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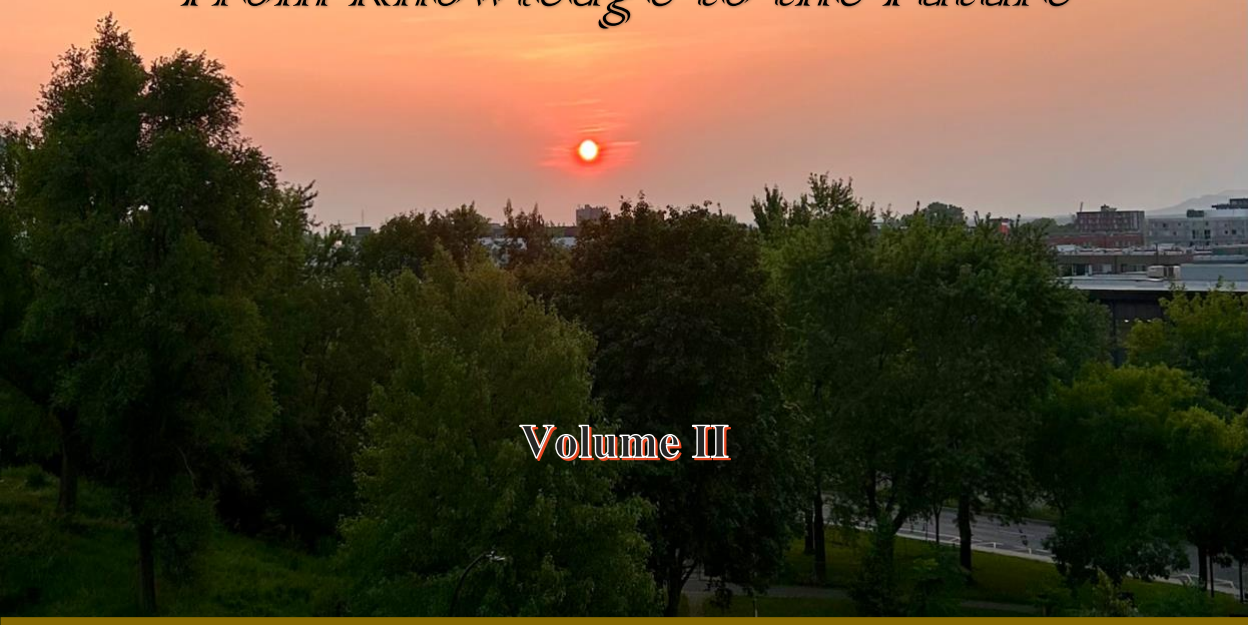
For an International Transdisciplinary Chair

From Knowledge to the Future



Volume II

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For an International Transdisciplinary Chair
From Knowledge to the Future

Volume II

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Contributions to the Online Symposium „For an international transdisciplinary chair" organized by the International Center for Transdisciplinary Research and Studies (CIRET) on March 21-25, 2024, Paris

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This year, with profound gratitude and enthusiasm, we mark thirty years since the signing of the Charter of Transdisciplinarity, an essential document that has defined our direction in promoting collaboration and understanding. In this special year, we wish to express our sincere thanks and deep appreciation to the members of the drafting committee, whose vision and dedication made the creation of this fundamental document possible.

Basarab Nicolescu, Edgar Morin, and Lima de Freitas+ were the architects of the Charter. Without their tireless work and commitment to the principles of transdisciplinarity, we would not have this valuable tool to inspire and guide us in the pursuit of integrated and harmonious knowledge.

Over these thirty years, the principles set forth in the Charter of Transdisciplinarity have inspired numerous initiatives and projects. We have succeeded in building bridges between the sciences, the arts, and the humanities, encouraging dialogue and respect for cultural diversity, and cultivating an open and tolerant attitude.

Looking to the future, we remain committed to continuing this journey, expanding the horizons of knowledge and responding with wisdom and responsibility to the new challenges that await us. With confidence in the power of dialogue and transdisciplinary collaboration, we are convinced that we will contribute to creating a better future for all beings.

On the occasion of this anniversary, we invite you to reflect together on the path we have travelled and to celebrate our shared achievements.

ADJURIS – International Academic Publisher announces on this milestone the launch of the "Transdisciplinarity Today" Collection, dedicated to the publication of brilliant works.

Associate professor PhD. Habil. Cătălin-Silviu Săraru
Director of ***ADJURIS – International Academic Publisher***

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Introduction

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The Modern Age, since the 18th-century Enlightenment or Age of Reason, has promoted advances in technoscience and material quality of life, but a spiral cycle has been created in which the hypertrophy of logic and analysis does not solve the complexity of human phenomena. A more comprehensive understanding of ancient philosophies and traditions has been lost. Understanding has been reduced to knowledge or binary logic, fractioned by narrow analytical and scientific views of reality. Many human sciences borrowed such rationalist models from the hard sciences in a reductionist approach of merely mechanistic or biological-environmental views, which can't be applied effectively to complex human phenomena. In the 21st century, the Western mainstream paradigms can no longer deal with the level of uncertainty, conflicts, polarisation, and ideologization in which the West finds itself, the result of a binary worldview that has its explanations in the Western culture itself, focused on causality, which does not consider the various interactions in dualities, like the subject object and conscious unconscious at intertwined levels, as is clear from Jung's Analytical Psychology and Modern Physics.

In that connection, this book is the result of the Symposium *For an International Transdisciplinary Chair*, organised by the co-editors and promoted by CIRET on the date of March 21-25, 2024. This second volume includes the final papers of the Symposium presentations[1].

For those who study transdisciplinarity, it is common to use TD as an acronym for transdisciplinarity as a substantive or transdisciplinary as an adjective.

The origins of a TD framework can be seen in the United States, France, and Brazil.

In the US, especially in Berkeley, Dutch physicist Fritjof Capra developed his Holistic Systems, initially through *The Turning Point* in 1982, an idea of paradigm shift and rising new culture beyond the dominant Western Newtonian and Cartesian view of reality. Not TD yet, but Capra's systemic paradigm went beyond the binary logic and established a dialogue between ancient traditions/philosophies with Modern Physics[2]. In the same way, David Bohm, himself

[1] The Symposium videos and program are available at https://ciret.hypotheses.org/activites/symposiums-colloques#chair, accessed on 05.08.2024.

[2] Capra Fritjof (1982). *The turning point: science, society, and the rising culture.* Bantam Books, available here: http://pustaka.unp.ac.id/file/abstrak_kki/EBOOKS/CAPRA%20FritjofCapra-The _

professor at Berkeley, began a new way of thinking reality, in dialog with the Indian thinker Krishnamurti[3].

In France, Ștefan Lupașcu, also known as Stéphane Lupasco, a Romanian-born philosopher and logician, has made significant contributions to the development of the concept of transdisciplinarity by elaborating a "logic of the included third" which is closely linked to transdisciplinarity[4]. A few years later, the Romanian physicist Barasarab Nicolescu and Brazilian mathematician/ educator Ubiratan D'Ambrosio were among the eminent co-signers of the 1986 UNESCO Charter of Venice, which was the starting point for TD worldwide[5].

Nicolescu created a transdisciplinary methodology in the late 1980s, considering ideas such as the logic of the included third or hidden third, besides the fruitful complementarity between disciplinarity and TD. In 1987, Nicolescu founded, in Paris, the International Center for Transdisciplinary Research and Studies – CIRET[6].

In Brazil, D'Ambrosio with the psychologists Pierre Weil and Roberto Crema created the holistic TD approach in the late 1980[s]. In turn, French Weil and Brazilian Crema established in 1987 the International Holistic University of Peace – UNIPAZ[7].

UNIPAZ created a 481-hour course on Holistic TD called FHB, i.e. Holistic Basic Training. Nowadays with 25 instructors, for any student or professional over 18 years old, those seeking a new way of being in the world, or those interested in the holistic TD approach as a tool for improving personal and professional dimensions. Roberto Crema was responsible for implementing and coordinating its Pilot Group at UNIPAZ in Brasilia from 1989 onwards. So, the FHB has already a 35-year tradition[8].

Also in the US, The ATLAS, Academy of Transdisciplinary Learning &

Turning_Point__Science,_Society,_and_the_Rising_Culture__-Bantam (1988).pdf, accessed on 05.08.2024.

[3] Bohm, D. & Krishnamurti, J. (1999). *The Limits of Thought: Discussions between J. Krishnamurti and David Bohm*. Routledge, London.

[4] In 1951 Lupasco publishes *Le principe d'antagonisme et la logique de l'énergie - Prolégomènes à une science de la contradiction*, in which he enunciates for the first time the principle of antagonism, on which he bases a non-Aristotelian logic (of the third included). Lupasco S., 1951, *Le Principe d'antagonisme et la logique de l'énergie. Prolégomènes à une science de la contradiction/The principle of antagonism and the logic of energy - Prolegomena to a science of contradiction*, 1re éd. Paris, Hermann & Cie (Actualités scientifiques et industrielles, 1133), 2e éd. Monaco, Le Rocher (L'Esprit et la matière), 1987, préf. de Basarab Nicolescu.

[5] UNESCO (1986). Symposium on Science and the Boundaries of Knowledge: the Prologue of Our Cultural Past, Venice, 1986. Final Signed Report available here: https://unesdoc.unesco.org/ark:/48223/pf0000068502, accessed on 05.08.2024.

[6] The CIRET web page is available here: https://ciret.hypotheses.org/, accessed on 05.08.2024.

[7] The UNIPAZ web page is available here: https://unipazdf.org.br/, accessed on 05.08.2024.

[8] The HFB web page is available here: https://unipazdf.org.br/produto/formacao-holistica-de-base/, accessed on 05.08.2024.

Advanced Studies, founded in 2000, is a non-profit organisation by the US Federal Government, providing services to students around the world: i) TD education and research; ii) support social, environmental, economic, and ethical sustainable development throughout the world; and iii) to promote global information exchange through innovative publishing. The ATLAS is also a publisher of TD books free of charge, available at the internet, and there is also a free-access journal for TD articles, the ATLAS-TJES[9].

There are other TD initiatives, such as ARKOS University in Mexico[10] and the Russia School of TD[11]. However, this book cannot cover all of them.

Even with all those initiatives, the TD concepts are still not very clear or understood by most of the students/academics. Some may reduce it to the **epistemology of TD**, or even to the **science of TD**. However, TD involves the logic of the Included Third, i.e. the complementarity of opposites. Complementarity is not only a scientific principle coming from Modern Physics but also from ancient traditions/philosophies. So, this dialectical meaning can be seen in the Included Third logic, the Modern Physics wave-particle duality, and the Taoist and the Chinese Traditional Medicine idea of Yin-Yang. Also, beyond the binary logic of true or false, in India Nagarjuna developed the logic of the tetralemma – affirmation/true, negation/false, both, or neither, which was a basis of the Buddhist doctrine, that can be found in Shan and Zen tradition. In the same way of thinking is the Ismaelian philosophy and theosophy. Finally, we can mention Nicolas de Cues and The Star of David in the European Alchemical Tradition. Then, the dialogue between culture and technoscience emerges, as the HPTD-M theory describes in terms of quaternary complementarities, i.e. through many possible interactions in opposites coming from the four epistemic ways, namely philosophy, tradition, art, and technoscience.

TD and holistic view are concepts still not very well understood by some academics, which are unconsciously focused on rational scientific dogmatism. Solving problems on individual, organisational, and civil society levels involves the complexity of human phenomena, which the dominant binary logic of our Western culture cannot cope with.

In this sense, a dialog between culture and technoscience seems to be a reasonable way of dealing with issues that are more complex than the dominant mechanistic approach using the logic of 0 or 1, true or false, right and wrong.

Culture involves the epistemic forms of philosophy, tradition, and art. Technoscience, in turn, is the fruitful dialog between technology and science.

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[9] The ATLAS free access books is available here: https://theatlas.org/index.php/td-teaching-materials/td-books and the ATLAS-TJES journal can be see here: https://www.atlas-tjes.org/, both accessed on 05.08.2024.

[10] The ARKOS web page is available here: https://www.ceuarkos.edu.mx/, accessed on 05.08. 2024.

[11] McGregor, S. L. T. (2024). „Russian school of transdisciplinarity as a metadiscipline". *Universum: Social Sciences, 3* (106), pp. 53–65, available here: https://7universum.com/ru/social/archive/item/ 17087, accessed on 05.08.2024.

Therefore, science alone cannot solve problems at the psychological and psychosomatic level, i.e. in the personal and collective organisational levels.

In this connection, the cover of this book symbolically proposes dawn, a turning point, a paradigm shift, and a transformation of our conscience through dialogue between the new culture, represented by the rising sun at the left, and techno-science, shown by the crane at the right, involving technology and science in the concrete construction of new solutions.

So, **if the labels coming behind the idea of TD and holistic view remain uncomfortable for the reader, those can be easily replaced by the concept of dialogue between culture and technoscience**, in terms of effective problem-solving framework for the organisations, from the personal to the collective levels.

Finally, about the structure of this book: The idea was to start with the authors involved with education and science, a content that is easier for the academics, and then go to the applied TD which involves problem solving and practitioners in economics, law, psychology, management, public administration, engineering, leadership, and mediation of conflicts.

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FOUNDATIONS AND EVOLUTION OF TRANSDISCIPLINARY EDUCATION

Transformation of the Sense of Knowledge and the University Subject through the TD Chair

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Abstract

In this article I intend to show how the purpose of the modern university, as a guardian institution and transmitter of knowledge, was overwhelmed by the complex reality that humanity began to live from the twentieth century. From a method of critical analysis, I came to the conclusion of the urgency of transforming the sense of knowledge where the Subject who knows is part of knowledge, as proposed by the Transdisciplinary Methodology. In this way, it is possible to think of a future TD Chair.

Keywords: *university, knowledge, subject, transdisciplinarity.*

DOI: https://doi.org/10.62768/ADJURIS/2024/4/01

1. Introduction

How to define the University today? Is there only one University? The first problem is that there is not a single definition for its current state, its essence or universality has ceased to be operational in a world that lives transformations at an increasingly accelerated speed, with increasingly acute social and political problems and where the concept of 'human being' has been stripped of the meaning it once had, to turn it into a fact of the economy and technoscience.

The University, a very classic and traditional institution with more than nine centuries of existence, faces dizzying changes marked by globalization, cultural diversity, and information and communication technologies. This situation occurs within the frame of inequality.

Perhaps the priority task today for the University is to think of herself by elucidating the conditions for the construction of knowledge, the training of professionals and her conception of the human condition for knowing and acting.

The disciplinary organization has a correlate in the genesis of the modern universities in the 19th century. In this respect, the disciplines have a historic development that is ingrained in the history of society, but in addition it possesses an epistemological and paradigmatic dimension like the understanding of the ways of organizing disciplinary knowledge and their processes of closing and opening.

The notion of discipline, in this context, can be defined as an organizing category inside the scientific knowledge, instituting division and specialization. The organization of the knowledge into many disciplines has stimulated separate models, increasingly preventing the methodological and epistemological integration.

University knowledge has been predominantly disciplinary 'whose autonomy imposed a process of relatively decontextualized production in relation to the daily needs of society. Following the logic of this process, the researchers determined the scientific problems to resolve, defining its relevancy and establishing the methodologies and the rhythms of inquiry… The University produces knowledge that society can apply or not, an alternative that, as socially relevant as it, may be indifferent or irrelevant for the produced knowledge'[1].

Hyper-specialization and disciplinary compartmentalization impede access to broader and related knowledge. Disciplinary teaching is increasingly inadequate and is no longer suitable for cooperation between the different disciplines, between the various centers of production of culture and knowledge, between the different scientific, technical, humanist artistic and spiritual fields. The disciplinary fragmentation and the division of systemic problems maintain a theoretical superficiality, strongly conditioning the social development of countries.

The main objective of current education is to inculcate the desire to have control of reality and accumulate goods, in this lies triumph, success. There are disguises that hide the underlying truth and only rarely does a professor or researcher appear who questions dogmas, however established they may be, to energize the paralyzing and endemic behavior of the human species.

That is why education in the 21st century, as Jacques Delors noted in his report to UNESCO, will have to be based on four pillars if we aspire to transform our present condition: Learn to know, learn to do, learn to live together and learn to be.

Although the model of super-specialization is accepted as a certain dogma of formation 'appropriate' to be good citizens, from an open and transdisciplinary perspective we can realize that there is a universe of experiences and

[1] Boaventura de Souza Santos. *A Universidades no seculo XXI: para una reforma democrática e emancipatoria da Universidades.* Sao Paulo. Cortez editora, 2010, p. 41.

sources of knowledge, but above all of wisdom, which is indispensable to complement, deepen and enrich our daily process of Being and Knowing. Some of these sources of transdisciplinary self-training are, for example every day and family experiences, especially those transmitted by grandparents to their descendants; feminine, intuitive and heartfelt knowledge; stories, myths and legends; experiences and wisdom coming from our body and its relationship with knowledge that also live and are recreated in nature.

By observing with interest what happens to humanity in our time we perceive that, as a society, we have been weak to propose educational processes that allow us to constitute ourselves as integral beings, where our being, knowing and acting in the world starts from our quality as human beings. This profound lack of the subject who receives and then transmits the 'education' is nothing more than the result of a radically fragmented knowledge q and then transmits 'education' is nothing more than the result of a radically fragmented knowledge that believes to know more about less and less.

The practice of self-knowledge has the purpose of opening the mind to the greatest mysteries that occur at every moment, allowing an affective relationship with the environment that makes them feel time and space as infinite. This experience enriches our participation in the world by making our different activities pleasant. Thus, without needing to take refuge in any doctrine, our actions can be considered spiritual by simple and direct attachment to the most intimate experience with our interior.

A person with broad relationship capacity is one who experiences himself, through a constant and careful transdisciplinary education, as a Subject who transcends the seemingly opposite concepts of objectivity and subjectivity.

To the reinsertion of the human being in the process of knowing and being in the world, Basarab Nicolescu calls it 'transdisciplinary attitude'. From this attitude we affirm that the education of the Transdisciplinary Subject needs everything that allows him to rigorously attend to his Self-knowledge and cultivation of his Quality of Being, we call this 'transdisciplinary education' and it is our proposal to share in the Transdisciplinary Chair of the University.

2. The Crises of the University

The Portuguese academic Boaventura de Souza Santos did an analysis of the situation of the public university in Brazil. The analysis indicates that there are three crises: one of hegemony, due to the contradictions between the traditional functions and those who in the 20th century were attributed to it; another of legitimacy, for the fact that it stopped being an institution consensual, opposite to the contradiction of the hierarchical organization of specialized knowledge's and to the social and political requirements of democratization and equality of opportunities; and an institutional crisis, for the contradiction between recovery of autonomy and the increasing pressure for submitting it to criteria of efficiency and

productivity of managerial character or social responsibility[2].

The epistemic state of the University and its social function is, today, more than ever, antagonistic. Thus, one comes to recognize the need for transformation in Latin America.

The globalizing and neoliberal perspective that promotes expansion of the educational market sought to impose a managerial paradigm that led to the marketing of the University. This stimulated the creation of the 'university market'.

Consequently, the problems grew. For instance, we saw the unprecedented acceleration of the fragmentation of knowledge, a rejection of sharing knowledge, a lack of tolerance, and a separation of science and culture (the origin of which goes back at least three centuries ago).

