' that a person uses to solve problems (...) in science, technology and society."*

It's this journey through the Heideggerian "forest" that AI is incapable of. And it's this incapacity that gains human beings when they rely on AI to choose between several options. Binary logic generates conformism insofar as it ignores human emotions. It ignores the freedom of the mind and the diversity of possible points of view. And so, to claim that $2 + 2$ does not necessarily make 4, or that this is a result that has no truth content, is to risk being considered a fool, an imbecile or a traitor to the community to which this statement is addressed. There is no "discussion" possible with ChatGPT if you try to take it beyond the information it has collected, in other words, beyond the politically correct thinking or standard theory on which the software is based. ChatGPT is devoid of any creativity and invites you to rely on what has already been said. But this leads to a certain mode of behavior, coming from the masters of politically correct thinking or standard theory. Anyone who deviates from this is a priori suspect. If it's considered "correct" to plant wind turbines on the Montagne Sainte Victoire, in south of France, in order to "produce value", anyone who opposes them unquantifiable aesthetic criteria or respect for the memory of Cézanne, must be silenced. And that's exactly what's happening. It is becoming less and less tolerated in Western societies to reject the "soft consensus" and claim that ChatGPT's "answers" are nothing but a tissue of truisms.

But that's not all. The grand narrative, as it results from this sum of truisms held to be "true", will itself pretend to be "true". Anyone who, anywhere else in the world, has the audacity to oppose it can therefore only be a madman animated by malicious or perverse intentions towards the holders of such a reasonable and well-shared "truth". We must therefore not talk to him, but face him head-on. There can be no dialogue with anyone who departs from the taxonomy and axiology on which shared beliefs are developed, against a backdrop of certainties held to be definitive. This is why Dr Mariana Thieriot Loisel pleads: *"the establishment of a neutral zone for the circulation of ideas is essential to enable the human mutations that will foster our cultural evolution thanks to cooperative and transdisciplinary research"*.

As Günther Anders put it more than fifty years ago, in the absence of this "neutral zone for the circulation of ideas", man becomes "obsolescent",⁹ reduced to the conformism of a mechanical behavior elevated to the level of an absolute truth that brooks no contradiction, whether from within the human group or from outside it. The human being is reduced to an individual lost in the midst of the multitude of which he is a part. This conformism then takes the form of "soft" totalitarianism - totalitarianism which is not felt as such, but which denies each individual the right and power to think and act differently from the demands of the multitude and those who exercise power over it. Here, then, we need to distinguish between the "individual" and the "person".

What's it all about? It may be useful to expand on this distinction, which originated in Thomism and was taken up by the French philosopher Jacques Maritain (1882 - 1973). See," he writes,¹⁰ "with what religious

⁹Günther Anders, *L'obsolescence de l'homme, sur l'âme à l'époque de la deuxième révolution industrielle* (1956), Paris, Editions de l'encyclopédie des nuisances/Editions Ivrea, 2008.

¹⁰Jacques Maritain, *Trois réformateurs*, Paris, Plon, 1931.

solemnity the modern world has proclaimed the sacred rights of the individual, and with what price it has paid for this proclamation. And yet, has the individual ever been more completely dominated, more easily shaped by the great anonymous powers of the State, of Money, of Opinion? What is this mystery? There's no mystery here. The modern world simply confuses two things that ancient wisdom had distinguished: it confuses individuality and personality." And he adds: "So that, as individuals, we are but a fragment of matter, a part of this universe, distinct no doubt, but a part, a point in this immense network of forces and influences, physical and cosmic, vegetative and animal, ethnic, atavistic, hereditary, economic and historical, whose laws we are subject to."

What then, to use Maritain's language, is the person? It's the human being who is capable, on his own, and whatever the conditioning that obscures or restricts his judgment - those unintentional modes of action that Mariana Thieriot-Loisel talks about - of forming an opinion for himself, of distancing himself from what is said or done around him, who constructs himself in order to exist, as Simone de Beauvoir would say, on the basis of the morality he has freely given himself.¹¹ But this is what the machine is incapable of. It reproduces the principles imposed on it by its programmer, and anyone who follows the conclusions it arrives at is merely reproducing the principles that animated the said programmer. If he's a racist, his program won't recognize faces that are a little too pigmented.¹² Consequently, imposing these conclusions to members of the human community constitutes, on the part of those in power, a totalitarian behavior comparable to that of the "Big Brother" described by Orwell in "1984". It reduces everyone to the status of an individual, denying him or her the quality of a person capable of judgment and personal initiative, in other words, of a free contribution to the common good.

And so we come to transdisciplinarity. Transdisciplinarity invites us to break out of the boxes we've invented or inherited in order, through dialogue, to engage in a conversation at a more general level of reality than the one we were in, each on our own, before we met. Mediation, reconciliation and search for harmony between humans, between humans and non-human living beings, and even with the planetary non-human, can only take place if we agree to escape ourselves out of our initial certainties and categories on which they are based. We must be willing to leap into the void that alone will bring us closer to the Other. What I believe differs from what you believe, but our beliefs in each other are part of a larger belief, at another level of reality, which is common to both of us, leading us to relativize, and perhaps correct, our initial beliefs. Transdisciplinarity thus represents the ontological and epistemological framework within which, as Leonardo da Silva points out, mediation can take place. And there's no need to stress the extent to which today's world needs mediation, whether in terms of relations between individuals, relations between human communities, or relations between humanity and its terrestrial environment, both living and non-living.

Artificial intelligence won't allow this unless the programmer tells it to. It postulates once and for all that two and two make four, and this cannot be discussed. And so, anyone who asserts, depending on the circumstances and the person with whom they are speaking, that two and two make 3.8 or 4.2, cannot be heard. And anyone who says that the wonderful landscape of the Montagne Sainte Victoire may be worth more than the electricity generated by the wind turbine that will disfigure the landscape cannot be heard either. AI is logical, according to a certain type of commonly accepted reason; it is neither wise, nor a philosopher, nor a poet, and even less spiritual. It computes, which is already a lot, but we shouldn't expect more. And Leonardo da Silva is right to point out that it is an excellent tool, but that we cannot delegate decision-making to it.

And yet this is what, for the sake of convenience, or sometimes because it's impossible to do otherwise, it invites us to do. Why don't you go and spell your name with the capital letter it begins with on a computerized administrative form that rejects it as an "unknown sign"? It's as simple as that. Or rather, it all starts with that. And everything else follows. I have to change what I thought was the spelling of my name so that I can enter it into the system that will hopefully get me what I want. It's a small renunciation, but it's a renunciation that leads to bigger ones. And, one thing leading to another, each individual finds himself, in his solitude, faced with the machine that "decides" in the name of the person who installed it or had it installed,

¹¹ Simone de Beauvoir, *Pour une morale de l'ambiguïté*, Paris, Gallimard, col. Folio essais, 2021, original edition, 1947.

¹² Aurélie Jean, *De l'autre côté de la machine, voyage d'une scientifique au pays des algorithmes*, Paris, Editions de l'Observatoire, 2020.

and this in the name of a "reason" outside of which nothing else matters. He loses sight of the purpose he has set himself, personally and collectively, based on his past and the future he projects himself into. He locks himself into a present without a past and without a future, whereas, according to Peter Whitehouse, *"powerful new narratives, based in part on older archetypal myths, will be needed to weave the fabric of the future based on an understanding and appreciation of the deep and wide patterns of the universe across space-time."*

It is this confinement that transdisciplinarity invites us to overcome. This is how we can open ourselves up to the world as it is, even before we understand it, and to the Other, in his non-reducible otherness, with whom we can make humanity. Perhaps this is what culture is all about, and let me end with a personal anecdote:

It was at the end of the eighties of the old century, at a symposium in Angers, France, which brought together academics, trade unionists, business leaders, religious leaders and even elected politicians, some French, others straight from what was still the Soviet Union. On both sides, we regarded each other with a great deal of goodwill, but also with mistrust, because we realized that we didn't speak the same language or share the same prejudices. And so, on the second evening, an official dinner brought us together at the Château du Plessis Macé, owned by the French department of Loir et Cher. Here I am, face to face with a Duma deputy who doesn't speak a word of French or English. I don't speak Russian, and the interpreter is far away. We're both preparing for a very dull evening. I think he came up with the idea. And then I see him raise his glass, look me in the eye and propose a toast: "Victor Hugo, Notre Dame de Paris". We toast. My turn to raise my glass: "Léon Tolstoï, Pierre Bézoukhov". We toast. Toasts followed one another throughout dinner. A little haphazard at the end. We knew almost nothing about each other, but we understood each other perfectly. I realized that day that it's culture that brings people together. And an artificial intelligence, no matter how connected it is to everything that's been written around the world, will never be cultured. It will never be able to bring anyone closer to anyone else.

Hubert Landier, November, 2023.

Conclusion

Eng. Leonardo da Silva Guimarães Martins da Costa, MBA and transdisciplinary theorist (HPTD-M)

Dr. Mariana Thieriot Loisel: postdoc research in philosophy, sciences, and technologies

Since the end of the 18th century, the Modern Age has promoted undeniable advances in the field of technoscience and quality of life in material terms. However, it has created a cycle of hypertrophy of binary logic and rationality, excluding intuition and empiricism from the scientific debate, making it difficult to solve concrete issues involving the complexity of human phenomena: Emotional intelligence tends to be absent, in the shadow of the Western unconscious, as mentioned in this book chapter *Artificial Intelligence and the Transdisciplinary Human Mediation of HPTD-M* and also in this Conclusion. So, Western culture tends to be reduced to a mix of science (focused on causality) and ideology (as a result of dogmatism answering what science cannot explain): **This creates conflicts between different cultures, through scientism feedbacked by dogmatism.**

In this context, this book, as a result of the CIRET International Symposium *Artificial Intelligence and Human Mediation* of November 21-22, 2023, emerged as a possible forum for the discussion of human mediation in connection with Artificial Intelligence (AI), envisaging concrete troubleshooting in organizations and civil society, which demands time, collective thinking, and emotional welcoming. In fact, this type of problem solving demands transparency in information sharing, which requires a transdisciplinary mediation with empiricism, emotional intelligence, rationality, and intuition: To achieve informational transparency and agree with the new technoscientific directions, we need time. Scientists tend not to be allowed to think together because of economic reasons. There seems to be no financial investments by governments and universities in transdisciplinary research because it demands extra time for dialog after the scientific work. Transdisciplinarity involves the dialog between technoscience (technology + science) and culture. Besides, transdisciplinarity means beyond and through disciplines, not only multidisciplinary (many disciplines not interacting), or interdisciplinarity (interactions between and among disciplines). So, **disciplinarity complements transdisciplinarity** and vice-versa.

The already mentioned Symposium was organized by the French International Center for Transdisciplinary Research and Studies (CIRET), a NGO that promotes international research and studies in connection to transdisciplinarity: <<http://ciret-transdisciplinarity.org/>>. For this book there was also the support of the US Academy of *Transdisciplinary Learning & Advanced Studies* (ATLAS) <<https://theatlas.org/>>, including the publication of some articles of this book separately in its Transdisciplinary Journal of Engineering and Science (ATLAS-TJES) <<https://www.atlas-tjes.org/>>. This partnership between France and US through NGOs was essential to promote an international resonance of this subject of AI in connection to transdisciplinarity for mediation and problem solving.

As a suggestion, future synergies like this book, between CIRET and ATLAS, can be considered in the future as way to promote a Western cultural transformation: From a dominant mechanistic, scientific, and dogmatic view of reality to a transdisciplinary one, which may lead to more effective troubleshooting in organizations and civil society, including universities' transdisciplinary courses envisaging paradigm shift of the nowadays mere disciplinary approach, to a dialogue between disciplinarity and transdisciplinarity.

So, disciplinarity complements transdisciplinarity and vice-versa. In the HPTD-M theory view (*Holopraxis Transdisciplinary Management*) the following concepts are established considering the effective and dialectical problem solving in organizations:

- **Disciplinarity:** disciplines studied separately by specialists (isolated disciplines).
- **Multidisciplinarity:** specialists in a meeting, working group, or research, with no interaction between disciplines (multi = several).
- **Interdisciplinarity:** interaction and interchange among or between disciplines in a meeting, working group, or research, which may even create new disciplines (inter = among or between).

- **Transdisciplinarity:** the unity of understanding beyond the disciplines (trans = beyond + through), complementary and synergic interactions between specialists and generalists through various ways.
- **Complementarity** between disciplinarity and TD, comprising the logic of the Included Third.
- **Quaternary complementarities** through archetypal relations for effective and dialectical organizational problem solving (this concept can be seen in detail through the chapter *Artificial Intelligence and the Transdisciplinary Human Mediation of HPTD-M*).

Furthermore, transdisciplinarity can be seen, according to the HPTD-M, as the dialog between four main disciplines or epistemic ways, i.e., 1) **technoscience** (technology and science in feedback), 2) **philosophy**, 3) **tradition**, and 4) **art**. This can be seen also through the dialog between technoscience and culture. Culture can be understood as philosophy + tradition + art. Finally, religion is part of tradition, which also involves spiritual traditions and cultural traditions: Religion is only part, of science is only part of technoscience. So, in the transdisciplinary paradigm, contrary to some simplistic approaches, **mere science and religion cannot create a complementary dialogue**, simply because of the dogmatism involved in both. There is much more to be addressed in the context of the four main disciplines or epistemic ways for concrete problem solving in organizations and civil society.

Through a CIRET research group AI, Economy, and Transdisciplinarity, established in December 7, 2023, also as a result of the CIRET Symposium, the AI discussion has been integrated through economic, managerial, and organizational problem solving, in public and private instances. The Environmental, Social, and Governance (ESG) is in fashion as a paradigm of sustainability. However, our Western culture inherited from the Age of Reason tends to reduce the subject to the object. The human phenomena in ESG are based on ethical behavior, belief structure, and collective/personal values. After all, people make things happen (or not). So, the idea of ESG seems to be distorted when not considering the psychological personal and collective levels, the complementarity of conscious and unconscious as per Analytical Psychology and Philosophy. In this perspective, the socio-environmental governance of ESG needs to effectively go beyond sustainability on an economic-financial and environmental level, by addressing the internal and external environment of organizations on a psychological and philosophical level, not just through physical and material resources. In this sense, sustainability on a humanistic perspective means i) paying attention to the balance of relationships among all stakeholders or actors and ii) avoiding unreasonable stressful pressures at the personal and collective levels, iii) setting problem solving ethical guidelines for the group. This is to avoid not only an awful environment but also unnecessary costs for the organizations as a result, which can be prevented like a fire extinguished before it spreads. The essential idea here is taking proactive measures to address a problem or conflict early on before it escalates or becomes more difficult to manage.

This idea of integrating economy came from Prof. Dr. Hubert Landier e Eng. Leonardo Costa, both members of CIRET initiated in transdisciplinary studies. Dr. Landier is an economist and mediator through social audits and Eng. Costa have a 14-year background in the economic-financial career of federal auditor, as a Brazilian public servant.