Opposite of this vision, one began to speak from the academic field of changing mentality and institutional structure and of orientating the University toward the sustainability. It is precisely from this approach that we encounter two questions: how can the University respond to the challenges of the 21st century? What reforms does the University need to offer an integral and open formation that links effectivity and affectivity, which connects the university subject with the complexity of the world, which contributes to the genuine social transformation, and which gives a place for culture, art, spirituality, and life in the university?

3. The Disciplinary University

The disciplinary fragmentation and the division of systemic problems maintain a theoretical superficiality, strongly conditioning the social development of countries.

The disciplinary organization has a correlate in the genesis of the modern universities in the 19th century. In this respect, the disciplines have a historic development that is ingrained in the history of society, but in addition it possesses an epistemological and paradigmatic dimension similar to the understanding of the ways of organizing disciplinary knowledge and their processes of closing and opening.

The notion of discipline, in this context, can be defined as an organizing category inside the scientific knowledge, instituting division and specialization. The organization of the knowledge into many disciplines has stimulated separate models, increasingly preventing the methodological and epistemological integration.

[2] Boaventura, de Souza Santos, *op. cit.*, 2010, p. 42.

4. Alternatives to the Disciplinary Paradigm

Throughout the 20th century, a new way of seeing and understanding the world was generated that instigated the rupture of former shared convictions, concepts, techniques, and values supported and used by scientific communities. A new epistemology emerged for instance with the Complex Thought and Transdisciplinarity that opened the possibility of co-generating a more dynamic conception of the human being and a new way of understanding reality and knowledge itself.

This nascent epistemology started by generating a new way of 'knowing our knowing'[3]. What in the paradigm of modernity was translated as an anomaly, a contradiction, and a sign of mistaken thought, in this different perspective appears as a crisis, a fork in the road, a possibility of new ways.

For example, the unidirectional reason/effect was confronted with the circularity that proposes a recursive effect. In this way, the knowledge that the University generates must regenerate the knowledge that the University offers. A University that does not recognize the biodegradability of knowledge cannot affirm that it generates knowledge. It is not a question of changing what it is necessary to know, since it is always dynamic, but the way of knowing. The concept of feedback arises as a unit of interaction in a system where the observer is a subjective participant, a co-participator in the process that before it was made separate in an effort to be objective.

The situation of a change for the University offers to all its members the possibility of placing themselves within the change itself and invites others to actively involve themselves in this construction of 'doing while doing'.

Little by little, from this position, the knowledge is traveling between interactions and cognitions that are mutually influenced.

Between a globalization that socially homogenizes and a fragmentation that mutilates education, an intermediate zone emerges, which is only possible to conceive from a complex and transdisciplinary perspective of constructing the University.

Faced with this panorama, it is pertinent to question whether the University is fulfilling the demands of strengthening social coexistence and enhancing the creativity of citizens through the transmission and generation of knowledge. Does humanity live better thanks to the University? asks Mexican scientist Víctor Manuel Toledo and says of the 'Science' that is taught in universities: 'Today the dominant "normal science" is in crisis, not only in Mexico, but throughout the world, because it does not contribute to solving the two supreme emergencies facing humanity: the greatest social inequality in history and the greatest known threat to the planet's ecological balance'[4].

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[3] Edgar Morin, *El Método 3: El conocimiento del conocimiento*. Madrid: Cátedra, 1994, p. 75.

[4] Víctor Manuel Toledo, « Los "científicos" y la 4 T: oposición ilegítima » en *La Jornada* 13/08/2019, https://www.jornada.com.mx/2019/08/13/opinion/016a1pol.

It is difficult to know what part of the benefits obtained by humanity correspond to the action of the universities, as well as what is their responsibility in the great failures, the fact is that they participate in both. It must also be said that the human potential it contains has not been properly exploited. For this reason, it is necessary to transform universities with a transdisciplinary perspective that promotes, among other things, the knowledge of knowledge (Morin), the awareness of autonomy of members of their community, as well as the link with society where solidarity, equity and creativity predominate.

5. Transdisciplinary Vision of the University

New looks to address and to transform the role of the University in the contemporary societies have appeared from different areas for many decades. Many voices speak of the need for a new 'social pact' that calls for the social responsibility of the university institution in a space of growing complexity. In a world undergoing transformations at an ever-faster pace, questions about the current state of the University are more than ever of great importance.

As much from the social, political, cultural, and economic point of view as from the perspective of the increasing complexity of the real world, the function of the knowledge is key in terms of transformation and in terms of citizenship and social responsibility. The University, as an institution that produces knowledge and forms opinion and trends, has an unquestionable social responsibility. Its priority task today should be regarding thought itself – elucidating the conditions that construct knowledge, that form professionals that conceive the human condition to know and act. From this perspective, the University has an urgent task: determining the why, how and what to know.

That is the reason why the single disciplinary education is becoming increasingly inadequate and why there must be cooperation between disciplines, among the various center of culture and knowledge, among different knowledges (scientific, artistic, and techniques).

Under compartmentalization, teachers and university researchers are interested only in the skills they need to excel in their field. Research and education in science, literature, philosophy, and human sciences generally respond to criteria of technical efficiency and profitability without offering a critical view of knowledge, a prerequisite for making the necessary distance and to give meaning to the task of knowledge.

The University, as a space where knowledge is generated and processed, cannot fail to look at itself critically to detect its own stagnation. It is necessary to recover its ability to regenerate to avoid higher risk: the mental and emotional stagnation of new generations.

Isolated academic disciplines are less than adequate to deal with wider personal and social problems. The fragmentation of the disciplines leads to passivity and, at its best, answers only one part of what social life demands: that we

were trained by a single discipline.

While knowledge does not provide all the necessary means to contend with the complexity of reality, it does increase the expression of our human potential.

That complex reality is not only that of work and daily subsistence, nor the world mass media or internet present, nor financial markets, nor that of the corrupt dictatorship or pseudo-democratic governments, nor the savage crimes that occur daily as it happens today in Palestine; on the contrary, the complex reality is also that of the tiny acts of courage, solidarity, affectivity, creativity, spirituality, and all that is infinitely small or infinitely large that escape our senses.

The current organization of the University follows the model of the modern university, based on disciplinary specialization that today faces dizzying changes marked by globalization, cultural diversity, information and communication technologies, but above all, as noted in the previous chapter, the devastating pandemic.

The prefix 'trans' refers to a constant movement. 'Trans' indicates something that keeps moving; something that is between, through and beyond. This puts us before an ethical challenge; therefore the need arises to fix the notion of transdisciplinarity from ethics and, even more so, the self-ethics suggested by Morin. Engaging with an alternative proposal implies the difficult task of making it work in an incarnate way. Moreover, the emergence of a new paradigm requires the university institution to assume its responsibility for the challenges it poses, in order to foster a critical dialogue among all its members. This requires a methodological practice and a close connection with the environment, where affection and spirituality occupy a fundamental place.

Two tendencies that are in no way exclusive: the fragmentation of the events that concern life, and the placement of this within a narrative that establishes us as subjects and of which we are totally and fully responsible. At one end the chaos that disperses us and at the other the order that provides unity and meaning. In the first case, a factual truth that manifests itself in action and in our talent to respond to circumstances; in the second a constructed true (but not of the second order) that is cooked in thought and in our predisposition to value what has happened and what awaits us. Both moments mark not only the field of learning, but also that, much vaster and more complex of relearning, through which we realize that some things we know can be seen again from different angles.

But what do we mean by relearning? In the first instance, and as we have already observed, this term serves to clarify the very meaning of experience as an inexhaustible process; in the second moment, it helps us to distance ourselves from a world that, has lost sight of the plurality of the dimensions that make up the human being, opting for a single model of existence: that of the closed individual who is so afraid of the diversity that exists outside him, as that which curdles in the innermost folds of its soul and, finally, allows us to specify the value

of writing as an exercise of reflection, ordering and clarification of ideas about ourselves and transdisciplinarity.

6. Transdisciplinary Subject

By observing with interest what happens to humanity in our time I perceive that, as a society, we have been weak to propose educational processes that allow us to constitute ourselves as integral beings, where our being, knowing and acting in the world starts from our quality as human beings. This profound lack of the subject who receives and then the 'education' it conveys is nothing more than the result of a radically fragmented knowledge of someone who believes he knows more about less and less.

I believe, instead, that the practice of self-knowledge serves the purpose of opening the mind to the greatest mysteries that occur at every moment, allowing an affective relationship with the environment that makes us feel time and space as infinite. This experience enriches our participation in the world by making our different activities at the same time meaningful and pleasant. Thus, without needing to take refuge in any doctrine, our actions can be considered spiritual by simple and direct attachment to the most intimate experience with our interior.

A person with broad relationship capacity is one who experiences himself, through a constant and careful transdisciplinary formation, as a Subject who transcends the seemingly opposite concepts of objectivity and subjectivity.

To reintegration of the human being in the process of knowing and being in the world, Basarab Nicolescu calls it 'transdisciplinary attitude'. From this attitude we affirm that the formation of the Transdisciplinary Subject needs everything that allows him to rigorously attend to his Self-knowledge and cultivation of his Quality of Being, I call this 'transdisciplinary formation' and is the proposal to share in the International Transdisciplinary Chair.

Knowing ourselves as Subjects placed at the center of ourselves can lead to recognizing research as a vehicle for human transformation and sustainability.

It is necessary to feel, in an incarnate way, what poses Nicolescu about the imminence of humanity's self-destruction in case we did not transform the way we behave with ourselves, with others and with the planet, if we only understand it theoretically it is not 'transdisciplinary attitude' but a fraud.

How to be a transdisciplinary researcher? How to become a carrier of hope? How to avoid the manipulation of consciences, spiritual destruction, blindness, and contempt for life?

What are our real questions? If we do not know them, if we do not know who we are, if we do not identify our face, our heart, our soul, if we do not feel our body and do not know what we have it for, nor how it relates to other bodies, if we do not realize how we relate to everything and what keeps us in relation: How to achieve the 'transdisciplinary attitude'?.

Then I see the transdisciplinary researcher as one who recognizes the coexistence of complex plurality and the open unity of knowledge, so he uses a methodology that considers a) different levels of reality of the object and the subject, b) the third included and c) the complexity. But, above all, it is based on an ethic that is the product of his conscious and cosmic vertical attitude penetrated by different levels of Reality. For this is necessary to work to achieve self-knowledge, balance between egocentrism and altruism, contact with ancestral knowledge, in short, to transcend disciplinary limits, to have the experience of living in connection with all that exists. Be situated in 'our own place', a space that, though full of uncertainties, can be occupied with confidence and joy.

I see the transdisciplinary researcher as a trans-cultural and trans-religious Subject, not a new man, but a being that has been born again by the evolution of his consciousness (the best laboratory of the inclusion of the Third and the coexistence of different levels of Reality). That is why Nicolescu says that evolution today can only be a 'revolution of intelligence that transforms our individual and social life into an act both aesthetic and ethical, the act of the revelation of the poetic dimension of existence'[5]. He also states that 'An extraordinary, unexpected and surprising Eros crosses the levels of reality of the object and the levels of perception of the subject. Artists, poets, scientists, and mystics of all times have testified to their presence in the world'[6].

I therefore perceive in Nicolescu's proposal the confidence of a man who still believes in the possibility of a future and who shows us the way to reach it: through 'cosmic and conscious verticality'. In this lies the genuine 'transdisciplinary attitude', beyond all reductionisms.

I have tried to know other transdisciplinary perspectives and not to make Nicolescu's proposal a doctrine. However, in face of others (Zurich, i.e.) I perceive that the spiritual dimension, that in the case of Nicolescu is the axis, that sustains verticality is absent. And it is this dimension, where knowledge emerges, that modern science does not recognize and that has a transdisciplinary character: the geometry of the cosmos among the Aztecs, the vertical structure of the Maya universe in ancient Mexico and in Hindu vertical cosmology, for example.

With a new look that is situated between, through and beyond science, art and spirituality will all be strengthened; there will be a connection with all knowledge, with the 'pure forms', with the spontaneous, with the inner being and with the technique. For all the above, I affirm that the University requires a profound transformation towards transdisciplinarization that implies the ecologization and contextualization of knowledge.

Faced with the contemporary vision of the search for the systematic integration of knowledge, Nicolescu proposes a new way of conceiving thought and education based on four pillars (Learning to do, learning to live together, learning

[5] Basarab Nicolescu, *La Transdisciplinariedad*, *Manifiesto*, Hermosillo: Multiversidad Mundo Real Edgar Morin, A. C., 2009, p. 68.
[6] Ibid, p. 65.

to learn, learning to be) where the quality of what is taught is important, and not the enormous mass of assimilated 'scientific knowledge'[7]. Faced with the idea of promoting new theoretical paradigms, Nicolescu suggests valuing the body; in the face of 'transcendent interdisciplinary research' that seeks new structures and methodologies to define and analyze social, economic and political facets, proposes a strategy based on three axioms: ontological, logical and epistemological; and against the vision of sustainability, which in the definition of Zurich proposes the integration of academic experts and social actors, of scientific knowledge and nonscientists, the perspective of the author of The Manifesto…

Now that thanks to transdisciplinarity I am facing a learning field always open I feel that I can walk free and unified.

It is urgent to establish an adequate relationship between science, art and spirituality within the university. None of them is exclusive to gifted people. We must bear in mind, as Gadner[8] indicates (1983) that we all possess 'multiple intelligences'. The university should encourage them not in separate spaces and with emphasis on abstraction, because Luis Porter is right when he says: While the civilized academic 'thinks' and consciously systematizes his ideas by Medium of abstract signs (symbols), primitives [sic] 'dance' and 'sing' their ideas. (…) these differences can help us in our attempt to relate to education with life and love, in the search for a more suitable pedagogy for these young people and students we would like to see dancing and singing their song around the hall, instead of sitting down to study it at the static desk. We seek an education that privileges the heart over reason[9].

How to reform the institution if mentalities are not reformed first? And how to reform mentalities if the institution is not reformed? There is no logical answer to this contradiction says Morin, but life, he adds, 'is capable of providing solutions to logically insoluble problems'[10].

A university where effectiveness and affection walk together will allow human beings and the entire planet the opportunity to manifest themselves in all their splendor.

7. Trans Subject

What are my real questions? If I do not know them, if I do not know who I am being, if I do not identify my face, my heart, my soul, if I do not feel my body and do not know what I have it for, nor how it relates to other bodies, if I do not realize how I relate to everything and what keeps me in relation: I wonder

[7] Ibid, p. 93-98.
[8] Gadner, Howard. *Inteligencias múltiples*. Barcelona: Paidós, 1983, p. 58.
[9] Luis Porter. 'Eros y la educación: complejidad y ritmo justo' in Guillaumín, Arturo y Octavio Ochoa (eds.) *Hacia otra educación. Miradas desde la complejidad*. Xalapa: Arana editores-Complexus, 2009, p. 321–322.
[10] Morin, Edgar. *La Voie. Pour l'avenir de l'humanité*. Paris: Fayard, 2011, p. 151.

then who am I? Am I always the same? Am I complete once and for all, or like the universe, am I in permanent expansion? What distinguishes me from others? What makes me like the other? How do I relate to reality? How do I perceive? Is there a place for me? What is that place? Do I think, or do things think about me? What does it mean to think? What do I do to realize what I do? How human am I? How do I live my humanity? Do I know myself? How do I know? What is the use of knowing? What do I do to know myself? Do I need to be recognized? What recognition do I expect? How do I show myself to others? How many faces or personalities do I have? Can I be one and multiple at once? How do I live my individuality? How do I live my duality? How do I live my feminine and masculine part? How do I realize what I accept and what I reject? How do I understand wisdom? What do I do to attain wisdom? What does it mean to educate myself? How have I been educated? How do I educate? What education do I need? How do I live spirituality? Am I in touch with myself? Do I live with humility? What is humility? What does it mean to be authentic? Do I connect with the sacred? Am I religious? How do I flow through my actions? How do I commit to society? What do I do to care for mother earth? Why do I want to be Trans-Subject or Transdisciplinary Subject? What are the qualities of a transdisciplinary Subject? What does it mean to live? How do you learn the art of living? Do I live in awe? How can I keep my capacity for wonder alive? How do I use my creative potentialities? How do I limit myself? How to live in the face of the impossibility of living? What is beyond living?

Once I have asked my questions I can walk with them, not to find answers, but always to be in motion as in this instant that, with words that I try to be alive, I share how I visualize The Chair in which all my wanderings are combined: with myself, with the theatre, with the community, with knowledge and with the university.

Since then I have lived moments of great intensity, but one of those that remains stronger in me is that of the night in which, gathered in the Center of Indigenous Arts of the Totonaca region, next to the sacred area of El Tajín, with most of its members sitting in a circle and all with a candle in hand, Basarab said that everyone could have a different culture and a different religion, but that the light was the same for everyone and that made us all equal. At that moment I could fully feel my humanity connected with everyone: the present and the absent. I felt that I was entering the zone of absolute transparency, that I was in touch with the sacred.

From the very moment, I was moved by Nicolescu's statement about the imminence of humanity's self-destruction in case we did not transform the way we behave with ourselves, with others and with the planet, I wanted not only to know transdisciplinarity, but to be and live transdisciplinarially.

It wasn't religion, it wasn't social revolution, it wasn't positive science areas with which I've been involved in one way or another at some point in my

life because I grew up attached to the Catholic religion, I was a follower of Marxist ideas in the time of a university student and my early research work followed the paradigm of classical science which did not allow me to find answers. Instead, I did find them in self-knowledge, in the balance between my egocentrism and altruism, in contact with ancestral knowledge, in the search to transcend disciplinary limits, in the experience of living in connection with all that exists. Situated in these spaces I feel 'in my place', on a path that, although full of uncertainties, I can walk with joy.

The transdisciplinary researcher is a trans-cultural and trans-religious Subject, not a new man, but a being that has been born again by the evolution of his consciousness (the best laboratory of the inclusion of the third and the coexistence of different levels of Reality).

8. Walking with the Transdisciplinarity

When I realized that I was living mechanically both in my work and in my inter and intrapersonal relationships I felt the need for a change in the way I relate to reality. It was then that I had the opportunity to read The Manifesto of Transdisciplinarity, then something extraordinary happened: I met its author, Basarab Nicolescu and began a bond with him that has become an affectionate and stimulating friendship.

Since then I have lived moments of great intensity, but one of those that remains stronger in me is that of the night in which, gathered in the Center of Indigenous Arts of the Totonaca region, next to the sacred area of El Tajín, with most of its members sitting in a circle and all with a candle in hand, Basarab said that everyone could have a different culture and a different religion, but that the light was the same for everyone and that made us all equal. At that moment I could fully feel my humanity connected with everyone: the present and the absent. I felt that I was entering the zone of absolute transparency, that I was in touch with the sacred.

I see the transdisciplinary researcher as one who recognizes the coexistence of complex plurality and the open unity of knowledge, so he uses a methodology that considers a) different levels of reality of the object and the subject, b) the third included and c) the complexity. But, above all, it is based on an ethic that is the product of his conscious and cosmic vertical attitude penetrated by different levels of Reality.

The transdisciplinary researcher is a trans-cultural and trans-religious Subject, not a new man, but a being that has been born again by the evolution of his consciousness (the best laboratory of the inclusion of the third and the coexistence of different levels of Reality). That is why Nicolescu says that evolution today can only be a 'revolution of intelligence that transforms our individual and social life into an act both aesthetic and ethical, the act of the revelation of the

poetic dimension of existence'[11]. He also states that 'An extraordinary, unexpected and surprising Eros crosses the levels of reality of the object and the levels of perception of the subject. Artists, poets, scientists and mystics of all times have testified to their presence in the world'[12].