So, it seems relevant to consider Prof. Dr. Max-Neef's contribution to the economic discussion of transdisciplinarity itself. There are connections between Max-Neef and the HPTD M theory. In the opinion of Max-Neef, an already deceased economist and academic awarded with the so-called "Alternative Nobel" for his Barefoot Economics theory: Formal knowledge, linked to reason, is constructed according to the rules of method and causality, while understanding, more linked to intuition, regulates method and causality, as he mentions in a 2005 article *Foundations of transdisciplinarity*:

Einstein [...] declared that "the intuitive mind is a sacred gift, and the rational mind is a faithful servant. We have created a society in which we honor the servant and have forgotten the gift."

Max-Neef was also a former Berkeley professor and had the vision to point out the analytical hypertrophy that generates several distortions in economic theories in his 2014 book *La economia desenmascarada*:

I began my academic career at the age of 27, as a professor at Berkeley during the early 1960s. [...] My whole discourse as a conventional economic academic was completely inadequate for

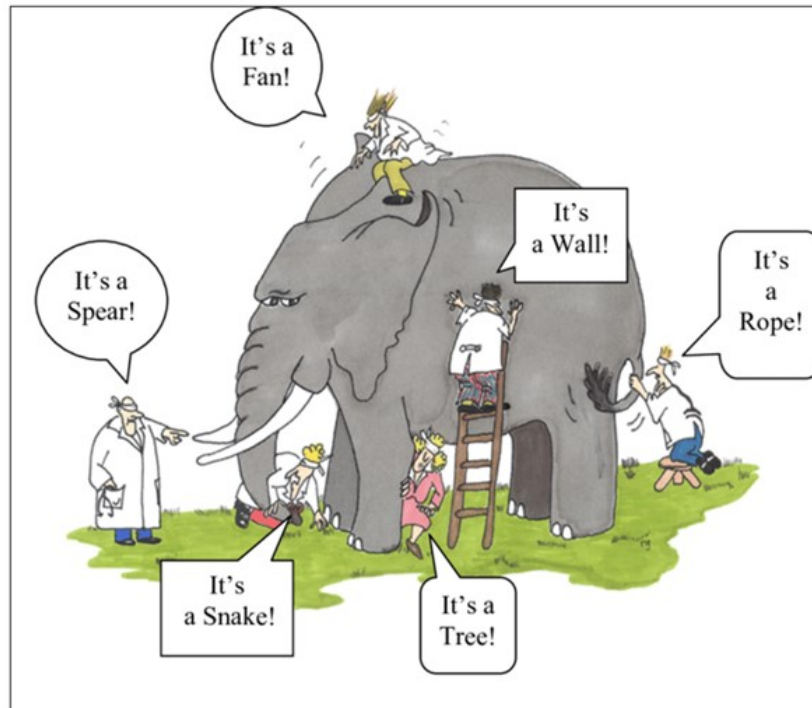


Figure 1: Part of slide # 2 presented in the Symposium by Prof. Dr. Paul Shrivastava.

me to say anything meaningful. I was used to diagnosing and analyzing, but I was not used to understanding.

In Eng. Costa's opinion, we can even point out the **confusion between efficiency and effectiveness**, which for most economists seem to be synonyms. Similarly, some operators of law in the public sector, without experience in the private sector, who are unable to perceive, in practice, the difference between rationality and reasonableness, face the same analytical hypertrophy. In the public sector, the concept of efficiency (doing things right) coincides, in the sense of the conformity of a process (compliance), but it also includes the economy (lowest cost). Effectiveness (doing the right thing), on the other hand, tends to be restricted to the result in terms of the achievement of goals. After all, discernment involves something more than the technical training encouraged in the public sector; a good manager needs to be a generalist who is always open to dialogue and listening, in order not to get lost in technobureaucracy: This something more is the ethical perspective a manager needs to have. Max-Neef expresses this key issue very well when he says that he spent a lot of time diagnosing and analyzing (analytical hypertrophy, after all), but was not used to understanding.

Through this dialogue between AI and economy for problem-solving in public and private organizations, considering the HPTD-M theory, **"understanding" is more than simply "knowing"**, to integrate the analytical and the synthetic method: the rational and empirical intelligence (hard skills) with the emotional and intuitive intelligence (soft skills).

Finally, a dialogue between Prof. Dr. Paul Shrivastava and Eng. Costa can be explored, in view of their presentations in the Symposium, i.e.: 1) *Opportunities in AI & Human Mediation by Dr. Shrivastava and 2) Artificial Intelligence through the Transdisciplinary HPTD-M Theory* by Eng. Costa. As per Dr. Shrivastava notes in the slides filed for the event:

So, in his Figure 1 presentation, in Eng. Costa's opinion, Dr. Shrivastava refers to the metaphor or allegory commonly known as "The Blind Men and the Elephant." It is a story that originated from the Indian subcontinent and has been widely used in various cultures and religions to illustrate the concept of subjective truth and the limitations of individual perspectives. The basic story involves a group of blind men who have never encountered an elephant before. They are asked to touch different parts of the elephant and describe what they feel. Each blind man touches a different part, such as the trunk, the tail, the ear, the leg, and so on. Based on their limited sensory experience, each blind man forms a different interpretation of what an elephant is like. The moral of the story is that **individuals tend to see the same fact from different perspectives**, based on their limited experiences and limited perception of reality. It is often used to emphasize the importance of considering multiple viewpoints to gain a more complete understanding of reality. The metaphor has been adapted and retold in various forms in literature, religious texts, and philosophical discussions.

From a 2022 article by Eng. Costa there is an excerpt in the context of communication and mindsets corroborating this elephant allegory, especially in view of dogmatism and ideologies disguised through a binary logic of 0 or 1, right or wrong, true or false. The text was published by the ATLAS-TJES journal under the title *HPTD-M: The Holopraxis Transdisciplinary Management Theory*:

Reality can be described in many ways, depending on the viewers' perception of facts, but there are minimum requirements of compliance, such as separating clearly news from opinion (editorial). Such governance requirements have also relation to the well-being of society collective conscious and unconscious, considering Jungian theory (see Figure 9). Besides, subject and object can't be separated according to Jungian psychology and modern physics, i.e., the observer's view of reality is according to his perception (see Franz [3] and Capra [6]). So, one can conclude that there is not one reality, but many realities, depending on the observer of reality.

Just to conclude the complementary points of view: Eng. Costa focused in his presentation on what he understands about AI and its scope: A rational tool but not an empirical, emotional, or intuitive for problem solving. Then, the scope of AI and its limitations need to be discussed. Hopefully, this book may help with some insights for that purpose.

The AI scope could be seen in the context of the complementarity principle, since AI tends to be rational, unilateral, focused on binary logic. Deductive reasoning is based on theory, typical of ancient Greeks, while inductive is based on experimentation, as in Ancient Rome. The Romans were very pragmatic, great directors of engineering works and forerunners of law. However, when Romans needed scientists and inventors, they turned to the Greeks, who had the gift of mathematics, of deductive reasoning. There are, therefore, these two complementary forms, which can be used to close a framework of thinking: In the history of philosophy there can be seen the Rationalists (such as Descartes, Leibniz, and Kant) and Empiricists (such as Locke, Berkeley, and Hume).

Mental models and paradigms need to be tested and adequate to the concrete case and to the types of problems to be solved, considering the complexity levels of the variables and their predictability. So, according to HPTD-M theory, three types of approaches can be applied: 1) Binary Logic for mechanistic approaches with variables behaving like a machine, 2) Feedback Logic for systemic perspectives analogous to living organisms, and 3) the Included Third Logic for the transdisciplinary paradigm, when the dialectics process is the solution in view of the complexity of human phenomena.

Transdisciplinarity may be a tool to provoke a cultural transformation of the West and East to solve problems concretely in civil societies and organizations, so as to integrate this collective emotional shadow which provokes conflicts of many sorts in the groups at various levels, i.e., familiar, professional, organizational, municipal, state, national, and the West as a whole. This can be done in two different and complementary levels that create the transdisciplinary leader, as per the HPTD M:

- **Governance involves the internal environment** and how the decisions are made for working groups and organizations. The results can be seen in the perspective of the inner effectiveness.