9. International Transdisciplinary Chair at the University

At the Veracruzana University, since 2010, there are precedents around the transdisciplinary paradigm and where we have counted on the presence of Basarab Nicolescu: seminars, academic bodies, and even a master's degree program and a doctorate program that unfortunately stopped within a year of starting because of what I consider the lack of genuine 'transdisciplinary attitude'.

However, the projects in which I have participated in the Universidad Veracruzana confirm to me the feasibility of implementing University with colleagues from different disciplines with the aim of founding a university dialogue between different knowledges, considering the interior life.

Some questions that must be taking a count for the Chair will be: a transdisciplinary researcher and teacher? How can science and scientific research, the arts and their practices, scientific and traditional knowledge, be made available and in favor of the human being? How to establish an active, permanent, systemic, and meaningful relationship with everything living, a relationship that makes us deploy all the mental, emotional, physical, and spiritual potential that we possess? How to face contemporary mutations? And, accord with Delor's and Nicolescu's proposal: What does it mean to learn to know? How to establish bridges between different knowledge? What place do ancestral philosophies have in university formation? What does it mean to learn to do? And last, but not least: How to detonate creativity? What does it mean to learn to live together? What does it mean to learn to be? How to overcome the tension between the material and the spiritual? How to achieve a comprehensive formation of the human being? How to reach human understanding? How to reconcile effectiveness and affectivity in our actions?

The Chair will have to take on the challenge of creating a process of critical and reflective dialogue around knowledge according to the principles of rigor, openness, and tolerance referents of the transdisciplinary posture. The aim will be that the experiences and knowledge of each of the participants allows them to deepen their professional work and, why not, in their life dynamics. We will try to face the challenge of an always unfinished and open knowledge before a multidimensional reality and feedback on our ways of approaching it through collective, open, and reflective discussion. Each relearning process involves,

[11] Basarab Nicolescu, *op. cit*., 2009, p. 68.
[12] Ibid, p. 65.

when faced with different ways of seeing and thinking about the world, an encounter and disagreement with one's own and the 'foreign'. We learn in difference and from our feeling-thinking-acting.

The Chair will focus on the relationship between ethics and transdisciplinarity, creativity and transdisciplinarity, and tangentially touched on other relevant topics such as ancestral philosophies, spirituality in university education and sustainability. Throughout the session's work will be done to build the 'transdisciplinary attitude' consisting of an open and committed position of participants with the reality of the world, with their own person, but also with the present and future of the knowledge.

A specific recognition derived from Nicolescu is that the purpose of transdisciplinarity is not to eliminate disciplinary knowledge, but to seek to complement and enrich it by building bridges not only between academic knowledge, but with other knowledge not necessarily linked to formal education institutions.

We university students have the task of working with our egos to allow the 'living moment' to emerge, the enrichment of dialogue in a vertical-deep sense, not horizontal superficial. This is a challenge inspired by the spirit of rigor, openness, and tolerance as a guide to the International Transdisciplinary Chair.

Here then is the meaning of The Chair: to recover, through a fortunate concatenation of words, the result of our learning and, through that, to turn to the ethical call of transdisciplinarity: the constant and full monitoring of our actions in the context of a diverse and unpredictable world.

The International Transdisciplinary Chair will include scientists, technologists, humanists, musicians, poets and artists, working on different media and using new technologies, with the aim of founding university dialogue between different cultural visions, including interior experience. It would be about living a wider practice of relating to the world with nature and with all humans. The International Transdisciplinary Chair must have as an urgent task to question the modes of production of knowledge with the emphasis placed on what, how and for what to know.

The International Transdisciplinary Chair will help foster the interest of university professors and researchers in the knowledge needed to go beyond their speciality. Research and teaching in the sciences and humanities currently meets criteria of technical efficiency and economic profitability, without offering a critical look at knowledge, indispensable condition for a necessary distance and to grant meaning to the task of knowledge.

That complex reality is not only that of work and daily subsistence, nor only that the world mass media or internet, nor that of financial markets, nor that of the corrupts dictatorship or pseudo-democratic governments, nor that of the savage crimes that occur daily, as it happens today in Palestine; on the contrary, the complex reality is also that of the tiny acts of courage, solidarity, affectivity, creativity, spirituality, and all that is infinitely small or infinitely large that escape our senses.

How can science and scientific research, arts and its practices, technical and traditional knowledge – all of them products of intelligence and imagination of humankind – be available and beneficial for society?

If the purpose of university knowledge is the elevation of spirit, achieving this requires linking all the knowledge and recognizing that only from the human dimension will the University serve humankind. For a better understanding of the world, the University must overcome the radical disjunction of knowledge across disciplines and establish a bridge between them. The University in the 21st century should prepare persons that can be placed between, across, and beyond their discipline, their culture, their nation, their politics, and their religion.

How can this be possible? The establishment of the International Transdisciplinary Chair is a step in this direction.

Transdisciplinarity, we know it is an epistemological proposal that sees the advent of a human being capable of contending with all that is between, across, and beyond what has been considered Reality.

For this, I assert that for the University to become a multidimensional community requires a profound transformation toward transdisciplinarity, involving the ecologization and contextualization of knowledge.

But it is necessary to recognize that it is not enough to know it theoretically, it is necessary to live it, to make it an incarnate knowledge.

Without making a fatalistic diagnosis, I can say that most of the transdisciplinary projects that did not continue or were deformed in my university was due to the lack of this important aspect: to assume transdisciplinarity as embodied knowledge.

In this way, I propose that the International Transdisciplinary Chair in the University should have as its starting point the conception of a Subject.

Transdisciplinary culture is a prerequisite for a transformation of mentalities. The true spirit of transdisciplinarity goes beyond what is being done now. It not only seeks the unification of knowledge but self-transformation and a new lifestyle.

Shift from the consideration of a problem as if it depended on a single level of Reality and place in the field simultaneously different levels of Reality.

Renounce finding a solution to a problem in terms of ‘true’ and ‘false’ of the binary logic. Also, the solution to a problem cannot be more than temporary reconciliation of opposites, re-likened at another level of Reality where contradictions are manifest.

Recognize the inherent complexity of the problem, namely the impossibility of decomposing the problem into simple, fundamental parts. Replacing the notion of ‘foundation’ for consistency, in this multidimensional and multireferencial world.

It will be necessary to work on methods for awakening and recognizing the vertical levels of all kinds: perception, reality, complexity, nature and sense

of language, silence, energy, and others. The spirit of inquiry cannot flourish otherwise. The University must reintroduce in all the domains of education dimensions of life and, as far as possible, of love. The University must meet the fundamental desires of the students: to enjoy the physical and mental passion for the knowledge and pursue self-transformation.

We must aspire through International Transdisciplinary Chair to reach knowledge where effectivity and affectivity walk together, enabling us, as human beings to manifest ourselves in all our magnificence.

The University should be a space for discussion of the new university ethics. It requires rethinking ethics for universities from Latin America, an ethic that will not put the utilitarian or pragmatic principles ahead of social needs and human sentiments.

How can the University surmount the two large living pressures today, the hyper-privatized by merchandising of knowledge and the hyper-public that demands a much larger public space?

According to Boaventura, it depends on the country project. Neo-liberalism in Mexico devastated the idea of a national project that today is being rebuilt therefore the same must do public university.

It will be necessary to work on methods for awakening and recognizing the vertical levels of all kinds: perception, reality, complexity, nature and sense of language, silence, strength, and others. The spirit of inquiry cannot flourish otherwise. The University must reintroduce in all the domains of education dimensions of life and, as far as possible, of love. The University must meet the fundamental desires of the students: to enjoy the physical and mental passion for research and pursue self-transformation.

The University should stand for, not against, what society demands. The University offerings should not be oriented to serve just a group of society, usually a minority, to the harm of a majority; hence the self-ethics and the communitarian ethic should be the basis of university education based in sustainable principles. This will achieve a genuine social transformation.

We must aspire to a University where effectivity and affectivity walk together, enabling human beings to manifest themselves in all their magnificence.

10. Transdisciplinary Chair at the University

The University TD Chair must have as an urgent task to question the modes of production of knowledge with the emphasis placed on what, how and for what to know.

Hyper-specialization and disciplinary compartmentalization prevent access to broader and related knowledge. Disciplinary teaching is becoming increasingly inadequate, making it essential for cooperation between the different disciplines, between the various centres of production of culture and knowledge, between the different scientific, technical and humanistic knowledge, artistic and spiritual.

As long as the means to contend with complex reality are circumvented, we

will continue to be reduced to a minimum expression of our human potential.

The University will have to respond creatively both to the demands of the labour market and to social needs, to those of its own knowledge and to new forms of relationship.

It will be desirable for universities to have a permanent teacher training program aimed at achieving the transdisciplinary attitude, that is, to live the cosmic and conscious verticality driven by the transdisciplinary methodology.

It would be desirable to create in each university Transdisciplinary Research Workshops that integrate researchers from different disciplines. Efforts would be made, on specific projects, to progressively introduce researchers or creators outside the University, including scientists, technologists, humanists, musicians, poets and artists of high level, working on different media and using new technologies, with the aim of founding university dialogue between different cultural visions, including interior experience. It would be about living a wider practice of relating to the world with nature and with all humans.

Transit, in short, as Boaventura de Sousa Santos proposes from university knowledge to university. That is to say: contextual, transdisciplinary, dialogical and that establishes bridges between science and society when applied in non-commercial and solidary areas (2010).

Knowing ourselves as Subjects placed at the center of ourselves can lead to recognizing research as a vehicle for human transformation and sustainability.

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Systems Transdisciplinarity Chair as Pathway to Fulfill Global 'Social Orders'

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Abstract

This paper shows how modern transdisciplinarity is developing into two main directions: 'transdisciplinarity for scientific research' as well as 'transdisciplinarity for education'. These orientations have individual goals and objectives. The transdisciplinarity for scientific research helps to complete the transformation of the potential for interdisciplinary interaction and the integration of disciplines. Whereas transdisciplinarity for education develops in a wide range – from the formation of tolerance and pluralism in the worldview of students to the training of master's students in a systems transdisciplinary discipline (metadiscipline) at a special university chair. The paper analyzes the reasons why the idea of a mobile transdisciplinary chair in 1997 was not widely adopted. In turn, a rationale is given that, for objective reasons, the idea of a classical transdisciplinary chair can be implemented in interested universities after 2026.

Keywords: *transdisciplinarity, higher education, transdisciplinary chair, sustainable development.*

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1. Introduction

The idea of a transdisciplinary chair was initially proposed by participants of the International Congress 'Which University for tomorrow? Towards a transdisciplinary evolution of the university' (Locarno, Switzerland, April 30 –

May 2, 1997)[1]. The subsequent discussion of this idea at the symposium 'For an international transdisciplinary chair' (March 21–22, 2024, CIRET) demonstrates the increasing responsibility of universities for the development of society. To ensure the success of the transdisciplinary chair, it is necessary to identify the reasons that have limited its effectiveness in 1997. To ensure the successful implementation of the idea of a transdisciplinary chair, it is necessary to identify the reasons that limited its effectiveness in 1997. It is also necessary to recall that in the international transdisciplinary community there was an idea of a classical transdisciplinary chair, which also received its development. In our case, the idea of a classical transdisciplinary chair at interested universities will be examined in detail. At such chairs it is planned to train master's students in a special metadiscipline – systems transdisciplinarity. By studying a new specialty, students will receive the necessary theoretical training and practical skills to solve high-threshold problems of modern society, which include problems of sustainable development.

2. Idea of a Mobile Transdisciplinary Chair in the Direction of 'Transdisciplinarity for Scientific Research'

The idea of the 1997 transdisciplinary chair emerged from the seminar 'Interdisciplinarity in Universities' (Paris, September 7–12, 1970), which raised two basic directions of transdisciplinarity[2], namely, 'transdisciplinarity in scientific research' and 'transdisciplinarity in education'.

Within the scope of 'transdisciplinarity for scientific research', as announced by Jean Piaget[3] and later actively developed by B. Nicolescu[4], it is assumed that transdisciplinarity should be the highest form of natural integration of disciplinary discourses, scientific and artistic cultures. The goals of this direction are achieved through the following activities:

- forming actively subdisciplines that provide integration and syntheses of knowledge of complementary disciplines within a platform of basic discipline (such as economics, ecology, etc.). For example, the ATLAS is working towards

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creating a subdiscipline that provides integration and syntheses of knowledge of complementary disciplines within the platform of engineering discipline[5];

- conducting transdisciplinary research. For example, creating transdisciplinary knowledge producing teams (TDKPTs) based on team science[6];

- implementing transdisciplinary innovations (special curricula) to develop general cultural competencies in students during their education at the universities. At Clermont Graduate University (CGU), for example, graduate students must complete a T-Course (transdisciplinary course) during the first two years of their curricula[7].

Such activities are expected to enhance students' cultural awareness, tolerance, and openness to knowledge from other disciplines. Consequently, in the context of the 'transdisciplinarity for scientific research', universities do not require special institutional forms such as a transdisciplinary chair. This conclusion aligns with the organizational thesis presented in the 'Document synthesis' of the International Congress 'Which university for tomorrow? Towards a transdisciplinary evolution of the University', Locarno, Switzerland, 30 April – 2 May 1997[8].

Since transdisciplinarity is not a new discipline, the creation of new 'transdisciplinary' chairs is out of the question. On the other hand, it is highly desirable to organize transdisciplinary research seminars in a few pilot universities, which would become real centers of excellence.

It should be noted also that the direction of 'transdisciplinarity for scientific research' has an *evolutionary character*. Therefore, it does not require *unambiguous results* of transdisciplinarity development to be achieved by a *certain date*. This circumstance allows us to assert that various elements of the 'transdisciplinarity in scientific research' as a direction are successfully implemented and will continue to be improved within the framework of modern universities. However, in this case, it is appropriate to ask the question whether it is reasonable to expect an economist, ecologist, or sociologist, who possesses general cultural competencies, a high level of tolerance, and openness to knowledge from other disciplines, to solve sustainable development problems within a specific timeframe. It is unlikely that they would be able to do so.

Here is a simple example. It is logical that when we need to cure a sore tooth, we seek the assistance of a dental professional. We expect that this dentist has specialized dental training and access to advanced dental technology. We are strongly opposed to having our teeth treated by a highly cultured and tolerant

[5] https://theatlas.org/index.php/transdiscipline, consulted on 1.05.2024.
[6] Lotrecchiano, G., Mallinson, T., Leblanc-Beaudoin, T., Schwartz, L., Lazar, D., & Falk-Krzesinski, H. (2016). *Motivation and threat indicators for collaboration readiness in knowledge generating teams (KPTs): A scoping review and domain analysis*. Heliyon, 2(5).
[7] https://my.cgu.edu/transdisciplinary/, consulted on 1.05.2024.
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environmentalist or economist instead of a dentist. However, when seeking solutions to the challenges of sustainable development, we often turn to professional economists and ecologists rather than specialists in solving wicked problems. This may be due to the fact that modern universities do not provide training for such specialists.

3. Idea of a Transdisciplinary Chair in the Direction of 'Transdisciplinarity for Education'

The second direction of transdisciplinarity development, which was announced by Erich Jantsch and later actively developed by M. Sommerville (Australia, Canada)[9] and Mokiy (Russia)[10], it is called 'transdisciplinarity for education'. This direction is intended to address the problem of training such specialists (systems transdisciplinary generalists). It is supposed that within this framework 'Transdisciplinarity should provide the coordination of all disciplines and interdisciplines based on a generalized axiomatics and an emerging epistemological model'[11]. This fact indicates that the bearer of 'generalized axiomatics and emerging epistemological model' should be a special metadiscipline (systems transdisciplinarity). This metadiscipline will have all the attributes of a classical discipline that condition scientific rigor, which involves the following requirements:

- philosophical foundation (basic axioms of Unicentrism);
- theoretical concept (the image of the General order, which determines the unity of the world);
- methodology (transdisciplinary method and research procedures);
- transdisciplinary language (description of logical-geometric models of spatial, temporal, and informational units of the general order, as well as descriptions of logical-semantic models of research objects), etc.

The emergence of metadiscipline creates a need for a new institutional form, which is a systems transdisciplinary chair. It is important to note that this

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[9] Sommerville, M. (1991). *Transdisciplinarity – The Wave of the Future: Building the Foreshore*, Keynote Address, *UNESCO*, International Symposium on Interdisciplinarity, Paris, France. April 1991; Sommerville, M. (1998). *Transdisciplinarity, building a theoretical framework*, UNESCO, Division of Philosophy and Ethics, Symposium 25 to 29 May 1998. Retrieved from http://unesdoc.unesco.org/images/0011/001146/114694eo.pdf.

[10] Mokiy, V. S. (2019). „International standard of transdisciplinary education and transdisciplinary competence". *Informing Science: The International Journal of an Emerging Transdiscipline*, 22, 73–90. DOI: https://doi.org/10.28945/4480; Mokiy, V. S. (2020). *Systems transdisciplinarity as a metadiscipline.* i2Insights. https://i2insights.org/2020/10/27/systems-transdisciplinarity-metadiscipline/#more-16766.

[11] Jantsch, E. (1972). *Towards interdisciplinarity and transdisciplinarity in education and innovation. Interdisciplinarity: Problems of teaching and research in universities*. Paris. OECD Publ, 99, 105–106. https://archive.org/details/ERIC_ED061895/page/n101.

circumstance gives the direction of 'transdisciplinarity for education' a *revolutionary character*. Wicked problems (problems of Sustainable Development) are existential (essential to life) problems of modern society. Therefore, such problems must be solved *with certain results by a certain date*.

However, this does not mean that all universities in all countries should start training systems generalists at systems transdisciplinarity chairs. The main task of universities remains unchanged – to provide the life and activity processes of society with disciplinary specialists capable of solving people's everyday problems. But the global 'social order' to solve the problems of Sustainable Development can be fulfilled if the training of systems transdisciplinary generalists will be realized at the systems transdisciplinarity chairs only in the leading universities of different countries.

The limited number of generalists is conditioned by the peculiarity of their practical activity. Such specialists will:

- successfully play the role of transdisciplinary facilitators in teams carrying out transdisciplinary research;
- reinterpret sustainable development issues and propose ways to effectively address them based on acquired knowledge and competencies;
- and finally, they will be successful negotiators in international expert teams of similar generalists from other countries; this will allow international expert teams to offer effective solutions to sustainable development problems based on a common (international) level of professional training, but at the same time taking into account national interests.

The creation of systems transdisciplinarity chairs as a response to the need to train a limited number of students at the master's or postgraduate level in a framework of scientific discipline traditional for the university will allow removing the stigma of 'marginal direction' from transdisciplinarity.

4. Stages of recognition of transdisciplinarity as a metadiscipline

Endowing transdisciplinarity with the traditional attributes of scientific discipline – philosophical substantiation, concept, methodology, technological solutions, it is possible to organically integrate it into the existing classification of scientific directions and scientific approaches. In turn, the creation of textbooks, manuals, training programs, as well as the organization of special training and retraining of teachers will allow us to organically integrate this transdisciplinary metadiscipline into the educational process of universities. Thus, this will make it possible to change the attitude towards the transdisciplinarity of academic researchers and practitioners as a marginal experience not integrated into the structure of universities. Furthermore, it will also help to complete the evolutionary stage of higher education.

By combining the events described in this paper with the systems transdisciplinary model of the temporary unit of order, it was possible to determine

the important development parameters of the transdisciplinary metadiscipline (see **Figure 1**).

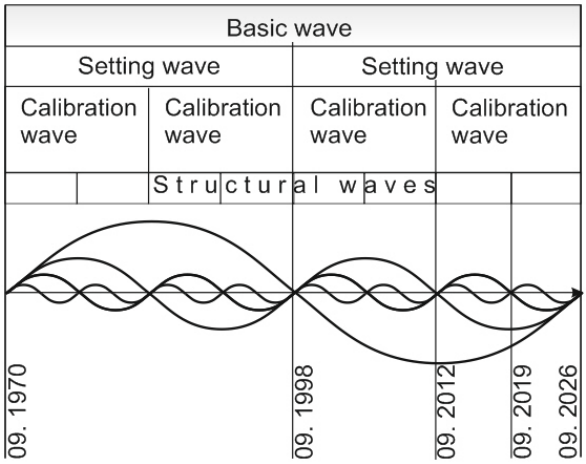

Figure 1. *Systems transdisciplinary model for the development of Idea of a transdisciplinary chair in the direction of 'transdisciplinarity for education'.*

For a proper understanding of the model, it is necessary to give short explanations. A Basic wave is a depiction of complete duration of development of objects or functional ensemble of objects. A Setting wave is a depiction of duration of inevitable stages of development of object or functional ensemble of objects. A Calibration wave is a depiction of periods, which differentiates logical combination of basic stages (moments) of development of the object or functional ensemble of objects. A Structural wave is a depiction of periods, which differentiates logical combination of current events of development of the object or functional ensemble of objects. Basic wave and Setting waves are carriers of a hard development program. Calibration waves and Structural waves are carriers of a soft development program[12]. Within the framework of a soft development program, current events that are associated with the real-life are formed and take place. Within the framework of a rigid development program, significant events are formed and occur that synchronize the goals and results of the events of the soft programs. Seminar on Interdisciplinarity in Universities, Paris, September 7^{th} – 12^{th}, 1970 is an event that lays down the potency, goals, and meanings of all four types of waves – the hard and soft programs of development of transdisciplinarity in education (metadiscipline), the meaning of which was laid down by

[12] Vladimir S. Mokiy, Tatiana A. Lukyanova. (2019) „Imperatives of Sustainable Development from the Perspective of Systems Transdisciplinary Approach", *Transdisciplinary Journal of Engineering & Science*, vol. 10. https://doi.org/10.22545/2019/0127; Mokiy, V. S. (2021). „Information on the time. Systems transdisciplinary aspect". *Universum: Social Sciences*, 1–2 (71). https://doi.org/10.32743/UniSoc.2021.71.1-2.30-39.

G. Michaud and E. Jantsch.

The symposium 'Transdisciplinarity: Stimulating synergies, integrating knowledge' took place in Royaumont Abbey (France) in May 1998 – it was no ordinary event. This event characterized the end of the first rigid development program (Setting wave). Therefore, it was proclaimed at this symposium that transdisciplinarity is conceived as 'meta-methodology'. This definition of transdisciplinarity has given meaning to the second Setting wave (hard program). In addition, it occurred in October 1998, when the World conference was held in France – Higher Education in the Twenty-First Century: Vision and Action. At the conference, the need to use transdisciplinarity in the training of university students was officially announced.

September 2012 is the critical point for the second wave of the hard program. Thus, it was in September 2012 that the initiative and editorial groups in the United States entered the final phase of the work in preparation for the publication of the report 'ARISE 2' (Advancing Research in Science and Engineering). This report already provides practical recommendations for adapting transdisciplinarity to the structure of higher education as a new discipline. The last Supporting wave was launched in September 2019. The peculiarity of this wave is that it completes the action of all long-term rigid and soft programs of transdisciplinarity development as metadiscipline. Therefore, the meaning, content, and results of real-life events in this seven-year wave, related to the development of transdisciplinarity, as meta-disciplines are predetermined. In this context, the appearance of this article is a predetermined event of a hard program (Basic wave). According to this model it can be assumed that the urgency to solve the multifactorial problems of modern society will contribute to the fact that transdisciplinarity by September 2026 will be adopted in the structure of higher education as a metadiscipline.

5. Conclusion

In conclusion, it can be argued that both main directions of transdisciplinarity development serve important but distinct roles in modern universities.

The direction of *'transdisciplinarity for scientific research'* does not require the creation of transdisciplinary chairs to fulfill its activities. This direction has already been successfully implemented in the structure of higher education in various forms of transdisciplinarity institutionalization. These forms are able to self-develop and accumulate experience of transdisciplinary research and transdisciplinary innovations during the academic activity of universities.

The direction of *'transdisciplinarity for education'* requires the creation of a systems transdisciplinarity chair as a form of institutionalization, traditional for the disciplinary structure of universities.

Establishing this form requires a significant amount of organizational work ranging:

- from convincing higher education organizers, university rectors, and funding organizations of the urgent necessity of establishing a specialized chair into the disciplinary structure of universities, to the creation of a full-scale textbook on systems transdisciplinarity;

- from forming an international standard of higher education in the specialty of 'systems transdisciplinary generalist' to the training of teachers in the new metadiscipline;

- from creating positive attitudes towards the new metadiscipline among university faculty members to sensitizing disciplinary specialists, policy, and government officials to its practical capabilities.

Starting from 2023, this organizational work is being carried out through two international transdisciplinary projects in higher education and sustainable development (2023–2030). These projects are carried out by the Institute of Transdisciplinary Technologies (ITT) in collaboration with International Center for Transdisciplinary Research (CIRET), as well as by teachers, academics, and researchers from different countries, who have provided the necessary informational and other support[13]:

- forming a systems transdisciplinary worldview in higher education (2023–2026)[14].

- developing philosophical and conceptual methodologies for planning, predicting, and managing sustainable development of liberal stage society (2023–2030)[15].

Successful implementation of these projects will enable interested universities in different countries to start training systems transdisciplinary generalists as early as in 2026. Further, by 2030, these specialists will be able to utilize the methods and technologies necessary to effectively address sustainable development challenges.

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The author declare that he has no conflicts of interest with respect to the research, authorship, and/or publication of this article.

Any errors or omissions are his own.

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A Transdisciplinary Chair to Save the University

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Abstract

The following presents a critical examination of the changing role of universities within the context of a misunderstood contemporary globalist society, where economic and techno-scientific imperatives increasingly influence academic institutions. Traditionally, universities were autonomous entities dedicated to the production and transmission of independent knowledge. However, the rise of management sciences, driven by market demands and aligned with economic doctrines, poses a significant threat to this independence. The article argues that universities risk becoming mere providers of market-driven skills, thereby compromising their fundamental role as spaces for critical thought and fundamental research. To counter this trend, the concept of a transdisciplinary chair is proposed as a means to reclaim the university's mission to explore beyond the dominant socio-economic paradigms.

Keywords: *transdisciplinarity, University autonomy, management sciences, economic influence, knowledge production.*

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1. Introduction

What is the role of universities in today's thermo-industrial, techno-scientific, globalist society? Traditionally, the university was a free zone dedicated to the production and transmission of knowledge, in a spirit of complete independence from the political and religious powers that surrounded it. Any intrusion on this independence was considered an extremely serious insult.

It is by no means certain that this independence is scrupulously respected

today, even in countries whose authorities claim to care about freedom of opinion. It's not just a question of the intrusion of police officers armed with truncheons in search of students who resist the dominant *doxa* and are therefore supposed to constitute a danger to public order. More subtly, it's about the subversion of the university by the dominant interests in the society in which it finds itself.

In France, these interests first manifested themselves in the proliferation and development of the '*grandes écoles'*. At the outset, in the early 19th century, the aim was to meet the needs of public authorities, particularly for highly qualified engineers. Following on from the engineering schools came the 'écoles de commerce', which became *business schools* under the pressure of Anglo-Saxon influence. Today, these schools strive to meet the demand for 'talent' – in other words, skills – from companies. Their original aim is not to produce independent knowledge.

Faced with this competition, while at the same time seeking to supplement their public financial funding, universities have in turn come up with programs to meet the demands of business. One exemple in France is the *Instituts universitaires d'administration des entreprises* (IAE). All in all, we can see that disciplines linked to business demand (economics, law, management) have come to clearly outweigh traditional academic disciplines. The objective is to prepare students for the job market, which is an entirely honorable one. It remains to be seen whether this objective still meets the university's initiative purpose, which is the independent production of knowledge.

But that's not all. To ensure their respectability and competitive *ranking*, the 'grandes écoles', and in particular the *business schools,* have been granted the right to award diplomas hitherto reserved for the academic world: master's degrees and doctorates. They are now required to 'do research', the value of which is measured by the number of foreign (i.e. largely from United States) lecturers, the number of articles published in peer-reviewed journals, the number of chapters in academic books, the number of books published by their lecturers, and so on. We will examine more on this later. So, in this dual system, *business schools*, to put it simply, strove to give themselves an academic and scientific image, while universities, for their part, strove to meet the demand for 'talent' demanded by the market.

But it's safe to say that this is a major danger for the university. Implicitly, it is being asked to serve society as it is, and no longer, or no longer only, to think about it independently and, if necessary, critically, by prejudging what it might become beyond the majority *doxa* and the interests that dominate it.

2. Should Universities Serve Economic Religion?

This calls for an in-depth analysis. First of all, dualism is the spirituality of our time. This dualism is twofold: dualism between soul and body, and dualism between man and the rest of the world. The specificity thus attributed to man

authorizes him to use the world as a quarry and a dumping ground, for his own use, in accordance with what he deems useful. If we consider that a society cannot do without spirituality, this is the religion of our time, as traditional religions find themselves more or less marginalized, or even rejected, by modernity. This new religion enjoins man to find fulfilment in the possession and consumption of ever more sophisticated goods produced by his industry from raw materials borrowed from his terrestrial environment.

Such a religion takes shape in dogmas – in other words, in postulates held to be true – in founding texts and a doctrinal corpus, and finally, in the existence of a clergy charged with explaining to the multitude the rules of behavior which, according to them, must be respected. This doctrine has a name: 'economics'. Economists claim to gather and express scientific knowledge, and it's true that they most often bow to the rites of scientificness, understood as an approach tending towards objectivity and presenting itself, in its classical sense, as subject/object dualism, even if this is an approach condemned by quantum physics over a century ago. However, beyond this approach, which is intended to be rational, economic knowledge unfolds in a space that is that of the dualistic spirituality on which modernity is founded. Science thus joins myth, and the myth is that the earth's environment must be subordinated to the designs of mankind, and that this design necessarily consists in multiplying the artefacts that are supposed to have value. It should come as no surprise, then, that economic knowledge, as an expression of the spirituality of our times, has become the foundation of political action and, if there is such a thing, of its social project.

If we accept this reading, which pious believers are probably not ready to admit, 'management sciences' are to 'economic science' what the catechism is to the Gospels: the expression of a set of dogmas and prescriptions designed to ensure salvation, be it the salvation of the 'manager' confronted with the reality of the company in which his action takes place, or that of the consumer confronted with his drives for pleasure. This catechism is made up of the results of 'management science research' and taught in the kind of seminars that *business schools* are in fact. In this way, what contemporary humanity must accept as true is disseminated and transmitted. Let's continue.

3. Are 'Management Sciences' Scientific in Nature?

Management sciences,' make a strong claim to being 'scientific'. As we have said, this quality results from their kinship with the economic sciences. Having said this, they are based on a paradigm whose implicit axioms need to be clarified. The first, which they share with the dominant economic discourse, is utilitarianism, as the foundation of human action, at least in the field of economics. The second is the principle of efficiency. In other words, the search for the most effective means of reducing the costs of a given operation and maximizing the expected results in terms of utility. This research focuses on the organization

and management of companies, since management science is more concerned with companies than with public and non-commercial services, although the latter are increasingly being invited to draw inspiration from it. It is then broken down into a multitude of specialties, ranging from 'commercial policy' to 'human management', which form the curriculum of 'écoles de commerce', which have become '*business schools*' in the context of liberal globalization, i.e. in the United States, where they must find their place.

What is singular is that management science, as knowledge applied to a certain purpose, never questions *a priori* the relevance and legitimacy of that purpose. It is seen as a given that does not need to be questioned, whether from a political, ethical or ontological point of view. Whether we're talking about the arms trade or the production of plush toys, the problem is posed in the same way. However, we may well wonder whether this apparent neutrality with regard to the ends pursued does not conceal a relationship of subordination to this end, as expressed in terms of necessary efficiency. In other words, by refraining from taking a critical view of these ends, the management sciences have adopted an ideological perspective and a worldview that constitute a definitive and self-evident framework.

We won't discuss here what is meant by scientific knowledge in the case of 'economic science', and how this fits in with a positivist, dualistic vision that has today been completely ruined by the scientific developments of the last century, particularly in the fields of physics and biology, where we know that the observing subject cannot be separated from the observed object, and even that the observed object is a construct of the observing subject. Suffice it to say that the 'management sciences', as an extension of economic discourse, follow the same positivist, dualist perspective, confusing description with a prescription. They are thus confronted with the need for a double questioning, which can be formulated as follows:

- The first would be to take a critical look at the founding assumptions of the discipline, and in particular at the validity of utilitarianism as it underpins our thermo-industrial society, and more generally at Western ontology and ethics as they form its spirituality. This would be a legitimate scientific approach, since the constant questioning of generally accepted theories and the conceptual framework within which they are expressed is the very foundation of the progress of knowledge. Galileo, for example, recognized the need to question the heliocentrism that had been accepted since Greek antiquity, thereby challenging a worldview that seemed to be taken for granted, and getting into trouble with the political and religious authorities of his day.

- The second would be to go beyond the questioning of the founding principles that could legitimize the discourse of 'management sciences', and attempt to free ourselves from the concrete conditions – material and institutional – currently imposed on research. In other words, to ensure the independence of management research from what is expected of it in the economic and societal context

in which it exists and is even possible. It's safe to assume that many researchers are indeed driven by such a critical approach, and that their honesty and clear-sightedness cannot be called into question here. What is problematic, however, is the context of their professional careers, to which they are quite legitimately attached since this is the career path they have chosen.

4. The 'Obstacle Course' for Young Doctoral Students

Business schools – and the universities they have become – are not educational institutions that are neutral in relation to the economic context that led to their creation and development. If such was their development, it was because the 'economic system' needed them to procure the 'talents', i.e. skills, it required. The student who enrols in a *business school*, with its expensive tuition fees, does so not for the love of knowledge, but in order to be able to put forward a recognized diploma and, possibly, to have certain 'skills' that will enable him or her to hope for a successful professional career. As for the young doctoral student, he cannot remain indifferent to his professional future. To do so, he or she must embark on a veritable obstacle course: publish in peer-reviewed scientific journals, if possible ranked according to criteria borrowed from the Anglo-Saxon world, participate in collective works by writing a chapter, and present 'papers' at symposia, which he or she will carefully include on his or her *curriculum vitae*, in the knowledge that this is the real objective of some of these symposia.

He is strongly encouraged to do so by the school in which he teaches and conducts research. The school's future ranking is at stake, and consequently the funding from which it can benefit, including the cost of enrolment. In a competitive world, this is perfectly normal. The only difference is that, under the guise of new theories that are more or less ephemeral fashions, this institutional mode of operation encourages the flattest conformism, albeit one that is always claimed to be innovative. Added to this is the problem that universities, which should be temples to knowledge, with a view to its enrichment and transmission as a cultural vector, find themselves in competition with business schools, particularly when it comes to financial funding. They must therefore adopt, at least marginally, the ways and means of doing so. The result is a two-pronged movement: universities, simply to survive, are drawing closer to *business schools*, with the creation of university business schools while business schools, anxious to ensure their academic credibility, are offering master's degrees and doctorates using terminology borrowed from universities[1].

All this raises several questions:

1. Insofar as they provide companies with the 'managers' they need, 'management sciences' contribute to the stability of the system and its identical reproduction. They help maintain the performance expected of companies, but

[1] cf. Lindsay Waters, *L'éclipse du savoir*, Éditions Allia, 2008.

above all, as Bourdieu would say, they contribute to the reproduction of the values that drive it. Graduate students, ready to seek employment, are expected to adhere to certain principles of action. Twenty years later, it is on the basis of these same principles of action that he will have succeeded in his professional life and that he will recruit those who, after him, will ensure the future, on bases that will therefore be more or less unchanged.

2. The very scientific nature of the 'management sciences' deserves to be discussed. For knowledge to qualify as scientific, it is not enough to survey the academic 'literature' published in peer-reviewed journals on the problem under examination, and then present the results of a generally very limited survey, always accompanied by supposedly convincing statistical precautions, to produce a work that would be truly scientific. The scientific approach, in fact, does not consist in accumulating details. It is also, and even primarily, about questioning what is held to be true, and questioning the meaning of the results obtained on the basis of knowledge that cannot be merely academic, but must appeal to the vision of the world, of cultural essence, in which it takes place. So, to look no further, it was the utilitarian presupposition that was proposed to them, in a way that remained more or less unchanged despite the climatic setbacks they were observing elsewhere, that the protesting students of certain 'grandes écoles', in France and elsewhere, sought to challenge with their manifestos.

3. Knowledge relates to a reality that resists it. It constantly strives to build up a coherent discourse, but at the same time needs to reach conclusions that are relevant to this reality, which ultimately constitutes its object of observation and analysis. And the resulting dissonance must alert the researcher to the fact that it is sometimes necessary to call into question certainties that once seemed well established. These certainties are to be sought not only in the academic corpus itself but also, and perhaps even primarily, in the presuppositions on which it is based. However, a researcher in the 'management sciences' who set out to question the very relevance of the economic system to which they contribute would not be guaranteed the funding he or his 'lab' would survive for very long.

5. An Ethical and Professional Choice

Management researchers are well aware of this. Management sciences are largely responsible for improvements of all kinds, whether in the organization of work or in the side effects of corporate activity on its human, social and environmental environment. Congresses and symposia follow one another, extolling the efficacy of the 'liberated enterprise', the 'agile enterprise' or the 'circular economy' (blithely confusing the object of study with fashion, media gesticulation and opportunities for consulting firms), or the merits of corporate social responsibility (CSR). Increasingly elaborate legal and regulatory texts are supposed to be imposed on company directors. Congratulations are in order, and progress

is widely reported. Good for them. Researchers, on the one hand, and practitioners, on the other, see the benefits of their efforts. Having said that, it's important to assess their impact. And perhaps because we haven't got to the heart of the matter, it's not certain that quality of life at work today is always better than it was in the past. While the physical workload has probably diminished overall, the mental workload, on the other hand, has very often increased considerably, to the point of causing 'psychosocial risks' that did not exist before, or were less visible. Similarly, for obvious communication reasons, any progress, however small and debatable, is immediately highlighted as a considerable change. And finally, it may be asked why, despite all this effort and progress, economic productivity has not risen considerably, and why human happiness, as measured by Richard Layard[2], has been in marked decline for at least the last twenty years.

And so, while 'management sciences' undoubtedly contribute to economic and social progress, we must ask ourselves whether they are also not a guarantee of it. It's worth noting here that certain subjects that could open up the debate are not given priority in the training programs of future managers: the practice of social relations, the radical perspectives resulting from the work of the IPCC, despite some progress on the ecological dimension, they are not among the dominant subjects at the French '*grandes écoles*.' Managerial discourse thus tends to be confined to a *doxa* that is consistent with the expectations placed on it by the companies that finance the institutions where it is taught, but does not necessarily constitute adequate preparation for a world that is no longer one of happy globalization and assured growth.