- **Governability is related to the external environment** and the systemic stability in large public organizations, involving the dialogue between politicians and the civil society that they represent. The outer effectiveness can be seen as the level of support of civil society.

There is clearly a difference between **efficiency and effectiveness** in management, roughly and respectively the difference between “**doing things right**” and “**doing the right thing**”. So, AI tends to be an efficient source of information, like a consultant or an assistant, because it can select a database much better and faster than a human would do. However, AI can never be an effective manager or a decision maker, because it has no soft skills, as far as human phenomena are concerned, especially regarding meaningful new ideas, foreseeing problems, relationship skills with all actors involved, and wisdom in the decision-making process. Besides, AI acceleration of the learning process obliterates collective conscious teamwork. As mentioned above, we lack time to research together.

Then emerges the third type of shadow of the West, which comes from the lack of consciousness reflection and the confusion velocity and intensity with effective production. Reflection is an important part of problem solving, in terms of the synthetic method (intuitive and emotional intelligence), complementing the analytical one (rational and empirical intelligence). Analysis makes questions and synthesis provides the answers through insights and new ideas: This is the dialectical process as per the HPTD-M theory.

Also considering the HPTD-M theory, the way of balancing and mediating conflicts involves the dialogue among the four types of intelligence, namely empirical, emotional, rational, and intuitive, in connection to the subject-object complementarity, i.e., the balance of individuality (subject) and collectiveness (object), reflecting the personal-collective nature of consciousness in the end. Therefore, we have detected three **types of shadow** in Western culture, which hinders the effectiveness of problem solving in organizations and civil society:

- **Emotional** as a result of rationalism;
- **Collective** as a result of individualism;
- **Reflective** as a result of acceleration in the context of AI.

Questions Emerged in this Book

As already mentioned in the Conclusion of this book and seen below, the four questions were elaborated by Dr. Mariana Thieriot Loisel as co-organizer and co-mediator in the Panel. Dr. Florent Pasquier, professor at Sorbonne and president of CIRET, was also co-organizer. Here are the answers resulting from a discussion between Eng. Leonardo and Dr. Mariana.

I- November 21, 2023:

- 1) **Is it possible to agree on a definition of “human being” within a transdisciplinary: technoscientific and philosophical perspective?**

The human being can be seen as four ways of comprehension of reality, which are technoscience (technology in interaction with science), philosophy, tradition, and art. Those four are the main disciplines considering a Brazilian holistic transdisciplinary approach. This means the creation of an integrated comprehension, beyond and through disciplines. On the other hand, Artificial Intelligence cannot go beyond a rational tool and is unable to interact with disciplines in a human sense.

Moreover, as per the **Charter of Transdisciplinarity**, adopted at the First World Congress of Transdisciplinarity, Convento da Arrábida, Portugal, November 2-6, 1994 :

Any attempt to reduce the human being by formally defining what a human being is and subjecting the human being to reductive analyses within a framework of formal structures, no matter what they are, is incompatible with the transdisciplinary vision.

2) What are the main causes of inhumanity that block the evolution of certain zones of our society and that still generate cultural conflicts?

The Modern Age has created a focus on binary logic and rationality, which tends to exclude intuition and empiricism from scientific debate, making it difficult to solve concrete issues involving the complexity of human phenomena. Emotional intelligence seems to be almost absent in this discussion. So, Western culture tends to be reduced to a mix of science (focused on causality: cause and effect relations) and ideology. Ideology, in turn, is a result of dogmatism answering what mere science cannot explain. So, this is the origin of most cultural conflicts. Then, Artificial Intelligence should be used considering its limits of application as a tool, or else it can stimulate dogmatism through its mere rationality, coming to the same problem of scientism, which uses dogmatism to explain what is beyond science.

To go beyond ideology, and dogmatism we need to learn to dialogue together, through the exercise of transdisciplinary mediation, and achieve common goals through the view of an ethical meaning of life.

II- November 22, 2023:

3) How can we develop problem-solving strategies to properly address the conflicts we dealt with yesterday (human; society) affecting nature and complex systems through human mediation? (locally/internationally).

In our perspective there are basically two questions: 1) To understand that human conflicts are complex and need to be solved through the Included Third logic, meaning the dialectical process, not the Binary Logic of Right and Wrong, True and False, Good and Evil, Manichaeism, scientism, or dogmatism. 2) Soft skills and hard skills have to interact in a complementary way through the process of looking for an agreement to solve conflicts. We need to develop a grey zone of dialogue and understanding that may lead us to overcome our conflicts to build a future together, focusing in values that protect our dignity, our integrity and respect our evolution.

4) Can we find a place at the University & in organizations: A GREY AND FUZZY ZONE to discuss these problems through an open, non-violent, and transdisciplinary dialogue?

We have experience with working groups complex problem solving. Yes, we can find a place, if in working groups we are aware of our unconscious ideological bias, our shadows, and accept different perspectives of reality. We must discuss positions we don't like. Not accepting discussion of certain questions configures emotional immaturity and the incapacity to concretely deal with problems. Furthermore, professors who try to impose their ideology on their students are not professors, but gurus, and must be despised because they are indirectly creating more conflicts in civil society when not accepting to discuss different points of view.

If we are talking about Artificial Intelligence, we need to be aware of our Western Culture's mechanistic and rational bias. In this connection, the risk of this AI tool is to be used in the context of scientism feedbacked by dogmatism, which hinders any attempt to solve conflict problems. So, we need to be aware of our own ideological biases before trying to mediate conflicts, to respect different cultures and perspectives. This means we must be mediators of ourselves, of our own shadows, before trying to mediate groups. The gray zone must be found within us, before we build it outside us.

We hope this event creates new opportunities for promoting cultural transformation which is so necessary in our nowadays Western society, through universities and organizations, especially considering the articles from the speakers that will compose the book of the Symposium, to be published soon.

Considering Dr. Landier's article in this book Appendix, *Messire François and the Wolf of Gubbio* (see **Appendix**), there are connections to the HPTD-M concept of transdisciplinary mediating manager. The text provoked some insights in the Eng. Leonardo Costa to elaborate the following two questions:

5) Would it be reasonable to affirm that the so-called primitive cultures have more wisdom than the Western rational culture enhanced by AI, since those could see things from different perspectives of reality?

- 6) **Does the Western culture tend to see conflicts through a binary logic, i.e., 0 or 1, right or wrong, true or false, not considering the different cultures, perspectives, and interests of each actor involved in the conflict? Would the Included Third Logic of dialectics be a suitable approach in this case for complex human phenomena problem solving? Does AI help in this sense?**

Finally, this Conclusion reflects Eng. Leonardo 's and Dr. Mariana 's opinion, not necessarily any public or private organization view.



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Appendix: Messire François et le loup de Gubbio

Prof. Dr. Hubert Landier: Economist, mediator of social audits in theory and praxis.

Messire François and the Gubbio Wolf*

Hubert LANDIER

Doctorate in economics

Professor Emeritus at the Academy of Labor and Social Relations of the Russian Federation (Moscow)

Expert in labor relations and social climate audit

Vice-President of the International Institute of Social Auditing (IAS)

Speaker

Member of the Institut Psychanalyse & Management

Every grass is happy as it grows! Everything has its way, and everything knows its way, goes away singing and comes back singing; only he knows nothing, understands nothing, neither men nor sounds, a stranger to everything, rejected by all. [1]

And now Western man finds himself alone with himself. His past is of no use to him, progress being for him to be sought in the radiant future reserved for him by his techniques. The remnants of the civilizations he has helped to stifle through his unwanted intervention elicit only an amused, distracted smile. He long ago unlearned to talk to animals, plants, flowers, trees, forests and deserts. And so, he finds himself alone in the middle of a desolate landscape.

Who to talk to? And about what? His certainties enclose him in a world that he alone occupies, from which he has excluded in advance anything that is not useful to the realization of his demiurgic ambitions. But it wasn't always so. The Great Plains Indian communicated with the buffalo people. He communicated with the rest of the universe, constantly seeking the balance that would allow the sun to rise each morning. He saw himself as part of the cosmos, not outside it.

One of the last Westerners to understand this was Messire François (1181-1226), born in Assisi, a little city of Italy. Messire François is said to have conversed with animals. Through the art - which we have lost - of disputatio, he sought a dynamic balance, with each person remaining himself, in his own identity, while opening up to the reality of the Other, in his otherness.

This is the essence of mediation. Mediation is the act of involving a third party between parties who do not agree. In the West, for a long time, this third party was the divinity, then technological modernity based on the idea of linear progress on the axis of time. Today, this optimistic vision is largely ruined, but we don't know what to replace it with. The institutions and certainties of the previous period are still there, visible or subterranean. There is no longer an overarching deity. Humanity lacks the third party that would enable it to reconnect with the balance of the universe's different components. A third party hidden at the heart of each and every one of us.

* Une première version de ce texte est parue en langue française, sous le titre « Messire François et le loup de Gubbio », psychanalyse et management, Institut Psychanalyse et Management, Paris, n°14/2019.

Third-party intervention and the principle of mediation

The year is the 13th century. In northern Italy, the inhabitants of the small town of Gubbio are terrorized by the presence of a terrible wolf. The situation is such that the only way they dare leave the town walls is armed and with others. But this is not always a guarantee of safety [2].

They open up to Messire François, who happens to be passing through. Messire François is an original, dressed in a simple tunic held at the waist by a rope, and walking barefoot. A native of Assisi, he has a following and already enjoys a certain notoriety. And so, he listens to what the people of Gubbio have to say. But his answer baffles them: what he proposes is to go and explain himself to "Brother Wolf". Of course, no one dares to go with him, so they just watch from a distance, expecting the worst.

Messire François meets the wolf, who approaches him with his mouth open, foaming at the mouth. The first step is to urge the wolf to calm down. The wolf sits up and listens: "What you're doing is very wrong, Brother Wolf," explains Messire François. You must promise to refrain from devouring the people of Gubbio from now on. But I understand that if you eat them, it's because you're hungry. So together, we're going to ask them if they couldn't give you something to eat on a regular basis.

The wolf gives his consent, wagging his ears and wagging his tail, the chronicle tells us, and the two of them head back to Gubbio. The people are surprised and appalled, so Messire François has to explain: "I guarantee that Brother Wolf will behave peacefully from now on, but in exchange, you must give him something to eat, because he's hungry. Do you agree?" It's hard not to be, but you need a certain amount of trust. And so, Messire François turns to Brother Loup, who confirms his assent by holding out his paw. The Fioretti of Saint Francis state that he lived for two years among the people of Gubbio. He entered houses freely, and the dogs refrained from barking, after which he died of old age, dearly missed by all.

This is exactly the spirit of a mediation, and it doesn't matter that his narrative was probably a little "arranged". But what we do know historically is that Messire François tried another, when he went to Damietta, in the midst of the crusade, to speak with the Sultan El Kamel about religion. The idea was not to condemn, but to listen and talk. Of course, this could only get him into trouble. Meanwhile, Brother Dominic was dealing with the Cathars in a very different way. The two saints did meet, but the Fioretti, with due ecclesiastical caution, seem to indicate that this meeting between the "Most Holy Francis" and "Saint Dominic" was rather cool. At least Messire François was not condemned to the stake, which was already a great deal.

The story of the Gubbio wolf sums up the mediator's stance towards parties in conflict. The mediator must believe no one, or rather, he must go beyond the limited and passionate points of view present, as they are at the origin of a conflict situation, and thus admit that everyone, a priori, is the bearer of part of the truth. The aim is not to prove anyone right or wrong, but rather, through his presence, the trust he inspires and the questions he asks, to work with both sides towards a broader understanding of the situation. The people of Gubbio are right to blame the wolf for threatening to devour them. This is understandable. But what they don't see is that Brother Wolf is obliged to provide himself with food, one way or another. And if he agrees to listen to Messire François, it's because the latter, without disavowing the anger of the inhabitants of Gubbio, has understood this. And so, it's a question of initiating a process that will lead to a satisfactory solution, both for the town's inhabitants and for Brother Loup.

Let's now transport ourselves to the 21st century, to some French company where relations between management and the unions (or one of them) have deteriorated profoundly, damaging the quality of the social climate and making it difficult to take initiatives that might be necessary to guarantee the company's future, in the interests of the employees themselves. Faced with this deadlocked situation, a mediator is chosen, no matter whose initiative it is, but with the agreement of the conflicting parties. How will the mediator play his role?

According to the author's personal experience, which is, after all, his profession, he must first listen. To listen to others, and to listen with kindness, by keeping silent, or rather, by silencing the feelings aroused in him by what he hears. And first of all, not surprisingly:

- From management's point of view: "staff representatives are disrespectful towards us, adopting a posture that is a priori confrontational, getting bogged down in secondary quarrels, multiplying incidents and, through their behavior, causing a paralysis in labor relations".
- From the unions' point of view: "Management's representatives have a contemptuous attitude towards us, refusing to take our arguments into consideration, striving to marginalize us in the eyes of the staff, deeming our role useless, even harmful, and discriminating against us.

On both sides, a multitude of precise facts are put forward to establish the veracity of such a judgment. There's no point questioning them: they're probably true. They must be taken into consideration. But at the same time, be aware of their limitations:

- These incidents may be exaggerated in scope, but they have symbolic force for the person reporting them,
- From the unions' point of view: "Management's representatives have a contemptuous attitude towards us, refusing to take our arguments into consideration, striving to marginalize us in the eyes of the staff, deeming our role useless, even harmful, and discriminating against us.
- Perhaps they reinforce already existing prejudices about the other's attitude, which form the basis of a long-standing antagonistic posture in their relationship,
- Their narrative may be a misinterpretation of the facts and intentions of the opposing party.

In such conditions, dialogue is impossible, because the parties involved do not understand each other, and this is often the case despite a great deal of goodwill on their part. The mediator's role will be to initiate a process through his or her actions (for example, proposing an audit of the situation according to a methodology that guarantees and proclaims his or her independence), without knowing in advance where this process will lead, and with the risk, at any moment, of it running out of steam. During this process, the positions of the parties involved will gradually change - and this can take time.

This change must come from the stakeholders themselves, not from the mediator, who is merely a facilitator. And then, without even realizing it, we'll come up with initiatives we'd never have imagined before. These initiatives are fragile and must not be rushed. The philosophy on which they are based is: "our interlocutors are unbearable, but it may still be possible to do something with them". A hypothetical way forward then emerges, and it may be that an agreement is reached, with each of the parties benefiting from it. The mediator's role ends there. He must then silently step aside. It's not up to the mediator to say what needs to be done: it's up to the parties involved to come up with a solution and, if necessary, to open negotiations, or to set up a system designed jointly. In short, it's up to them to take the initiative together - and it doesn't really matter which.