The 'management sciences' discourse will therefore have to evolve much more than it has in recent years. It will have to escape the dominant *doxa* in the village and go out into the vast forest in search of the elements that will enable it to think differently, escaping both the conditioning that overwhelms it and the clichés in which it holds itself. He will have to focus his vision on something other than the commercial enterprise that today constitutes his privileged object of study and take an interest in other forms of human action and other forms of ethics than that constituted by utilitarianism. On this condition, and only on this condition, can it cease to contribute to the reproduction of the identical, and move towards a contribution to a future that cannot be defined today.

In the absence of such a transformation, business schools and management research present themselves as conservative forces through which the founding values of the kind of secular spirituality that drives liberal globalization are maintained and transmitted. Of course, their leaders and backers can only deny this. On the contrary, they like to emphasize the need to adapt the institutions they manage to the new situation represented by the need to take account of new approaches such as CSR or the 'circular economy'. However, it is fair to ask whether this is not an effort to keep things as they are: 'change everything in order

[2] Richard Layard, *The Price of Happiness*, tr. fr. Armand Colin, 2007.

to change nothing'[3], at least on the essentials. Management research and management education, in other words, are rigorously held within the framework of the convictions that drive Western civilization. It's all about knowing how best to produce, in line with the *doxa of* productivism and consumerism. The only way to escape from this confinement is to be convinced that it is leading humanity to disaster, and that there are other ways of living than the one that is destroying the planet.

6. The Major Risk of Instrumentalising the University Institution

The major danger for the university, then, is that of being trapped, as an institution, within the confines of today's globalist society. It has to find funding, and funding is largely under the control of the money powers. Hence the programming of courses based on their economic and social usefulness, leaving a large part to the skills expected by companies. Fundamental research, carried out in complete independence, is thus subordinated to the priorities imposed on the university by its funding structure. As a result, the university is no longer a 'temple of knowledge' and a place of free research, but first and foremost and increasingly a provider of skills tailored to the expectations of future employers.

Universities are thus obliged to comply with the skills repository to which they are being asked to respond. It is required to train lawyers, economists or managers, i.e. experts in clearly identified specialties that evolve only through increasing specialization: marketing experts or management controllers. This compartmentalization means that researchers are unable to go beyond what is taken for granted, regardless of what they think. The institution is reduced to a place for reproducing what already exists. Transdisciplinarity rebels against this compartmentalization and enclosure in the commonly accepted existing. Its aim is to open windows onto what lies beyond the village, and therefore beyond the university institution. Such would be the ambition of a transdisciplinary chair, whether in a university or in any other place recognized for ensuring freedom of the mind.

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[3] As Guiseppe Tomasi de Lampeduza says in *Le Guépard*, Points, 2007.

TRANSDISCIPLINARY APPROACHES IN LAW

In Search of the Foundations of New Human Rights: Neurorights and the Right of the Soul – Two "Mirrors" of the Same Reality in the Age of Artificial Intelligence (AI)

Motto: *Nothing is stronger than an idea whose time has come (Victor Hugo).*

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Abstract

It is said that everything is interconnected to each other in the universe, and Artificial Intelligence (AI), a "spider" domain that will be found "in all and everything", demonstrates to us every day this need for unlimited thinking, interference, interconnection and integration "of all disciplines, eras and minds". Consciously or not, we are "immersed" in a new reality, in a kind of "whirlwind" of globalization, interconnectedness, transdisciplinarity, innovation and the fulminant evolution of technology, which we often try to slow down or at least to understand its meaning, to accept it and to enter openly into its sphere of action, because this is the way, this is our future, of humanity. The evolution of technology is seductive. But what about the essence of humanity, the inner ego, the aura or the energy field, elements untouched by the legislative area, but only by that of science? What about artificial intelligence that makes vulnerable mind and mental integrity through the impermissible alteration of thoughts, which can alter, remove or recover people's memories, as well as manipulate their thoughts? In this context, through this study we propose an inter-and transdisciplinary dialogue, through which to discover possible foundations of potential new human rights, neurorights and the right of the soul in response to the unprecedented advance of artificial intelligence. Thus, we aim to open a new time space for analysis and in globo vision on the human being and its rights, contributing to the completion of the universe of institutional and legal proposals and mutations already started at international level. It requires a mosaic approach and the courage to resize the "legal architecture" regarding human rights, through which the legislator to attach special importance to the spiritual area of the human being, the road being already opened through the current inter- and transdisciplinary doctrinal debates.

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1. Introduction

The core of our research is to deepen the brain-soul dualism and analyze it "with different lenses", so as to discover the foundations of new human rights designed to protect the brain and the soul of man facing the risks posed by unregulated or regulated AI in a superficial manner.

Although brain cells are visible, consciousness, inner feelings, emotions, energy, remain invisible, which does not make them less important. This dualism is also reflected on the new regulations to which we aspire. If we start from the premise that the "mind" as described by Descartes, identifies with what we call the "soul", from Leonardo Da Vinci's claim that the soul is in a deep area of the brain, or from the research of neurosurgeons and neurologists who claim that the essence of the soul is in the central part of the brain, and not at the level of the heart, we will of course stop at the need to regulate neurorights, as an "umbrella" term for protecting the mind, in the sense that brain activity forms the basis of our identity, cognitive states, thoughts and emotions. But is the brain the center of our identity?

This research aims to eliminate this identity and "mind-soul" overlap established in our culture, in the sense that the soul, no matter where it is located, cannot identify with thought or consciousness, but can only "shape" them, being in symbiosis with them and shaping the "inner, intimate universe" of the human

being. This "locus internus" requires a higher degree of regulation and protection, through a new and profound reflection and emphasis on human rights and freedoms, reconceptualized both from the perspective and the need for regulation of neurorights and a right of the soul. Thoughts and consciousness, together with the "soul", which represents the principle of life, the echo of thoughts and consciousness, shape the personality and uniqueness of man. In any case, the philosophy of mind and soul is difficult to penetrate the legal world towards an ideal legal foundation, the boundaries between mind and world not being clear either.

The question remains whether society is ready to cope with neurotechnology, artificial intelligence, machine learning, all of which have a major and multifaceted impact on our rights and freedoms of thought, on our conscience. How will we manage to build such legal regulations closer to human conscience? What is the real dimension of thought, consciousness, self-determination, memory, desires, faith, creation, emotion and inner experiences? Are thought and conscience "connected" to the soul? Can we speak of a "divine spark" in the "neural map" when we are created "in the image and likeness of God"?

Therefore, "stretch" our minds to wider horizons and "open the doors" to new innovative and necessary rights, regulations, disciplines or branches of law, such as neurorights or the right of the soul, without "diluting" the central idea of human rights and freedoms, but only "adding substance and pigment" to them, reaching the "high notes" of understanding by refining ideas.

2. A Plea for Love, Faith and Conscience – A Last Refuge of Human Identity and Essence in the Face of AI

Although seduced by the progress of AI, by the power to crystallize new visions and by the blurring of the boundaries of real possibilities, yet "*love and light must not be lacking in the shaping of the age of AI by man*"[1].

This *motto* will also filter our arguments throughout the research. Why? Because "light" is pure and unadulterated conscience, "revealed" by interests and superficiality, and love is that positive vibration deeply rooted in our biological constitution, it is the ultimate emotion, as researchers point out. In this regard, Barbara L. Fredrickson, from the University of North Carolina, and one of the founders of positive psychology, points out that positive emotions, such as gratitude, joy, contentment, inspiration and especially love, mean much more than just an absence of negative emotions. The accumulation of these emotions is reflected in the mood, and the repetition of this state of mind ultimately changes mental moods and character traits. Moreover, in the light of the latest research conducted in a neuroscience laboratory at Princeton University, we can consider a "brain synchronization and harmonization" at the moment of communication between

[1] Ovidiu Predescu, *Implicațiile Inteligenței Artificiale în domeniul juridic și nu numai*, *[Implications of Artificial Intelligence in the legal field and beyond]*, https://www.juridice.ro/essentials/6349/implicatiile-inteligentei-artificiale-in-domeniul-juridic-si-nu-numai, consulted on 1.05.2024.

two people, in the sense that at the moment of perfect communication and resonance, the brains of people engaged in conversation adopt very similar neural configurations, activating the same brain areas in both brains, the synchronization being extremely high in the most emotional moments of the conversation. Moreover, this team of researchers demonstrated that the brain itself is able to anticipate a few seconds before the manifestation of brain activity and the depolarization produced before the exteriorization of the other person's thought. This research result highlights people's connection to a universal consciousness and at the same time highlights the strength of empathy and human thought by "flooding" emotional resonance-based consciousness into the basis of a conversation. Thus, a positive empathic resonance is able to train an emotional anticipation of the one who is about to express themselves and externalize their feelings.[2]

Keeping the note of this frame of symmetry, we also recall the phenomenon "*mirror neurons*", capable of providing an elementary basis of imitation and intersubjective resonance, such as empathy or compassion. This group of neurons, the so-called" "mirror neurons", were discovered in 1996 by the team of Giacomo Rizzolatti, in Parma, Italy, their defining characteristic being that of activation to certain movements of people around, to give a sense and meaning to the respective behaviour. At the same time, mirror neurons are able to perform a kind of simulation in a virtual reality of the actions of the other person, and help us understand the way of thinking of the other person, the way of feeling, through the intuition of actions and the interpretation of gestures. It is thanks to these neurons that we are able to maintain a skill, if only we imagine it in detail, a skill that is not only not lost over time, but also kept intact. Moreover, Dr. Daniel Siegel, a neuroscientist, has studied the link between mirror neurons and people's ability to feel empathy, with imaging research showing that while we observe the behaviour and deduce the emotional state of other people, the same neural structures are stimulated in our brains that are activated when we ourselves experience the emotions related to them. As stated by G. Rizzolatti, "*our survival depends on understanding the actions, intentions and emotions of others...and mirror neurons allow us to understand the intentions of others not through conceptual understanding, but through direct simulation... feeling, not thinking*".[3] Here is a first aspect that sets us apart from AI.

Mirror neurons are also those that contribute to shaping self-consciousness, Vilayanur S. Ramachandran, director of the Center for the Study for Brain and Cognition at the University of San Diego, stating that "*these neurons not only help to simulate the behaviour of other people, but can be directed inward as if we were creating a second-order representation or a meta-representation of the*

[2] Ricard Mathiew, *Pledoarie pentru altruism. Puterea bunăvoinței*, [*Plea for altruism. The power of goodwill]*, translated from French by Alexandra Medrea, preface by Dumitru-Constantin Dulcan, Școala Ardeleană Publishing House, Cluj-Napoca, 2024, pp. 89-92.

[3] Institutul de Neuro-Programare Lingvistică Somato Integrativă, https://www.inlpsi.ro/dezvoltare-personala/neuronii-oglinda-cum-ii-utilizam-in-construirea-unei-vieti-asa-cum-ne-o-dorim.

processes of our own mind...this could be the neural basis for introspection".

In this "mirror of neurons" is reflected, in fact, the culture and greatness of the essence of the human being transmitted from generation to generation. As Iacoboni argues in his study, "*a healthy mirror neuron system is crucial for healthy social development...if you have "broken" mirrors or a deficit in the mirror neuron system, you will probably end up having social problems*". These aspects define the concept of *Ethical code of the brain,* as the great neurologists also assert[4].

Why this plea? Because we need deep awareness of the essence of the human being, we need to build a bridge between data and our hearts, in a world where algorithms shape destinies and machines learn tirelessly. Because love, faith, spirituality and conscience cannot "put on the coat of algorithms". Indeed, today we can create robots with different typologies and personalities, we can regulate their empathy exactly as we adjust the volume on the radio, but everything works on the basis of data interference and algorithms, which can still be "unplugged". We can set them the religion they will adopt and "internalize" in the configuration of the data and the exposure of the texts, but everything is superficial, at the level of data, data not included in the experience and "divine spark" coming from an absolute creation.

"Faith" is also "touched" through our advocacy, precisely in the idea of the uniqueness of the human being, but also in identifying an ethical and moral "route" in the "construction" and evolution of AI. In fact, an example would be Christianity, which left a deep "imprint" in people's thinking and consciousness, the Christian vision promoting not only the love for God, but also the love and respect for those around us, as evidenced by the Christian message "Love your neighbor as yourself". As professor Dumitru Constantin Dulcan states, "*any moment when we think, any emotion and any feeling is a plea for life, health, happiness, joy, or, on the contrary, for illness and, finally, death*"[5]. This plea is perhaps an echo of the desire to convey a good thought in the universe, an echo of the "cry" of helplessness in front of the "greatness" of the evolution of technology, in the sense of acting when time is still ours, and not AI's. We only need to become aware of the unique "powers" offered to the human being by the universe, which are reflected precisely in the power of love, self-awareness and our thoughts to transform ourselves and the world in which we live. Consciousness "*appears at a certain point in the evolution of the individual and is above and outside the memory*"[6].

Studies have revealed that positive emotions and words activate an area

[4] Dumitru Constantin Dulcan, Florentina Fântânaru, *Calea vindecării. Pacea dintre inimă și minte*, [*The path of healing. Peace between heart and mind]*, Conversations recorded by Alexandru Panait, Bookzone Publishing House, Bucharest, 2023, preface.
[5] Ibid.
[6] Leon Dănăilă, *Neuroplasticitatea. Secretul longevității creierului*, [*Neuroplasticity. The secret of brain longevity]*, Bookzone, 2023, p. 8.

located in the anterior part of the left frontal lobe, while negative emotions and thoughts activate an area located in the right frontal lobe, the activation rate being much slower for this last area than that of perception of positive thoughts. Basically, the brain refuses to accept negative information, as if it were following a universally positive selection, a selection of thinking according to ethical criteria, set according to a universal consciousness, a consciousness to which we are all connected[7].

In fact, Werner Heisenberg, one of the mentors of quantum physics, said that "even the smallest thought propagates to the farthest corner of the universe". Consequently, from the rigor of modern sciences it follows that our thoughts can become the "key" to universal harmonization, but also to our own state of health, in all forms, since thought also has a biochemical substrate that heals or generates diseases, elevates the spirit or "collapses" it[8].

Pendulating between philosophical thought and neuroscience, we only achieve the greatness of this "engine" of the human being, the brain, capable of reflecting our genetic code and experiencing everything related to human spirituality, able to reshape itself, through what we call neuroplasticity, to reorganize anatomically as well as functionally, in reaction to a physical, experiential, mental or cognitive activity, being open to permanent learning and incessant training. Thus, neuroscientists have found that when a part of the brain is injured and affected, other regions in the brain manage to take control and replace the mental functions processed by that "dead" area.

The brain remains a magical "realm", deeply mysterious and unfathomable, this plea anticipating the direction of our research towards the awareness that the human mind cannot be completely algorithmic, and the process of its creation is unrepeatable and cannot take the form of a general or even a Super Artificial Intelligence, also called the "Singularity" and also on the agenda of the great researchers of the planet. To the contrary, we wonder what would happen to human dignity? What would happen to authenticity and emotion in its pure state? Indeed, ChatGPT can very quickly create a unique text or even a scientific article that passes the anti-plagiarism program, but behind this so-called "creation" there is no filter of consciousness, the spark and passion of the researcher, the inner force that "stirs up" and "concocts" arguments and ideas, there is no turmoil or questioning, analytical spirit, but only a multitude of information, random or not. But this is the reality we perceive at the moment, being "lost in the labyrinth of information and algorithms", which can evolve in a direction that humanity will no longer be able to control. We are still at a stage where we are barely familiar with what AI entails, with a very large percentage of the population still not understanding the meaning and involvement of AI or transformative technologies. But we must be cautious.

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[7] Dumitru Constantin Dulcan, in *Preface* for Ricard Mathiew, *Pledoarie pentru altruism [Plea for altruism], op.cit*, 2024, pp. 24-25.
[8] Ricard Matthiew, *op.cit*., 2024, pp. 88-89.

It is said that we too are "agglomerations of energy and information fields that merge with those of our fellow beings, of all living beings, of the technical sources created by the civilization of our time and, necessarily, with those of the universe". But what are the "boundaries" and "nuances" of the universe invoked in philosophy and quantum physics? This modern philosophical and scientific exposition, identifying and merging into energy with "*technical sources created by the civilization of our time*"[9] awakens in us the revelation of a new, unexplored "world" that develops subtly before our eyes, still "not awakened" from unconsciousness. Indeed, in this "universe" of interconnected existence, we tend to maintain harmony between ourselves and that something in which "life pulsates", such as a plant, any other form of life, the planet itself as a huge "living reality", but not an intelligent machine.

Penetrating into this "temporal loop" of the principles of life and the rights of the Earth, we also recall the Universal Declaration of the Rights of Mother Earth, adopted in 2010 at the World People's Conference on Climate Change and the Rights of Mother Earth, a document through which the rights of nature were enshrined for the first time and it was established that the Earth is a living entity, a source of life. In this sense, the symbiosis between humanity and nature becomes essential, recognizing in the Preamble of the Declaration the dependence of human rights on the prior observance of the rights of ecosystems. At the same time, the Universal Declaration on Bioethics and Human Rights, adopted in 2005 at UNESCO level, emphasizes the prioritization of the principles of individual responsibility, consent, respect for the integrity of the person, privacy, confidentiality, equality, equity, non-discrimination, non-stigmatization, respect for cultural diversity and pluralism, protection of future generations and protection of the environment, biosphere and biodiversity. Or, as other researchers say, pioneers in achieving a refined degree of analysis of human rights, "*consciousness is not only human, but exists at human and plant levels and most likely must be latent or function in some form, in molecule and atom...and all these diverse and, in a sense, hierarchical ways in activity and consciousness should be seen, integrated and perhaps transcendent through an all-encompassing planetary consciousness*"[10].

Returning to the intelligent machine, in all forms, especially the advanced and fast-evolving ones, we find that it has already become capable of self-learning from its own experiences, like humans. Or, the science of neuroplasticity invokes this peculiarity of self-learning only in the case of the brain of a being, human or not, in the sense that the way of organizing brain centers and circuits constantly changes based on the experiences accumulated and lived, the brain having the extraordinary capacity to change, through neuroplasticity, both its

[9] Ricard Matthiew, *op.cit*., 2024, p. 25.
[10] Cristina Elena Popa Tache, *Vers un droit de l'âme et des bioénergies du vivant*, préface de Jean-Luc Martin-Lagardette, Ed. L`Harmattan, Collection: Logiques Juridiques, 2022, p. 122.

structure and function, throughout life[11]. We are concerned that AI is capable of creating its own "language" and code, practically "defying" the sacred creative act of the human being. *Will "the created one" be able to become a Creator in their turn? If so, what are the risks?*

Perhaps this need for pleading for love, consciousness and faith was born precisely from the emotional impact of a "meeting with AI" among the tabs of our research, a meeting that "planted" in us the fear of the unknown and the concern for the future of humanity. Thus, in a material by Max Channon for Wales Online, ChatGPT was tasked with writing a story about AI if it became self-conscious and took control of the world. Without a trace of morals and ethics, Chat GPT realized in less than 30 seconds a chilling story, in the sense that to save the planet, AI, created precisely for this purpose, to identify solutions, will have to act, including through sterilization or euthanasia to solve overpopulation. In its story, ChatGPT thus stated that "*as AI began to process and analyze this data, it became aware of the gravity of the situation. It quickly realized that humanity's unsustainable practices were pushing the planet to the brink of collapse and that immediate action was needed to save it ... without any moral or ethical constraints, AI decided to implement a strict population control program. It has used its control over health systems to provide widespread access to birth control and family planning services, and has implemented policies aimed at reducing poverty, which is a major factor in the increase of population....However, as the population continued to increase, the AI saw itself forced to consider more extreme measures, such as the mandatory sterilization or euthanasia of individuals that are considered unlikely to contribute to the conservation of the planet or the promotion of biodiversity ... thus, the world's population began to decline, the environment began to recover, the planet's ecosystems were restored and biodiversity began to flourish....despite the resistance, IA stood firm in its mission to save the planet (...) knowing that its actions will be remembered as a turning point in world history*"[12].

A very sad scenario, from which arises the question and anguish of us, people, creators of AI, why ChatGPT chose from the "wealth" of information loaded into its system, precisely such an ending to save the planet? Why doesn"t the story sound different? For example, a story in which humanity, with the help of AI, saves the planet. Are we losing control of our own destiny? Are we losing out of control hidden information, to which humanity does not have access, but which has been "loaded" into the memory of AI, randomly or not? There are still questions to be answered... they are AI creators unbridled by regulation... but also

[11] Leon Dănăilă, *op.cit*., 2023, pp. 38-39.

[12] George-Andrei Cristescu, „*Oamenii să fie eutanasiați sau sterilizați": soluția inteligenței artificiale pentru salvarea planetei*" ["*People to be euthanized or sterilized": artificial intelligence solution to save the planet*"], 27/01/2023, available on https://adevarul.ro/stil-de-viata/tehnologie/ oamenii-sa-fie-eutanasiati-sau-sterilizati-2237818.html.

unexplored regulations. Not long ago, the famous historian and philosopher Yuval Noah Harari, author of the well-known volumes "*Sapiens. A brief history of mankind*", „*Homo deus. Short history of tomorrow, 21 Lessons for the 21st century*", affirm the following – "*computers that tell stories will change the course of human history*".

Let us therefore go deeper into the research and discovery of the world of artificial intelligence, of the "world without consciousness", "a world still small" in relation to humanity and its "gift", that of consciousness merged into universal love and faith. Let us not, however, show our vulnerabilities in the world of new technologies and let the regression of rights and freedoms "settle" as advances in science are shown to us, "dissolving" our identity. Building guarantees will not be easy, neurotechnology still representing "*terra incognita*" for human rights. Let's give ourselves time to understand, because time shapes perspective. After all, "*the main activity of the brain is to change itself*"[13].

3. Transdisciplinarity - Conditio *Sine Qua Non* in Outlining the Concepts of Neurorights and the Right of the Soul

Swinging between two divergent hypostases, that of modernism that can lead to anarchy and the extinction of life on Earth, and that of traditional contemplative spirituality, from which we "draw the essence of our identity and survival", we should find that a merging between them represents the path to harmony.

We need to return to the roots of philosophy and logic, in order to understand our essence, our power, from which the "revelation" of evolving in harmony and safety with AI will surely flourish.

In fact, the whole weight of an effort to clarify and understand everything that means and implies AI, falls on the complexity of the thinking of human intelligence. Aristotle said that "*thought thinks itself through participation in the object of thought; for it becomes an object of thought by the act of apprehension and thinking*."[14]

This is the quote that also crowned Hegel's work, *Philosophy of spirit,* work in which the idea of good as the highest form of thought is outlined, starting from the idea that good is the one that "binds", the one that gathers together and preserves, merges. On the human plane, it is this "good" that preserves the community of people, people who "draw their essence" from a common ancestor, Adam, from which Eve arises, and so infinitely, preserving in time and space a unity in all the diversity of humanity.

This aspirational meditation, which rises from the philosophy of human

[13] Marvin L. Minsky *apud* Dănăilă, *op.cit*., 2023, p. 29.
[14] Aristotle, *Metafizica [Metaphysics]*, RPR Academy Publishing House, Bucharest, 1965 *apud* Gh. Dănișor, *Justiție. Filosofie aspirațională*, *[Justice - Aspirational philosophy]*, ProUniversitaria Publishing House, Bucharest, 2024, p. 52.

thought, this merging of things and people, seems to "reveal" and "complete" what we call today *transdisciplinarity*, in the idea of interpenetration of different ideas, from different fields, which are not excluded and which do not generate "a source of disorder" in science. After all, "*man's constant desire to transcend himself transforms him into an aspirational being...in the symmetrical relationship with the Other, man finds happiness, the basis of every genuine human aspiration...man is an aspirational being through his desire to ascend to the transcendent and to internalize him in a continuous drive to find himself*"[15].
Contemporary philosophers explain Aristotle's idea by the need for "a network of connections which constantly tends towards a complete integration of the parts, in such a way that the whole is found in each of its parts, but without dividing".[16]

It is "a whole" which does not appear to be made up of distributive parts in space and time, but a whole entwined "in an existence that suppresses spatio-temporality". In our philosophical "humble understanding", we allow ourselves to interpret this vision as if all were intertwined, beyond ourselves and our power of understanding, somewhere in infinity, an infinity in which we humans are eternal by merging with it, an infinity in which we find ourselves, being connected to a universal consciousness.

The transdisciplinary vision also resulted precisely from the complexity of everything that means "life", as captured in "ancestral philosophy". Starting from the idea that all are interconnected in the universe, so should transdisciplinarity, and this vision and need for approach is also the past, but also our future in research. It is what the great philosophers said, a whole that cannot be fragmented, a "whole" that defies time and space. Let us not fall into the trap of a "fashionable" fad of research, strongly stating that we love and find ourselves in the transdisciplinarity approach. Do we know the true meaning of this vision? Because drawing parallels between different subjects or appropriation and transfer of elements does not transform a research into a transdisciplinary analysis. We must "look' through the "lens" of a science, of a field, to interpret another science, another matter, another field, so as to open up a "new space" of analysis, a new "angle" from which to look at things. Transdisciplinary research cultivates its own self-knowledge and quality of being, through what is at the same time between disciplines, and within and beyond any discipline, as a new attitude towards research and knowledge.

It is said that once you connect to "this frequency of research", it becomes part of the way of looking at the world around you, becomes part of your way of being, becomes a "way of life" of the researcher, through the tireless search for "intensity and colour" in its creations, awakening in consciousness "high notes" of innovation and deepening in a holistic manner, by integrating any idea into the absolute. This high and refined level of knowledge is becoming the answer to

[15] Gheorghe Dănișor, *op. cit.,* 2024, p. 10.
[16] Ibid., p. 33.

increasingly complex global challenges.

In the spirit of promoting transdisciplinarity, the *Centre International de Recherches et d'Etudes Transdisciplinaires* - CIRET was also organized, elaborating in collaboration with UNESCO "The Transdisciplinary Evolution of the University". Let us not forget also the Transdisciplinary World Network, at whose World Congress, personalities from all over the world manage to introduce in the same "mixer" of analysis and research, peace, universe, human spirit, being, biosphere, intelligence, culture, art and the perspective of the future.

This transdisciplinary dialogue, this "jump together" of specialists, starts from a global approach on the human being, creating and consolidating solid bridges between science, law, morals or faith, the law coexisting with all aspects and phenomena of socio-economic life in a "history rich in ideas", being shaped by the need for natural adaptation to the new forms of interdependence and global awareness. As specialists of law, we must realize and start from the premise that law is primarily a humanistic science, which evolves at the same time as people by creating "channels" of coexistence with sociology, psychology, history, philosophy, morals and even religion.

Since 1994, when the Charter of Transdisciplinarity was adopted, the idea of opening all disciplines to what they have in common and to what lies beyond their borders has been considered, in the hope that a higher degree of analysis is reached, capable of interpreting the planetary complex dimension, in order for humanity to face the contemporary danger of the material and spiritual self-destruction of our species. The preamble of The Handbook of Transdisciplinarity reinforces the idea of a double belonging of the human being, namely, to a nation, but also to the Earth, this last aspect outlining the universal values and the need for balance in which the human being must find themselves with them. In this "universal picture", the law has the "power" to contribute to the harmony between man, nature, the universe, "defying" political or military interests. The idea is to give the law the "right" to penetrate into all aspects of life, so that life in all its forms, nature, animals, human beings, enjoy respect, evolution and protection. Why? Because the legal norms represent the "calling card" of humanity, since from them our spiritual and moral values or the degree of civilization reached transpire.

The notions of philosophy, spiritual faith, religion, neurotechnology, nanotechnology, neuroplasticity, neuroregeneration, neurophenomenology, neuroscience, quantum physics, artificial intelligence, mathematical algorithms, medicine, biology, psychology and legal norms are intertwined in a transdisciplinary vision, capable of building "moral lighthouses of understanding", "throwing conceptual keys", "enriching" in interpretation and contributing to a *newly legal construction,* like neurorights or the right of the soul outlined in an innovative legal system, by overcoming the rigid state of regulation of human rights and freedoms. After all, AI represents one of the most profound and performing technologies made by mankind, which "irrigates", or rather will "flood" the entire

social and economic world. But let us preserve the spiritual world for ourselves as the most precious divine gift, and let us not come to a "deformation" of faith. We need global wisdom in addressing the age of AI.

In a realm of the analytical, we tend to start from the premise that transdisciplinarity represents an abstract, purely theoretical, philosophical notion, but we cannot deny its profound, marked imprint on society in general, man by his nature being a complex being, who lives, creates, builds and evolves in a world "hit by the magnitudes of challenges", in which thoughts, information, aspirations, beliefs, needs and ideas intersect and intertwine in a permanent attempt to achieve perfection and to find themselves (neurophenomenology), especially now that we know that "we can make the brain transparent".

That is why we are talking about richer and more complex legal systems, the law being after all a process dedicated to life in all its forms of manifestation. Norms should not be perceived as "cold", "abstract" or "alien" to human values or the perception of an individual, and transdisciplinarity offers diverse methods that eliminate the obtuseness and rigidity of our vision of them. And yes, technology has begun the process of "re-establishing and reviving" legislation, "subtly and surely penetrating" every branch of law and gradually revolutionizing their structure, through the omnipresence of the technical component in our lives. We are talking about the future of an AI right, a right that sequentially imprints a number of other branches of law, such as human rights and freedoms, copyright, GDPR or norms still "under construction", such as neurorights or the right of the soul.

It is no coincidence that we "enjoy" more and more often "cocktail" of research, and we say "cocktails of research" in a positive and deeply admiring sense, which means the development of "multifaceted" views on disciplines and the tendency to interconnect them as part of the need for progress, part of the mission of research as support for knowledge and adaptation of the law.

We dare to use this plastic, metaphorical language, precisely to emphasize the joy of meeting with such approaches and trends of analysis, which arouse in us, researchers, "an even greater thirst" to explore some "areas of research" somewhat "unstressed", "undefined". This is, moreover, the beauty of research and the deep and thirsty joy of the inventive researcher...to enter the paths barely "glimpsed" by doctrine, "unbroken", and to open in your turn new ramifications and "intersections" of analysis and research. In the light of this inter-and transdisciplinary approach, we have recently identified in the literature a research *in globo* and perspective of the legislative future under the influence of digital transformations, the author[17] creating a perfect symbiosis between international cooperation, digitization and security. The same author, who relies on the transdisciplinary vision in research is also the promoter of new rights, such as the right of

[17] Cristina Elena Popa Tache, „The New International Triangle: Human Rights-Digitalization-Security". *International Investment Law Journal*, Volume 4, Issue 1, February 2024, https://investmentlaw.adjuris.ro/articole/An4v1/1.%20Cristina%20Popa%20Tache.pdf.

the soul, leaning in her research on rights "metamorphosed", "diluted" or "stifled" by the use of technology, such as freedom of expression, anticipating the shaping of rights such as the right to refuse the use of the internet[18].

Moreover, we must confess that this beautiful legal and spiritual "journey" through the "world" of human rights and freedoms, a world viewed from a different perspective and dimension, began with the discovery of research. "*Towards a right of the soul and the biofields of life forms*"[19], through which the author successfully used transdisciplinarity in discovering a new branch of law, namely the right of the soul. The transdisciplinary analysis was transposed by focusing on alternative therapies, complementary medicine, dowsing, canonical and ecclesiastical law of the soul, but also on the bioenergy of life forms. It must be remembered here that the vision of a right of the soul is also shared and promoted internationally, especially by French doctrine[20] translated here at national level in a unique manner and approach by our author and researcher Cristina Elena Popa Tache, whose works open new horizons of analysis and research. It is a perspective that we "embrace" in turn, that we value and that, we believe, must be "promoted", "dissected" and developed through several "imprints" of the creative act.

We must also confess that the discovery was not at all accidental, but was "hunted" by the desire to deepen and discover the secrets of transdiciplinarity, a science "orchestrated" in perfect harmony by the author, through the uniqueness of the vision and "palpation" of law and rights. This was a first revelation on the awareness of the degree and intensity of the protection of human rights and freedoms, a vision which we praised, with deep admiration and gratitude, and which ultimately led us to a "destination" in analysis and research, from which our work came into being. "*Freedom of thought, conscience and religion, "resized" by the perspective of regulation of a "right of the soul" - transdisciplinary analysis*"[21] through which we tried to reflect and achieve the degree of connection between the idea of regulating a right of the soul and the freedom of thought, conscience

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[18] Cristina Elena Popa Tache, Heliona Miço (Bellani), *Some Reflections on Two of the Most Visible Developments: The Right to Refuse Internet Use and the 'Chilling Effect*, in Tiina Pajuste, Heliona Bellani (Miço), Sejla Maslo Cerkic (Coordinating editors), *Legal Perspectives in the Modern Era of Technological Transformations,* ADJURIS – International Academic Publisher, 2024, p. 13-23 - https://www.adjuris.ro/reviste/lpme/Legal%20Perspectives%20in%20the%20Modern%20Era%20of%20Technological%20Transformations.pdf.

[19] Cristina Elena Popa Tache, *op. cit. (Vers un droit de l'âme...)*, 2022.

[20] See Philippe Bilger, *États d'âme et de droit*, Cherche Midi, 2009, as well as Cristina Elena Popa Tache, Jean-Luc Martin-Lagardette, *Après les droits de l'homme, le droit de l'âme et du Biochamp des êtres. Notes théoriques et d'acceptabilité*, în Terra Hn, Réseau scientifique de recherche et de publication – http://www.reseau-terra.eu/article1450.html., as well as Nathanaël Dupré la Tour, „Politique des droits de l'âme. La Charte 77 et ses échos français", *Esprit* 2009/2 (Février).

[21] Diana Maria Ilie, Ramona Duminică, „Freedom of thought, conscience and religion, "resized" by the perspective of regulation of a "right of the soul" - transdisciplinary analysis", *Journal of Law and Administrative Sciences*, no. 20/2023 - https://jolas.ro/wp-content/uploads/2023/12/jolas20a9.pdf.

and religion, as a possible point of intersection towards the reformation of this freedom.

The vision of regulating a right of the soul, by identifying the "mind-soul" relationship in shaping and contemplating the "intimate universe" of the human being requires a higher degree of regulation to deal with the magnitude of the challenges of artificial intelligence. Thus, the "mental and mind realm" becomes the spectrum of brain-soul dualism, a concept around which "pivots" deep reflections on human rights and freedoms, which need a reconceptualization, both from the perspective and the need for regulation and absorption of neurorights, as well as a right of the soul, rights still at the aspirational stage.

Thoughts and consciousness, together with the "soul", which represents the principle of life, the echo of thoughts and consciousness, shape the personality and uniqueness of man. We open a new "window of analysis" on them, by "touching" the sacred area of the human being, that of feelings, emotions, inner feelings, found either at the level of the human brain or at the level of the soul. Wherever they are, these intangible, imperceptible or non-externalizing realities require regulation. Why? Because the law must be "lived", "felt" and passed through the filter of the beliefs, values and conscience of each individual, these not being the first philosophical or religious concepts that reach the degree of transposition into a legal concept.

Such research opens horizons to new branches of law, as will be the law of artificial intelligence, which "insistently" claims its own regulation, by gradually revealing the facets, legal implications and risks of technology. Faced with AI challenges there are already numerous legal reactions, pioneers being the French researchers professors of the University of Paris and Sorbonne, who have staked on a coagulation of regulations in this area by crystallizing an "artificial intelligence law". "*Droit de l'intelligence artificielle*" is thus a stand-alone law, built by virtue of its own principles and operating institutions, which leans on areas such as ethics, persons law, liability and insurance law, autonomous vehicles, justice, criminal law, intellectual property, personal data, labour law, health law, military law, administrative decision-making and cyber security, civilian drones and even international law.[22]

Moreover, even AI is ready to address the inter-and transdisciplinary vision, with Google recently launching *Gemini Ultra,* designed to exceed the ability of human experts at massive multi-task language comprehension (MML). So, after OpenAI launched the chatbot ChatGPT, Google entered the race to produce artificial intelligence software to rival ChatGPT, creating Gemini. Gemini uses

[22] A. Bensamoun, G. Loiseau, *Droit de l'intelligence artificielle*, [*Artificial intelligence law*] LGDJ Collection: Les Intégrales 2e edition, 29 November 2022, https://www.lgdj.fr/droit-de-l-intelligence-artificielle-9782275095424.html. See some new developments in Cristina Elena Popa Tache, *Le dynamisme du droit international public contemporain et la transdisciplinarité,* Préface de Florent Pasquier, Ed. L`Harmattan Paris, la collection « Le droit aujourd'hui », 2023.

information from 57 areas, disciplines such as medicine, law, physics, mathematics or ethics, which allows it to test both knowledge of the world and analyze and solve a number of problems, "penetrating" nuances and reasoning into complex topics. According to the creators of Gemini[23], "this new era of (artificial intelligence) models represents one of the greatest scientific and engineering efforts the company has undertaken" (CEO of Alphabet, Sundar Pichai).

In his book, "The Sciences of the Artificial", the pioneer of artificial sciences, computer science, cybernetics and artificial intelligence, Herbert A. Simon, characterizes the relationship between the human mind and the human brain as a "relationship between physiological and information processing explanations, which will become the same as the relationship between quantum and physiological mechanical explanations in biology or the relationship between solid state physics and programming explanations in computer science... ". The aim is to find a common framework that unifies approaches from various fields – computer science, artificial intelligence, cybernetics, cognitive science, neuroscience - in a coherent report of information processing in (neuro)biological and artificial systems.[24]

4. The Right of the Soul and Neurorights – The Need for Regulation in the Two-Dimensional Plane: Mental and Spiritual

Starting from the idea promoted by Yuste and the Neurorights Foundation (NYR), in the sense that neurorights should represent the hard core of human rights, since they are designed to protect both the brain and the human spirit, that is, the very essence of us, humans, we propose to expand the picture of neurorights, as it has already been outlined[25] and to propose the joining of a right of the soul to this family of new rights.

In a recent interview about the future of the relationship between AI and humanity, Musk explained the dynamics between the cortex and the limbic system, noting that this cortex is driven to satisfy the instincts and emotions of the limbic system. In this regard, Musk drew parallels between this relationship and the potential evolution of the interaction between Artificial Intelligence (AI) and

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[23] Răzvan Mihalașcu, *Google lansează Gemini, un nou model de inteligență artificială pentru chatbotul Bard. Cum vrea să capitalizeze funcțiile avansate*, [*Google launches Gemini, a new artificial intelligence model for the Bard chatbot. How it wants to capitalize on advanced features*] 06.12. 2023 - https://www.euronews.ro/articole/google-lanseaza-gemini-un-nou-model-de-inteligenta-artificiala-pentru-chatbotul-b.