This philosophy is that of the inclusive third. Everyone is right, but no one is totally and absolutely right. At the same time as Messire François was living, Djalâl-ud-Dîn Rûmi, who had come from Balhik, in what is now Afghanistan, and settled in Konya, in the center of what is now Turkey, expressed himself as follows on the subject of the plurality of religions, of which it is to be feared that each of them claims to be the holder of Truth to the exclusion of all others:

"If the paths are different, the goal is the same (...). When the believer and the unbeliever sit together, if they say nothing in words, it is because they agree". [3]

And he adds:

"Both the disbeliever and the believer praise God; for the Most High God has said that whoever follows the straight path and lives uprightly by conforming to the law and the way of the prophets and saints, he will be granted joy, light and life. But if he does the opposite, as many obscurities, terrors, pitfalls and calamities befall him. Both, when they do so, what the Most High God has promised for them comes true, without addition or diminution. It follows that both proclaim the praises of God; but each uses his own language." [4]

In proclaiming that religions are all different expressions of the same quest, Rûmi is simply conforming to the Koran. The sacred text states:

"For those who have believed, those who have returned to Judaism, Christians, Sabeans, anyone who has believed in God and the Last Day and who does good, all will have a reward with God. No reason for them to feel fear and sorrow" (II, 62, tr. Malek Chebel). [5]

Or in Jacques Berque's translation:

"Those who believe, those who follow Judaism, the Christians, the Mandaeans, whoever believes in God and the Last Day, and performs the work of salvation, will find their reward with their Lord. There is no fear for them, and they will have no regrets" (II, 62, tr. Jacques Berque). [6]

God, the Inexpressible, thus occupies the function of a third party, imposing Himself in relation to the diversity of discourses and their confrontation, which is always to be feared. This is why, as the Koran affirms, "He who saves a single man is considered to have saved all men" (V, 32, tr. Malek Chebel). Which means, a contrario, that "whoever murders an innocent, murders all mankind".

In other words, no discourse can claim to have absolute value and, by right, impose itself on the Other. The Tao expressed this even further back in time:

"The Tao that can be expressed is not the Tao of all time. The name that can be named is not the name of all time. [7]

Which could be put another way:

"The way that calls itself the Way is not the Way. The name we give to things cannot designate them".

Traditional wisdoms, and others like them, thus placed an indefinable reality above the multiple expressions given to it by human beings. It's this depth that disappeared with scientific positivism, as it emerged in the 18th century. Laplace's demon is probably the most accomplished expression of what we know to be reductionism. In his *Essai philosophique sur les probabilités*, the famous physicist (1749-1827) gives his most complete definition of scientific determinism:

"An intelligence which, at a given moment, would know all the forces of which nature is animated and the respective situations of the beings which compose it, if moreover it were sufficiently vast to submit these data to analysis, would embrace in the same formula the movements of the largest bodies in the universe and those of the lightest atom; nothing would be uncertain for it, and the future, like the past, would be present to its eyes ." [8]

The world, in other words, is a vast mechanism, an automaton of the kind that was fashionable in 18th-century salons. It is an object, and the man of science, as subject, must strive to understand its laws of operation. Knowing them perfectly, he could then predict the future states of the system. But in doing so, he places himself outside the world, in accordance with Descartes' *Cogito*. And according to this principle, once truth has been established, it cannot be discussed.

Except that scientists have long believed that the sun revolves around the earth. This is where Karl Popper's principle of falsifiability comes in: a truth is established only insofar as its falsity has not been proven, and so, to qualify as scientific, it must be amenable to such scrutiny. Very well, then. So it's been established by Copernicus and Galileo that the earth revolves around the sun, not the other way around. But for Einstein, it's a different story: the earth doesn't rotate; it moves in a straight line - but in a curved space, deformed by the presence of the sun.

What does this mean? It means that there can be several different ways of apprehending the same reality. It's this pluralism in the way we apprehend the world that physicists are going to experience as they explore quantum mechanics. Is the photon, or the electron, a corpuscle or a wave? Laplace would have answered

that you had to choose: either one or the other. On the one hand, truth; on the other, error. Heisenberg (1901-1976) replied otherwise: both are true. It's all a question of the instrument we use to consider reality. And it's well known that no logical system can be absolute; since Gödel, it's been established that one or other of the postulates on which it's based is in any case unprovable.

This has become a commonplace, but we need to analyse it a little further. What quantum mechanics has taught us is that our understanding of reality is not independent of the instruments we use to observe it. There would have been no Galileo without the telescope. And different instruments show us reality in different ways. True and false are not opposed in the absolute, but within the framework of the techniques and logical presuppositions that precede the question. Scientific truth is therefore a constructed reality [9]. It consists in seeking out what makes sense for human intelligence in the chaos it presents. "In all representations, we direct our attention first and foremost to certain characteristics, which we then designate as 'essential'" [10]. Knowledge, including scientific knowledge, is thus embedded in a vision of the world that precedes it. It is expressed in a language that coincides with this necessarily particular and transitory worldview, and takes shape in concepts that correspond to a localized and dated culture. "We choose and invent the relationships to the world(s) we deem relevant. They are not given, they are constructed" [11].

What, then, is the distinction between the true and the false? The criterion of falsifiability, on which Karl Popper bases himself, undoubtedly finds its limits here. Within the framework of a certain logic, within the limits of a certain worldview, it seems possible to assert that an assertion is true or false. It must obey a logic of coherence with other assertions. But it must also obey a logic of relevance to what it designates. Now, of what it designates, the observer does not know everything, but only what he can technically observe and what he actually observes because it seems relevant to him. In other words, the observer is in no way neutral in the face of a reality that is external to him. The reality he sees is, to a certain extent, part of himself - and he is part of that same reality. The distinction between the subject, external to the world, and the world he observes from this exteriority, no longer holds. Descartes must be absolutely forgotten.

The *disputatio* and the transdisciplinary approach

But this is much easier said than done. Descartes and his *Cogito* are merely the localized, dated expression of a worldview lost in the darkness of our origins. As we all know, Plato already had humanity standing in a cave, from which it could only glimpse external reality through the shadows it cast. Saint Augustine placed this external reality in a beyond that alone counted. This vision took shape in the West within an institutional framework, the Catholic Church, holder of the distinction between truth and falsehood, outside of which there could be no salvation. The Reformation, then the Enlightenment, replaced this magisterium with personal judgment and Reason. Reasonable man, always in suspense of reality, strove to discover its laws. The man of science replaced the man of the church. And now, with the advent of quantum physics, this science was itself disintegrating.

But "scientific progress", following the call to "convert all nations", did not stand alone. It wasn't just about knowing more about the world. It was also about leading humanity along the path of progress. With the English and Scottish utilitarians, science itself had to be useful. Science was seen as serving technology, and technology as serving humanity in its quest for material progress. Admittedly, this progress was thwarted by the sad reality of working conditions in factories, but the future promised to be ever better, provided the discipline of work was respected. Progress, growth, improved living conditions: it's this triptych that today threatens ruin, with nothing in the imagination of modern man to take its place other than a feeling of desolation. [12]

Messire François had already walked away from this. He had done so in the most symbolic way possible, stripping naked in public and leaving his clothes with his rich father, the linen merchant. And he went off to preach to the birds, asking the swallows to be silent while he spoke. Messire François belonged to an era when the art of *disputatio* was still cultivated. In the squares of Seville and Granada, Muslims, Jews and Christians summoned their best orators, inviting them to clash in public.

It wasn't to persuade the Other - Christian or Jew or Muslim - to change his or her religion. Everyone

had his or her own convictions, and these convictions were based on a personal, family and community history. But these are roots that escape reasoning. Rather, beyond convictions, which are vectors of identity, it was a question of testing one's certainties, which is different, by confronting them with those of the other. Learning and teaching him. And thus, while respecting each other's convictions and identities, gain access to a higher level of understanding of the world. Acknowledging, beyond differences in point of view, that there is something above us. As Djalâl-ud-Dîn Rûmi said, this something is God, God who brings unity beyond the differences between men.

The death of God having been proclaimed, it was necessary to find a substitute for him; this substitute was "human nature". But what does it consist of? Doesn't it merge with the presuppositions of the age that impregnates the speaker with all its presuppositions?

This art of *disputatio* thus presupposed an entity overhanging the disputants, to which each could refer to nuance, modify, shift certainties, or even break with one or other. Between blue and green, it was a question of debating the name of the infinite shades that go from one to the other. Nobody was right, nobody was wrong. Today, go and discuss shades of blue or green with a computer. According to digital logic, it will be either one or the other. There's no possible compromise between 0 and 1. It's no longer a question of two stories coming together to form different assessments, but a simple alternative: either it's blue, or it's green. Under these conditions, what the other could bring as its share of truth is simply denied.

This was the path chosen by his confrere Dominique to confront Messire François, and it's easy to understand why they didn't get on very well. For the friar preachers, it's not a question of arguing with Cathars or Muslims, it's a question of converting them and, failing that, making them suffer the price of their detestable hardening in error. There is no longer anything in common between one group and the other, for lack of being able to project oneself onto another level of reality, by reference to a common source. Hence the physicists' rediscovery: between corpuscular and wave physics, it's no longer a question of truth or error, but of different perceptions capable of rediscovering their unity at a higher level of reality.

This is how Messire François dealt with the people of Gubbio and Brother Wolf. Between the reality of the one and the reality of the other, they needed access to a higher level of reality if they were to agree. And to do this, they needed the intervention of a third party who was not there to deny or condemn, but who was able to rise to another level of understanding of the reality of the situation. This is the transdisciplinary approach, as theorized by Stéphane Lupasco [13] and Bassarab Nicolescu [14]. The world cannot be interpreted in terms of a single approach, to the exclusion of all others. The scientific discipline is one approach; the artistic approach is another, and yet another is the spiritual approach, and the different artistic or spiritual approaches in relation to each other. They all speak to us of the same world, but they approach it from different angles. Is it any wonder that many renowned scientists were also accomplished artists?

Eva Aladro Vico, a professor at the University of Madrid [15], takes a closer look at the cave paintings in the Chauvet cave:

"Beauty is cognition, i.e. a form of knowledge of the real, of its true essence, produced by operations in which we access ideas, which help to represent experience in a harmonious, clear and integral way. (...). When we look at a cave painting, we see pure art. Artists cease to be their own species and become the image they paint, as the great Japanese painter Hokusai put it: if you want to draw a bird, you must become a bird. These paintings show us the way to a mode of communication open to the future, an empathy for living and future beings. They bear witness to the search for a profound purpose, in which ethics and aesthetics come together."

From this point of view, the scientific approach is just one way of reading the world, and cannot claim to be the most relevant, let alone the only one. Just as relevant as the contemporary biologist was the unknown artist of the Chauvet cave in man's understanding of the world, as a part of the world interacting with others. Of the Chauvet cave artist, the Tibetan hermit and the contemporary physicist, no one can claim to have a superior understanding of the world and the relationship between man and the world. No one way can be the only way, exclusive of all others.

The risk of a flat world

Why is a transdisciplinary approach so important today? Because we run the risk of a world that has become flat. By this we mean a humanity that has become incapable, through discussion, of accessing a level of reality higher than the approach that each individual may have to the world, given his or her personal history and the environment from which he or she draws his or her points of view. Human intelligence, under the pressure of digital technologies, tends to merge with digital computation: "eight plus four makes twelve, no argument there". But, yes, it is debatable, because the decimal system, although it may seem self-evident, is only ever a convention, in other words, an intellectual construct. But for this to happen, we need to accept a change in the paradigmatic foundations of our reasoning, and not regard it as an absolute. This implies a willingness to look both elsewhere and at the historical depth that generates symbols, which is the only way to overcome current situations of opposition.

Take, for example, the seemingly intractable contemporary conflict between Ukraine and Russia (or Israel and the Palestinians). To claim that Crimea is Ukrainian is to forget that it was wrested from the Sublime Porte by Catherine II (in 1783), that Russian is spoken there, that the inhabitants, even when Crimea was attached to Ukraine, displayed the Russian flag, that the Livadia Palace, where the so-called Yalta conference took place, was the summer residence of Tsar Nicholas II, and that it was only administratively attached to Ukraine for less than forty years. To speak of Ukraine's existence apart from that of Russia is to forget the role of the Grand Dukes of Kiev and the fact that Little Russia was the cradle of present-day Russia, that Saint Sophia of Kiev represents the missing link between Saint Sophia of Constantinople and the cathedrals of the Moscow Kremlin, that one of the two statues that adorn (or adorned, I'm afraid) the beautiful promenade overlooking the Black Sea in Odessa is that of Pushkin (the other being that of M. de Richelieu, appointed governor of the Ukraine), and that one of the two statues that adorn (or adorned, I'm afraid) the beautiful promenade overlooking the Black Sea in Odessa is that of Pushkin (the other being that of M. de Richelieu, appointed governor of the Ukraine). de Richelieu, appointed governor of the city by Catherine II, and finally that the island in the middle of the Dnieper occupied by the Zaporog Cossacks, from which they were expelled by Catherine II when they refused to allow her to enter on the grounds that she was a woman, is probably the only one that can be considered specifically Ukrainian. Such a past makes a mockery of the idea, so dear today to the United States, its European *dominions* and the wealthy local oligarchs, of a Ukraine that everything would set against Russia.

A world that has become flat is first and foremost a world that pretends to forget history, in which the past doesn't count - the only thing that matters is the future, as conceived according to the certainties of the present, and from which the social links and symbols of the past are consequently excluded. But it's also a world in which the certainties of the present are taken for granted as universal. Modernity is thus seen as the culmination of an evolutionary process that began with *homo sapiens sapiens* and necessarily led to the way of life of contemporary "developed" countries, starting with the American way of life, with the Herculean goal of taking it to new heights.

This means that civilizations other than Western civilization, what they were or what they still remain in a residual state, do not count, or only as tourist curiosities, being deemed to be at a lower level on the scale of "human development", this being considered primarily as technical and economic development. A Great Plains Indian striving to preserve his ecosystem and apologizing to the buffalo people for having to take an individual from them in order to feed would be "primitive", while exterminating them in order to lay railway tracks would be the work of the "civilized". There's no room for the Other in a civilization that holds its praxeology as the only one worth having.

As a result, *disputatio* takes place within a closed world, reduced to secondary debates, those that can be discussed within the same value system and taxonomy. As Walter Benjamin noted as early as 1923, "free conversation is lost. Whereas it used to be taken for granted that one was interested in one's interlocutor when conversing with another, this is now replaced by questions about the price of one's shoes or umbrella" [16]. Of course, we argue even less with an Indian from the Great Plains. We are as interested in his ideas as we are in those that reach us from earlier stages of our own civilization, conceived as so many inferior, "outmoded" stages in the course of an evolution that has led us to what we are today, and which will take

us even further towards the final technological parousia. Modernity is therefore incapable of taking into consideration anything that does not lead it back to itself, like a river flowing uniformly in the direction of progress. Confronted with the wolf of Gubbio, the man of our time will immediately give reason to the town's inhabitants and arm himself with an assault rifle to put an end to the wolf's actions.

In other words, he makes a judgment that excludes a priori what the wolf's point of view might be. The social auditor is familiar with this situation. Each of the parties involved seeks to impose its own point of view, which seems both coherent and justified within the framework of its own worldview. Of course, it will be possible to detect manifest errors or illusions in the assertions of each of the parties involved. But that's not the point: the listener has to stand above these mutually exclusive logics. Each of these logics is intended to be coherent, thus excluding any relevance to the other. And yet, it too has its coherence. The outcome of the conflict will depend on the ability of the parties involved to rise to a higher level of coherence. The mediator's role is to support them by creating the process that will help them achieve this, but which can only come from themselves. This will be a creative act: the invention of a shared world, including that of each of its constituent parts.