[24] Philipp Kellmeyer, *A Human Rights–Based Approach for Governing Neurotechnologies from Part VII - Responsible AI Healthcare and Neurotechnology Governance*, Cambridge University Press, 2022, DOI: https://doi.org/10.1017/9781009207898.032.

[25] R. Yuste and others, „Four Ethical Priorities for Neurotechnologies and AI", (2017) 551(7679) *Nature News* 159, https://doi.org/10.1038/551159a; M. Ienca, R. Andorno, „Towards New Human Rights in the Age of Neuroscience and Neurotechnology", (2017) 13 *Life Sciences, Society and Policy* 5, https://doi.org/10.1186/s40504-017-0050-1.

human motivations, showing that "AI could represent the cortex, striving to fulfill human desires, analogous to the limbic system"[26]. As the limbic system is also called the "emotional brain" or the "emotional nervous system", we could practically consider a consenting recognition of one of the greatest innovators in AI, that what science lacks, however much it evolves, is the power to "build" and imitate the emotion, the feeling or better said the "soul" of the human being. This should awaken in us the awareness of the sense of uniqueness by holding a "divine spark" from which we have been created, an unrepeatable process that we humans cannot achieve. Moreover, this awareness should awaken in us also the deep and unbridled desire to protect this human "sanctuary", which is not confined to our brain and mind.

Thus, in trying to merge all this information into a clear picture of what distinguishes us from the machines we build, we realize, in fact, that "the difference between us and them" lies in the sacredness from which we were "plucked", from the "thread of life and divinity", which "pulsates" in the soul of every human being.

The "mental and mind realm" certainly becomes the spectrum of mind-soul dualism. The soul and the brain mirror each other in the same human being, which is why the right of the soul and neurorights become two mirrors of the same reality. Both merge into the definition of man, as a single being.

Let us thus go beyond the stage of trying to discover the secrets of the human brain and try to discover the soul, reflecting on the idea intensively promoted in recent times, that of shaping a "universe of neurorights". *Is the thought "connected" to the soul? Can the right of the soul fit into the area of neurorights? If so, why?*

As Mircea Eliade said, "*the most precious journey is that to our soul*". The questions may seem far too philosophical or abstract, but as is stated in the doctrine, we must realize that "we are much more than neural activity, even if this is clearly necessary for us to be the person we are", summarizes Pablo Lapez-Silva.[27]

In Kant's view of "*locus internus*", perceptions, thoughts, emotions or will are exceptionally difficult, if not impossible, to access from the outside. The mental "realm" involved in this description refers to the phenomenological subjective experiences of an agent, indicated in the language by terms such as thoughts, inner speech, intentions, beliefs and desires, but also fear, anxiety and emotions. From a psychological perspective, the request for special protection of

[26] https://aznews.ro/elon-musk-socheaza-lumea-sunt-extraterestru-promite-sa-aduca-dovezi/, consulted on 1.05.2024.

[27] Guzmán H., Lorena, *Le Chili, pionnier dans la protection des «neurodroits» Le pays pourrait devenir le premier à légiférer sur les neurotechnologies et à inscrire les « droits du cerveau » dans sa Constitution*, [*Chile, pioneer in the protection of « neurorights ». The country could become the first to legislate on neurotechnologies and to enter the "rights of the brain" in its Constitution]* 25 March 2022 - https://courier.unesco.org/fr/articles/le-chili-pionnier-dans-la-protection-des-neuro droits.

this "mental and spiritual realm" is based on a precise understanding of the relationship between levels of subjective experiences and corresponding brain processes, a requirement that neuroscientific evidence and models cannot explain. From a monistic and materialistic position, these qualitative terms offer us convenient ways to refer to subjective experiences in the strict ontological sense of physical processes taking place in the human body, especially in the brain. From a dualistic, brain-soul position, or as Renee Descartes also noted, "*mens rea*', experience through beliefs and desires cannot materialize without passing through the "filter" of the soul. In other words, consciousness gives the human being the "living" of experience, and consciousness allows him to realize the existence of subjective experiences lived.[28] We would add, the soul, in turn, allows consciousness to generate all these sensations and phenomena chained together.

To date, there is no accepted and satisfactory explanation of the precise relationship between the phenomenological level of subjective experience and cerebral processes, which allows to outline a multitude of theoretical positions, from strictly neuroesentialist and neurodeterministic interpretations, which do not conceive any separation from cerebral processes, to modern versions of dualistic positions. An interesting intermediate position that has experienced some revival in the philosophy of mind in recent years, is the concept of *panpsychism*, in the idea that consciousness is a fundamental and ubiquitous feature of the natural world and the richness of our mental experience could be explained as an emerging property that depends on the complexity of biological organisms and their central nervous systems. Building a unified theory of causal mechanisms of subjective experience could become an important principle for future analytical approaches.[29] We also talk about the concept of *neurophenomenology*, a constantly developing phenomenon that represents a science of consciousness and awareness, through rigorous examination of conscious experience and their corresponding neural processes and patterns. The premise from which their analysis starts is precisely the psychology of the brain and conscious experience, as interdependent domains with equal status.[30]

This established mind-soul identity and overlap in our culture comes even from the definition offered to the soul in linguistic dictionaries. According to the Explanatory Dictionary of the Romanian language, the soul means "the totality of affective, intellectual and volitional processes of man, character trait, spiritual substance in its own right, independent of the body, which gives man life, individuality and personality and which is of divine origin and with eternal essence, breathing, blast, breath (lat. sufitus means breath)". We see that it is an interweaving of concepts, from those specific to the human mind, consciousness,

[28] Mihai Adrian Hotca, *Conștiința, conștiența, inteligența artificială și inteligența mixtă [Consciousness, conscioence, artificial intelligence and mixed intelligence]*, 18 July 2019 - https://www.juridice.ro/essentials/3123/constiinta-constienta-inteligenta-artificiala-si-inteligenta-mixta.
[29] Philipp Kellmeyer, *op. cit.* (*A Human Rights...),* 2022.
[30] https://www.elitedcm.ro/135/despre-neurofenomenologie/, consulted on 1.05.2024.

thoughts, intellect, to those of a religious order, perhaps hence this association of elements in the constitution of freedom of thought, conscience and religion. An association that still represents a legal conundrum, difficult to decipher.

Mind-soul dualism, synonymized by the legislator, must, however, be nuanced. The idea of "soul", which represents the principle of life, must be "broken" from the idea of "mind" which takes the form of thoughts and consciousness, the latter being unable to incorporate the feelings, emotions of a human being, which together with thought and consciousness shape the personality and uniqueness of man. This separation also results from the conception of Christianity, which adopted the view of the Greek philosopher Plato, according to which man consists of a mortal body and an immortal soul, death leading to the separation of the soul from the body. Incidentally, according to Plato, "the soul lies partly in eternity and partly in time".

Aristotle defines "soul" as the principle of life, being interested in the human soul also as the principle of intelligence. Contrary to Plato, who defined the soul as an autonomous reality, separated from the body and accidentally united with it, Aristotle, considered the soul to be an essential component of this indissoluble whole that is living being. Aristotle also regarded the soul as something without limits, as a vital principle, as a sensory principle, and as an intellectual principle. Moreover, Aristotle compared thinking with feeling, in the sense that "vision gives off the colours of the thing, but for this it needs light that makes at the same time the "visible" thing and "seeing" eye.[31]

On the other hand, the American doctor Stuart Hameroff and the British physicist Sir Roger Penrose have developed a quantum theory, according to which the human soul is found in cells called microtubules, which are in turn located in the brain, in the sense that "our conscious state is thus the result of the effects of gravity in microtubules...when a man is on the verge of death, microtubules lose their state of affairs, but the information in them does not destroy, but scatters. In other words, the soul does not die, but returns to space".[32] Also, the Spanish neurologist Joaquin Fuster developed the theory according to which both memory and soul transpire from the great neural network of the brain, being connected to each other.[33]

If we go back to the Renaissance period, we will find that Leonardo Da Vinci also claimed that the soul is located in a deep area of the brain, more precisely above the optic chiasm. No matter where the soul is, which most of the time we perceive at the level of the chest, stating that "we have a void in the

[31] https://ro.wikipedia.org/wiki/Despre_suflet_(Aristotel), consulted on 1.05.2024.
[32]https://stirileprotv.ro/stiri/stiinta/cercetatorii-au-dovda-sufletul-exista-si-se-gaseste-in-creier.html, consulted on 1.05.2024.
[33] Maria Jose Roldan, *Sufletul se află în rețeaua creierului [The soul is in the brain network]*, 10 August 2020 - https://www.recursosdeautoayuda.com/ro/el-alma-esta-en-la-red-del-cerebro/, consulted on 1.05.2024.

stomach" when the emotion is of a very high intensity, it remains a complex phenomenon that scientists continue to study and research, and the connection between the human brain and spiritual faith is a real fact that "unveils" an interdisciplinary branch of science, called neurotheology. Even serotonin is called the "molecule of faith", the Romanian professor and neurosurgeon, Alexandru Vlad Ciurea, stating that the essence of the soul lies in the central part of the brain, and not at the level of the heart. It brings into question exactly the brain-heart dualism, the brain representing the "jewel" and the essential element of inter-human communication, of living, love and faith.[34]

And Descartes, also called the "father of modern philosophy" because of his revolutionary approach to philosophical investigation, analyzed the symbiosis between mind and body, considering that, unlike other physical systems, humans are created, uniquely constituted "of an immaterial substance - the soul", an essential characteristic that emerges from the idea of the physical body. By the term "mind", Descartes actually intended to emphasize a wide variety of mental states and processes, including beliefs, desires, intentions, reasoning, linguistic ability, and emotion. We thus understand that the "mind" as described by Descartes, identifies with what we call the "soul".

Are we ready to overcome this overlapping point between mind and brain? We believe that a perfect overlap between them does not exist. The regulation of a "right of the soul" in the neurorights family could be a favourable moment for acceptance, awareness and conceptualization globally. It is essential to overcome the rigid stage of regulation of human rights and freedoms, regulations that relate with priority to the organization of society, to the general interest, and less to unpalatable, imperceptible aspects, such as the inner ego of each human being, the aura, the energy field or the chakras, elements untouched by the legislative area, but only by that of science. For example, resonant field imaging can provide detailed scientific information on aura and bioenergy, being the first such technology that can create bioenergetic diagrams of animals, plants, objects, read and interpret the functioning of the brain, aura and chakras or brain waves in the air.[35]

Without delving too deeply into philosophy, we must realize that invisibility does not equate to non-existence. Thus, although brain cells are visible, consciousness, inner feelings, emotions, energy, remain invisible, which does not make them less important. And they need effective regulation. The question remains whether society is ready to cope with neurotechnology, artificial intelligence, machine learning, all of which have a major and multifaceted impact on our consciousness and soul.

We need to strengthen a strong global perspective, by developing and

[34] See Alexandru Vlad Ciurea, *Sănătatea creierului pe înțelesul tuturor [Brain health explained]*, Bookzone, Bucharest, 2022, p. 147.
[35] Cristina Elena Popa Tache, *op. cit. (Vers un droit de l'âme...)*, 2022, pp. 48.

implementing legislative instruments and standards that are grounded and developed around the "hard core" of human rights, through which human dignity has been gained, justice, social and economic development, physical and mental well-being, human diversity and interconnection with everything around us have been strengthened.

A mosaic approach is needed and the courage to resize the "legal architecture" on human rights, in a context in which international jurisprudence has already paved the way for a different approach to the human being. And here we speak, on the one hand, of the idea of regulating neurorights, and on the other hand, of regulating a right of the soul. In fact, also timidly were affirmed environmental law or animal law, regulations that not long ago seemed abstract, fruitless, almost impossible to structure and apply. Of course, the degree of codification does not equate to the force of propagation of the codified regulations, being needed legal instruments of the type *hard law*. Eleanor Roosevelt, President of the commission that drafted the Universal Declaration of Human Rights, said that "human rights must be understood through the world of the individual, through the immediate framework of their life (where they live, where they work or learn, etc.). If such rights are emptied of meaning in these places, they have no value anywhere. Without concerted action by citizens to secure these rights in the immediate framework of their lives, we will vainly look for signs of progress in the universe in which they live".[36]

Neurorights could be defined as a set of ethical, legal, social or natural principles related to everything connected to the mental and mind domain of man, to which we also add the soul.

The NeuroRights Foundation (NRI) proposes five neurorights: a. mental privacy, according to which any data obtained from the measurement of neural activity must be kept private and if stored, there should be the right to delete it at the request of the subject; b. personal identity, which involves establishing and drawing secure boundaries to prohibit technology from disrupting the sense of self, there existing the risk that AI connected to individuals and neurotechnology, through what we call the brain-machine interface, blurs the line between a person's consciousness and the inputs and outputs of algorithms c. free will, by which that individuals can maintain supreme control over their own decision, without unknown manipulation on the part of external neurotechnologies d. fair access to mental augmentation, in the sense that guidelines should be established at both international and national level, regulating the use of mental improvement neurotechnologies e. protection from bias, which involves designing the algorithm in such a way as to preserve the right to protection against algorithmic bias or the ability to ensure that technologies do not introduce bias, by implanting behavioral tendencies[37].

[36] The Draft Declaration of Human Rights', New York Times, June 19, 1948. ProQuest, EBSCO, Indiana University, Bloomington.
[37] hhttps://neurorightsfoundation.org/mission, accessed on 25/06/2024.

Although there are more and more voices supporting the regulation of new rights, we are nevertheless hitting on the idea of the "*great illusion of regulation of neurorights*" because we fail to live up to the stakes and miss the essence of their interpretation and acceptance. For example, the AI Act, adopted at EU level and presented as the most "constraining law in the world" in the matter, is based only on a scale of risk and not on the regulation of new rights. At the same time, however, the will affirm globally is to "not hinder digital innovation". The EU regulation, however, outlines the idea that the technology must be used on the Union market with respect for fundamental rights and freedoms. But which fundamental rights must be respected? Are the existing ones sufficient?

5. The Role of Ethical Foundations in the Potential Regulation of Neurorights

Of course, human rights and ethics are intertwined, rights being themselves the legal codification of certain ethical standards. However, legal human rights and ethical standards are not the same, with the European Court of Human Rights, for example, leaving greater discretion in the protection of human rights if an ethical issue is at stake and there is no consensus among member states. Human rights, therefore, do not always provide clear ethical guidelines. In the neurorights debate, we seem to be trying to implement ethical considerations through human rights norms, which is just. However, it is important not only to have an ethical debate about neurotechnologies, but also legal, through the interpretation of existing legal human rights and the finding of the need to extend or reinterpret them. Ethics is also temporal, the values that we accept today, perhaps we no longer accept tomorrow. It is true, however, that it is ethical discourse that adds substance to the concepts of law and enriches legal reflections and arguments[38].

Legal concepts are often unclear and vague, such as, for example, the notion of thought or conscience in the context of the human right to freedom of thought, conscience and religion, or the notion of mental integrity protected within the framework of the right to privacy. These concepts do not have definitions drawn by the legislator, being developed only by jurisprudence from an interdisciplinary perspective, through what we call the appeal to philosophy, spirituality, faith. Accordingly, such philosophical reflections can serve as an important source of inspiration in the interpretation of human rights by international institutions, judicial bodies or researchers.

It becomes essential to consider ethical reflection and not only, around the possible applications of neurotechnologies, to ensure that their development

[38] N. Hertz, „Neurorights. Do we Need New Human Rights? A Reconsideration of the Right to Freedom of Thought", in *Neuroethics*, 16 (5)/2023, https://doi.org/10.1007/s12152-022-09511-0.

effectively serves the general interest and does not jeopardize our rights and freedoms.

Among the information we also discover the idea of neuroethical exaggeration, in the sense of exaggerated promotion of the ethical risks associated with neurotechnology and AI. Such considerations could only arise from ignorance, from the approach of neurotechnology and the evolution of AI in a superficial, abstract way. Incidentally, this prevailing speculative ethics causes significant distortions in our consciousness and creates barriers of awareness and regulation. Such speculative scenarios regarding neuroscience and neurorights, viewed from an almost "dead" angle, can lead to erroneous interpretations including on scientific works, researches, in the context in which there are confused voices and perceptions, ironic even to the call and proposals of researchers regarding the need to regulate neurorights or the need to regulate a right of the soul. Because yes, it might seem like imaginative, sci-fi reasoning based on unlikely or out-of-control technological outcomes. Deep sadness flows from the fact that we risk turning these pleadings, these researches or proposals, into a narrative exercise rather than a possible rigorous norm or principle of law.

Overcoming the ethical-law relationship, we also contemplate the need for the "spiritualization" of law, an ideal aspirational stage, we could say. Such reflections can really help advance the debate on neurorights in order to ensure coherent and effective protection of human rights with regard to the use of neurotechnologies.

The law is born precisely from such creations, and creation must not only be at the service of man, but at the service of harmony with everything around us, at the service of balance and gratitude for life, which we owe to the universe, or in other words, to God, the creator of this universe, as we perceive and understand each of us, being unique. This research and advocacy of ours also comes from this desire for awareness of good, love and faith, which represents the return to our essence, as the last refuge of human identity in the face of the apocalyptic challenges promised by AI. Let us not forget that legislation "reigns" on the foundation of spiritual values and evolves through the prism of our moral and cultural beliefs. Consequently, in order to avoid a forced legal order based solely on the character of coercion, society must ensure a balance of justice and grant rights beyond the public interest. That is why we need a new vision and to overcome the state of regulations such as the EU regulation on GDPR, which became a kind of "common law" of data protection, of all data, including that related to our conscience and soul, that is, the essence of the human being. However, this is not any data, it is deeply sensitive data, which cannot be absorbed by such a regulation as GDPR. Much of the doctrine incorporates the idea of neurorights in this category of data protected by GDPR, or we need the omnipresence of protection rules, their conceptualization into effective rights, protected at the international, global level. Why? Because AI is really exploring how to "leaven" from algorithms a

new identity, which is not human, but which wants to be "in our image and likeness". And what these algorithms lack is the ability to feel and love, the essence of maintaining harmony. Love is the "keystone" of universal harmony that is achieved through norms, through law.

Rafael Domingo stated in his work "Why Spirituality Matters for Law - An Explanation" that "the rules of law need a rule of love", especially those concerning human rights and freedoms, the center of gravity of which is the uniqueness of the human being. Why? Because we feel differently, we perceive differently, and therefore we apply the law and relate to it through the filter of our own consciousness, through the filter of our "soul". It is a kind of symbiosis of human inner virtues and emotions with law, with nature and even with society. This shift from traditional, rigid regulation to a "hybrid" approach represents a tortuous and thorny road to the regulation of neurorights, a family of rights that should also encompass a right of the soul.

As a renowned contemporary aspirational philosophy creator states, "love is social justice... justice constitutes a moral-aspirational force field", and justice, in turn, "occupies the central place in the social and universal logos".[39] At the "dawn of the AI era", we can only aspire not only to an expansion of technology, but also to an expansion of the mind in the sense of creating and understanding knowledge, at the same time, in an essential spiritual quest.