A human world that has become incoherent with the non-human world

Strengthened by his certainties and technical successes, modern man finds himself alone. The Indian has long since been relegated to a reserve. The drawings in the Chauvet cave have been reduced to a mere curiosity, deemed instructive in understanding just how far we've come since then. The Soviet Union has collapsed, and the "end of history" has been proclaimed with the utmost seriousness by a Hegelian-inspired American philosopher [17]. The successes of thermo-industrial civilization, however, can only be considered as such according to a particular reading, which is the one it makes according to its own taxonomy and axiology. These value technical progress, the abundance of inexpensive artefacts accessible to the greatest number, all situated on a linear time axis promising a "better" future. The balances on which the world rested until the advent of the steam engine are of only secondary interest. Poetry, contemplation, generosity, gratuitous interest in others and the useless have no place in it, except in a residual capacity.

As we've said, this is not how cultures other than the thermo-industrial one see things. But it must be added that the West's successes also contain grey areas that escape its axiology. Creative destruction", to use Schumpeter's expression, can be read as destructive creation. The "creation of value" it puts forward is paid for by a destruction of value, and a more than proportional destruction [18]. We won't go back over the causes and effects of global warming, loss of biodiversity and the invasion of space by non-biodegradable waste. These unfortunate side-effects of the industrial epic of the last two centuries, however, were not part of his program. That's why they were long ignored by those with economic and political power.

The work of a handful of whistle-blowers, followed by that of the IPCC scientists, and the already visible effects of thermo-industrial disruption, have made it difficult to maintain our denial of what is really a matter of sensitive reality, of what resists our understanding and our will. The emerging problem is that the new realities of the "Anthropocene" do not fit into the Western worldview. The ideology on which its institutions are based is more or less coherent, but it has ceased to be relevant to what lies outside it. And it's not easy to integrate the correlative destructions of thermo-industrial development, let alone imagine ways of restoring the balance compromised by Western achievements, as they have now been "globalized". Our vision of the world, as it represents for us the legacy of the last two centuries, resists the perception, which is nevertheless gradually taking hold, of what presents man as a constraint from which he cannot escape. The result is that we see while not seeing, that we constantly seek to escape into technological mirages where we believe we'll find a panacea that will enable us to face reality without changing our deep-rooted certainties.

Here are two examples. The first concerns the content of a magazine, *Futuribles*. *Futuribles* is a high-quality futures magazine founded in the 1970s by Bertrand and H el ene de Jouvenel. At the time, Professor Bertrand de Jouvenel was one of the few minds to have perceived and analyzed the extent of the damage inflicted on the environment by human activities [19]. This brilliant and daring mind did not hesitate to

think "outside the box". The same cannot be said of what *Futuribles* has become today. It certainly contains a number of highly relevant analyses of current developments and, from excellent experts, a wealth of information of great interest, for example, to senior civil servants anxious to shed light on the field of action assigned to them. On the other hand, statements that would represent a break with the thermo-industrial *doxa* are virtually absent. The scenarios discussed here are designed to shed light on the future - and, if possible, tame it - within the context of common beliefs and the political and economic institutions of the early 21st century. There can be no question, for example, of imagining that the future can be achieved by questioning paradigmatic foundations such as the importance attached to "progress", the "arrow of time", the role of the political economy or the relationship between humanity and its non-human environment [20]. *Futuribles*, in other words, follows in the footsteps of what already exists, and can be of little help in imagining the future other than through the channel of what seems to be self-evident.

Second example: wind turbines. Most observers agree that the ecological damage caused by thermo-industrial civilization is forcing the latter to move in a very different direction from that imposed by the goal of economic development, which was conceived as synonymous with the idea of "progress". But at the same time, the economic and political elites are unable to imagine the future as anything other than an extension of what they take for granted. This entrenchment in their certainties, whether conscious or unconscious, leads them, faced with a situation from which they cannot escape, to imagine "solutions" that would resolve the problem without abandoning their certainties.

It is in these conditions that the economic and political elites willingly put forward the idea of "sustainable development", "green growth" and "renewable energies". But how can we conceive of continuing our mode of development while at the same time putting an end to the growing contradiction it provokes in relation to the planet's carrying capacity and the destruction of our commons, as they condition the future of humanity? With the amount of energy consumed continuing to rise year on year, in the face of coal, oil and gas stocks that are already on the verge of exhaustion, sustainable energies have become the painless miracle solution that would enable us to give up none of these certainties that we take for granted.

Hence the wind turbines, which are destined to multiply in order to occupy a growing place in today's energy mix. We'll skip the technical details and the negative effects of the proliferation of wind turbines, now well documented [21]. In short, they consume large quantities of rare earths, generate various forms of pollution and destroy biodiversity, not to mention being unsightly and tending to profoundly alter landscapes. Hence the growing opposition they arouse from those who are likely to be their neighbors and be inconvenienced by them. Their promoters therefore need to discredit opponents on the grounds that they are primitive or selfish people who don't understand the relevance of multiplying "wind farms". Indeed, wind turbines are doubly profitable: they offer their promoters substantial profits, while giving the State the opportunity to assert that it is taking action against global warming. Hence the costly subsidies granted by the state to wind turbine operators; hence also, given the resulting profitability, the interest shown by some major industrial groups in wind energy. That's what it's all about: changing our energy sources in a profitable way, so that nothing changes in our lifestyles and our quest for "progress" through technology.

The need to rediscover *disputatio*

What model can Western civilization turn to in order to transform itself substantially, without ceasing to be itself? It cannot do so by looking to its past, which is radically devalued by the idea of progress sought in the future. Nor can it turn to the remnants of civilizations other than its own, which it describes by its own criteria as "primitive". Its vision of the world therefore condemns it to isolation. Nor, of course, can it engage in dialogue with its non-human environment.

Messire François engaged in such a dialogue when he addressed the wolf of Gubbio in a friendly manner, just as on other occasions he had addressed the birds, summoning the swallows to make a little less noise. It doesn't matter that his ability to engage in dialogue is legendary (his meeting with the Sultan El Kamel, on the other hand, is historic). For him, it was less a question of judging, still less of imposing, but of understanding, exchanging and taking into account what drives the Other. It is this Other-than-humanity

that today imposes its existence and its demands on the West, which saw in it only a career and a dumping ground, considering itself to be of another nature - and of a nature superior to all living things. Should we necessarily consider contemporary man to be superior, in his understanding of reality, to the unknown artist of the Chauvet cave?

At the other end of the world, Tchouang Tseu invites us to this kind of understanding:

Tchouang Tseu and Houei Tseu were walking on a levee of the Hao river. Tchouang Tseu said: "See how the minnows are wandering around at their leisure! That's the joy of fish.

- **You're not a fish," says Houei Tseu. How do you know what is the joy of fish?**
- **You're not me," replied Tchouang Tseu. How do you know that I don't know what is the joy of fish?" [22]**

Houei Tseu could be one of our contemporaries. He is walled up in what he believes to be his own identity, one that is close to that of Tchouang Tseu and different from that of the fish. Tchouang Tseu would have got on very well with Messire François. He knows that he and the fish share a common identity at a higher level of reality, and that this common identity enables the fish and himself to understand each other. But that's not all: Houei Tseu presumes what Chiang Tzu can or cannot understand. And yet, how could he legitimately do so? But in so doing, he closes the door on any possibility of a *disputatio* outside the framework he takes for granted. And yet, the future of humanity and its place in the great balance of the cosmos will probably depend on whether or not it is able to raise itself to a higher level of reality, which alone will enable us to reintegrate into our future that which we had excluded as being external to us. In other words, humanity must choose between Messire François and Frère Dominique, between the negation of the Other and the search for a common world.

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