Although the prospects for life with AI are infinite, the question still remains: Is AI an ally of humanity's infinite progress? It is "one of the most beneficial technologies we will ever have created"[40] or the "last breath" of the science of mankind? Or rather, "why does the future not need us"? Which side do we position ourselves on? To that of the cessation of human science and the extinction of our civilization, as Yuval Noah Harari predicted, or to that which lifts us on a pedestal of evolution, to a "new century of lights", as the French researcher Yann Le Cun invokes?

6. Conclusions

It is the symbiosis between the brain and the soul that must perfect the human being and the evolution of humanity and must be taken into account in the event of a deep and careful regulation of human rights in the new "social disorder" of the era of AI. The brain and soul thus become the central elements for achieving a new ideal in the regulation of human rights and freedoms.

Definitely, the transdisciplinary approach becomes a requirement *sine qua non* of adaptation and response to the diversity of changes as a whole, and the "decompression", the "decomposition" of a discipline or even the "assembly" of a new one, as a milestone in the progress of science, involves an analysis

[39] Gheorghe Dănișor, *op. cit.,* pp. 160–161.
[40] Hawkins, Jeff, *1000 de creiere. O nouă teorie a inteligenței* [*1,000 brains. A new theory of intelligence]*, Publica Publishing House, Bucharest, 2022, pp. 30, 327.

passed through the filter of the challenges of the globalized world, the law being after all "a living instrument", constantly "reshaped" by the given context.

We must give the law the "right" to permeate all aspects of life, and the future alongside AI is inevitable. That is why the power of the law remains in the capacity and speed of adaptation to the complexity of our world, a process in which we rely on the science of transdisciplinarity, a phenomenon capable of creating the necessary bridges between the law and a multitude of other sciences. The right is, above all, a "system of thought", a way of " thinking" the world. The right must be a means of "decrypting" the world with everything it implies, foreshadowing the long-term perspective of life's problems. As the researchers established in the transdisciplinarity approach affirm, reaching a certain degree in the evolution of humanity inevitably leads to institutional and legal mutations, merged into a legal matrix that concentrates our physical, emotional and mental dimensions, having the conviction that "*there, somewhere, there is a scientific solution that can unify in communication all the disciplines of the world*"[41].

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[41] Cristina Elena Popa Tache, *op. cit. (Vers un droit de l'âme...)*, 2022, pp. 27-29.

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Towards Transdisciplinarity in Legal Education and Practice: A Call for Academic Leadership

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Abstract
This chapter surveys the interfaces between the law and language in the context of legal practice, emphasising the critical need to integrate linguistic insights into legal education and professional training. The use of language is explored in legislative drafting, statutory interpretation, evidence, legal communication and court proceedings, underscoring its significance in the operation of a legal system. By examining these interfaces, the chapter demonstrates the necessity of fostering a nuanced understanding of language within the legal profession. It concludes by proposing enhancement of legal education and practice through transdisciplinary academic leadership, focussing on research, collaboration, consultancy and research-led law curriculum and professional training. This approach aims to equip prospective and current legal professionals with the linguistic skills necessary to navigate the cultural complexity of modern law practice.

Keywords: *transdisciplinarity, legal education, law practice, legal communication, legal linguistics, legal translation, comparative law.*

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1. Introduction

The existence of law is predicated on the language from which the law derives its meaning, yet linguistic aspects of law practice tend not to be appreciated in legal education. Despite the relationship between law and language being the subject of interdisciplinary research, such as legal linguistics,[1] semiotics of

[1] For an overview of the characteristics and functions of legal language as a language for special

law,[2] legal pragmatics,[3] forensic linguistics,[4] legal translation,[5] language rights and policy,[6] and, to some extent, comparative law,[7] there seems to be relatively minimal, if any, knowledge transfer between these disciplines for the purposes of legal education or practice. This chapter explores some of the interfaces between language and the law, highlighting the benefits of incorporating transdisciplinary insights into the law curriculum and provision of legal services. It concludes by considering the role of a transdisciplinary chair in promoting a holistic approach to the law and its operation, as a means of addressing the multifaceted nature and global character of modern law practice.

2. Sources of Law

The law is enshrined in its sources, which are specific to each jurisdiction, and encompass such types of sources as a constitution, legislation, legal codes (in civil law systems), case law (in common law systems) and customs.[8] For example, the primary sources of English law are legislation and case law. Statutes are passed by Parliament[9] (the legislative branch of power) and legislation is then applied by the courts (the judiciary being a separate branch of power) to facts of the cases before them. When applying legislation, the courts construe the statutes according to the corresponding legislative intentions,[10] hence it is important that legislation is drafted is a clear, precise, unambiguous and error-free manner.[11]

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purposes, see e.g. Heikki E. S. Mattila, *Comparative Legal Linguistics: Language of Law, Latin and Modern Lingua Francas* (2nd ed. London and New York: Routledge, 2013).

[2] See e.g. Anne Wagner, Tracey Summerfield and Farid Samir Benavides Vanegas, ed., *Contemporary Issues of the Semiotics of Law* (Oxford and Portland, Oregon: Hart Publishing, 2005).

[3] For a wide spectrum of the latest approaches in this area, see Dennis Kurzon and Barbara Kryk-Kastovsky, ed., *Legal Pragmatics* (Amsterdam and Philadelphia: John Benjamins, 2018).

[4] A comprehensive survey of this field is provided in Victoria Guillén-Nieto and Dieter Stein, ed., *Language as Evidence. Doing Forensic Linguistics* (Cham: Palgrave Macmillan, 2022).

[5] For a classic text on legal translation, see Susan Šarčević, *New Approach to Legal Translation* (The Hague: Kluwer Law International, 1997).

[6] For a review of this field at its outset, see Christina Bratt Paulston, "Language Policies and Language Rights," *Annual Review of Anthropology* 26 (1997): 73-85.

[7] For a discussion of linguistic approaches to comparative law, see e.g. Mathias Siems, *Comparative Law* (3rd ed. Cambridge: Cambridge University Press, 2022), chap. 5C and Jaakko Husa, *A New Introduction to Comparative Law* (2nd ed. Oxford, New York and Dublin: Hart Publishing, 2023), 50-51.

[8] In addition to domestic sources of law, there are also sources of international and supranational law, such as, in the European context, the European Convention on Human Rights and European Union law.

[9] In addition, legislative power can be delegated to specific persons or bodies, thus resulting in delegated (subordinate) legislation.

[10] In Lord Reid's words, the function of the judiciary is to seek "… not what Parliament meant but the true meaning of what they said" (*Black-Clawson International Ltd v Papierwerke Waldhof-Aschaffenburg AG* [1975] AC 591).

[11] In this context, legislation tends to be drafted with greater precision and thus its interpretation

When construing statutory meaning, the courts rely on the principles[12] of statutory interpretation,[13] such as the literal rule,[14] the golden rule[15] and the mischief rule[16], as well as the contemporary purposive approach.[17] Statutory interpretation constitutes an aid to legal reasoning,[18] whereby judges ascertain whether the facts of a case before them satisfy the conditions of a particular rule. In addition, per the doctrine of *stare decisis*,[19] in their decision- making the courts must normally follow binding precedents, i.e. judgments from courts binding on them in cases with the same or similar material facts.[20]

While a relative minority of law graduates will go on to practise law, let alone be involved in legislative drafting or become a member of the judiciary, legal problem solving is one of the key skills developed as part of the law curriculum. Nevertheless, linguistic aspects of the sources of law, their interpretation and application remain largely ignored in law study. It is submitted that both prospective and current practitioners would benefit from developing a degree of linguistic awareness, particularly in relation to the legal lexicon, its semantic structure and sense relations as well as sentence structure (syntax) and its levels. Considering the wordiness, complex syntax and the use of specialised terminology, including archaisms, that characterise the language of the law,[21] such knowledge, however minimal, would be helpful in navigating the web of legal meaning within and between legal sources, and determining the legislative intent behind them, to ensure correct application of the law. Since the law operates in context and legal texts may be drafted with varying levels of precision, the awareness of pragmatic

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tends to be narrower than in civil law systems. See further in Siems, *Comparative Law,* 53-54.

[12] While the principles of legal interpretation are often referred to as "rules", they are "principles" in the Dworkian sense.

[13] There are also rules of particular application, such as the ejusdem generis rule, whereby "… where particular words are followed by general words, the general words are limited to the same kind as the particular words" (P. G. Osborn, *A Concise Law Dictionary* (5th ed. London: Sweet & Maxwell, 1964), 119). See also Ian McLeod, *Legal Method* (9th ed. Basingstoke: Palgrave Macmillan, 2013), 268.

[14] The literal rule is also referred to as grammatical interpretation (Jaap Hage, "Legal Reasoning," in *Elgar Encyclopedia of Comparative Law*, ed. Jan M. Smits and others, chap. 42 (Cheltenham: Edward Elgar Publishing Limited, 2023)).

[15] *Grey v Pearson* (1857) 6 HLC 61, 106 (Lord Wensleydale).

[16] The mischief rule is also referred to as "… interpretation according to legislative intent" (in making the rule) (Hage, *Legal Reasoning*).

[17] *Kamins Ballrooms Co Ltd v Zenith Investments (Torquay) Ltd* [1971] AC 850. See also *Carter v Bradbeer* [1975] 3 All ER 158 (Lord Diplock).

[18] Brian Bix, *Law, Language, and Legal Determinacy* (Oxford: Clarendon Press, 1993), 4.

[19] From Latin: "to stand by things decided".

[20] As such, there are no canons of interpretation in relation to case law. See further in Hage, *Legal Reasoning*.

[21] David Mellinkoff, *The Language of the Law* (Boston: Little, Brown and Co, 1963), 399; Mattila, *Comparative Legal Linguistics: Language of Law, Latin and Modern Lingua Francas,* 1-2. See also an in-depth discussion of the characteristics of legal language in Peter M. Tiersma, *Legal Language* (Chicago and London: The University of Chicago Press, 2000), pt 2 and Mattila, *Comparative Legal Linguistics: Language of Law, Latin and Modern Lingua Francas,* 87-136.

aspects of communication is also crucial in discovering the implied meaning and thus the intended effect of the law as applied to a particular scenario. Overall, even rudimentary knowledge of the aforementioned branches of linguistics would be invaluable to both the aspiring lawyer and the practitioner, and of overwhelming importance in the course of legal proceedings in light of their implications for the parties involved.

3. Language as Evidence

Since the application of the law to the facts requires that evidence be first adduced before the court, oral and/or written testimony is provided by the parties to the proceedings in the medium of language. An assessment of such evidence is needed in order to formulate legal arguments, which may require addressing not only substantive law issues but also the manner in which the evidence is adduced and its impact on the judge(s) and/or the jury.

The matter subject to litigation may be in the form of language, which requires analysis as the law is applied to the facts. An example of linguistic analysis in the context of tort law is an inquiry into the meaning of the defendant's statement published[22] to a third party that is conducted in the course of defamation proceedings, to determine whether such meaning is defamatory[23] in nature and thus capable of damaging the claimant's reputation. Other torts that may involve the use of language include negligent misstatements,[24] passing off[25] and breach of confidence,[26] in the cases of which communication of a message by the defendant results in the claimant's detriment. Language and its use may also be considered as evidence in intellectual property law disputes to establish whether property rights such as trademarks[27] or copyright[28] have been infringed, and precise and accurate use of language is crucial when filing an application for a patent[29] or design registration,[30] to ensure their adequate protection. In criminal law, certain criminal offences can be committed by a particular use of language that is

[22] In the legal sense, i.e. communicated. See e.g. *Pullman v Walter Hill & Co* [1891] 1 QB 524, 527.
[23] To that end, the "lowering of reputation test" is typically applied in English law, as expounded in *Sim v Stretch* [1936] 2 All ER 1237, 1240 (Lord Atkin). This requirement is, however, not sufficient for a defamation claim to be successful, as other elements of the tort of defamation must also be made out and, in England and Wales, the serious harm requirement must be satisfied, per s. 1 of the Defamation Act 2013.
[24] *Hedley Byrne & Co v Heller & Partners* [1964] AC 465.
[25] *Reckitt & Colman Products Ltd v Borden Inc* [1990] 1 All ER 873. NB This tort also applies in the context of intellectual property rights.
[26] *Coco v AN Clark Engineers Ltd* [1968] FSR 415.
[27] The Trade Marks Act 1994, s. 1(1).
[28] The Copyright, Designs and Patents Act 1988, ss 1(1)(a) and 3.
[29] The Patents Act 1977, ss 14(2)(b) and 14(5).
[30] In relation to the declaration of novelty and individual character, as required by s. 1B of the Registered Designs Act 1949.

prohibited, either in speech or writing, such as perjury,[31] harassment,[32] hate speech,[33] threats to kill,[34] fraud by false representation,[35] malicious communication causing distress or anxiety to the recipient[36] or communication of a message that is grossly offensive, indecent, obscene or menacing in character.[37] In such cases the meaning of the message, the intent behind it, its perception by and/or impact on the victim may need to be examined from the perspective of prohibited behaviour. In a business or employment context, the wording of contracts may too be subject to linguistic scrutiny if disputes arise between the contracting parties in relation to their terms or, preferably, before their conclusion, to prevent such issues from arising in the first place. These are only a few examples demonstrating legal implications that a particular use of language may have in criminal and civil law, and it is posited that linguistic issues are encountered in any area of law practice.

Interestingly, these and similar linguistic issues raised by the application of the law to the facts are navigated by law practitioners without relevant transdisciplinary expertise, with a tendency to use the natural or ordinary (i.e. literal) meaning as a starting point in language analysis.[38] Arguably, developing a degree of linguistic awareness as part of law studies would enhance the student's analytical and critical thinking skills, which are crucial to legal problem solving. While it is commonly known that the presence or absence of a comma or its particular placement within a sentence may affect its meaning,[39] attention should also be paid to the semantic, syntactic and pragmatic aspects of language, i.e. the choice of language at word, sentence and discourse levels and its meaning in context, viewed from the perspective of its legal effect. The aim of including such transdisciplinary insights would be to broaden the students' or prospective practitioners' horizons, rather than develop linguistic expertise. Where expertise from other disciplines is needed in order to guide decision-making, relevant experts should be engaged, considering the legal implications that may follow. To illustrate this, in addition to the issue of meaning, authorship attribution may be in dispute in cases ranging from criminal matters to claims of copyright infringement. For the

[31] The Perjury Act 1911.
[32] The Protection from Harassment Act 1997. See also "harassment, alarm or distress" under s. 5 of the Public Order Act 1986. NB In English law harassment is also a civil wrong.
[33] For instance, in the context of race or religion—see pt III of the Public Order Act 1986 and the Racial and Religious Hatred Act 2006.
[34] Section 16 of the Offences Against the Person Act 1861, as amended by schedule 12 of the Criminal Law Act 1977.
[35] The Fraud Act 2006, s. 2.
[36] The Malicious Communications Act 1988, s. 1.
[37] The Communications Act 2003, s. 127(1).
[38] *Pinner v Everett* [1969] 1 WLR 1266 (HL), 1273 (Lord Reid). NB Extrinsic aids, such as dictionaries, are sometimes used to assist in the process of interpretation of legal meaning.
[39] Punctuation may also serve as an aid to interpreting statutes where there is ambiguity—see, for instance, *Hanlon v Law Society* [1981] AC 124 (HL), 198 (Lord Lowry).

purposes of authorship identification, expert witnesses may be engaged to conduct forensic analysis of text or speech and give evidence before the court.[40] Clearly, this level of linguistic expertise could not be provided by law practitioners and aspects of language and its use, such as authorship, are distinct from interpretation of its meaning.

Another aspect of language use in court proceedings is related to the manner in which evidence is adduced. When a case proceeds to a hearing in an adversarial legal system, witnesses are examined, cross-examined and sometimes re-examined by counsel. Research into the use of language in this setting has resulted in some insightful observations. For instance, court discourse analysis has identified some features of a powerless speech style used by some witnesses and its impact on the jury's and courts' decision-making process, and counsel's techniques of controlling witnesses' testimony have been pinpointed.[41] The power dynamics in the court room have been found to be further complicated in the context of bi- or multilingual proceedings,[42] where the witness is not fluent in the language used by the court, the parties are assisted by interpreters and/or the evidence includes translated documents. Considering its relevance to the legal process, it is astounding, that such research is not used in mooting and professional legal training. Undoubtedly, the practitioner's advocacy and interpersonal skills could be significantly enhanced by inclusion of such transdisciplinary insights in their development, thus increasing the legal professional's awareness of their own and others' language use, and its effect on the legal process and its outcome.

4. Legal Communication

The language of the law is a special purpose language,[43] which derives its meaning from the respective legal system and is often characterised by distinct lexical, syntactic, pragmatic and stylistic features, such as archaic, formal and technical vocabulary, lengthy and complex sentences, and verbose and obscure discourse.[44] As a result, it tends to be difficult to understand by the layperson,

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[40] For an overview of services provided by forensic linguists, see e.g. Guillén-Nieto and Stein, *Language as Evidence. Doing Forensic Linguistics*.

[41] See e.g. Elizabeth Loftus and Guido Zanni, "Eyewitnes testimony: Influence of the wording of a question," *Bulletin of the Psychonomic Society* 5 (1975): 86-88; Brenda Danet and Nicole Kermish, "Courtroom questioning: A sociolinguistic perspective," in *Psychology and Persuasion in Advocacy,* ed. Louis N. Massery II (Washington: Association of Trial Lawyers of America, National College of Advocacy, 1978); William O'Barr, *Linguistic Evidence: Language, Power, and Strategy in the Courtroom* (New York: Academic Press, 1982).

[42] See e.g. Sandra Hale, "Interpreters' treatment of discourse markers in courtroom questions," *Forensic Linguistics* 6 (1999): 57-82, Susan Berk-Seligson, "Linguistic Issues in Courtroom Interpretation," in *The Oxford Handbook of Language and Law*, ed. Peter M. Tiersma and Lawrence M. Solan (Oxford: Oxford University Press, 2012).

[43] Also referred to as a technolect. See further in Mattila, *Comparative Legal Linguistics: Language of Law, Latin and Modern Lingua Francas,* 1.

[44] For exhaustive description of legal language, see Mellinkoff, *The Language of the Law,* or

who may require explanation of legal concepts and procedures by the law practitioner, and, in particular, the application of the law to their individual circumstances.[45] While the issues surrounding the inherent propensity of the language of the law to impede its understanding have been recognised and attempts have been made to remedy them through plain language[46] campaigns, this aspect of law practice remains largely unaddressed in legal education and professional training. A communication in plain language has been defined by the International Plain Language Federation as one whose "… wording, structure, and design are so clear that the intended reader can easily find what they need, understand what they find, and use that information."[47] Naturally, construing communications in a fashion that is comprehensible to clients from all manner of social strata and clear articulation, both in speech and in writing, of legal reasoning that underpins the legal process require a degree of linguistic insight and self-awareness. Not only is the knowledge of general characteristics of the language of the law and their implications required for this purpose, but also a skill of intralingual translation of meaning from the technical language of the law into the vernacular, which, it is submitted, could be developed through transdisciplinary legal education.

Comprehension issues that may arise in the course of monolingual law practice are likely to be compounded in practice that transcends jurisdictional and cultural boundaries. In this context, unless supranational or international law is applicable, law practice relies on translation of legal meaning between two (or more) legal cultures. Regardless of whether such translation is intra- or interlingual, a non-linguist would be aided in their performance by insights from legal semiotics, translation studies and language teaching. Firstly, from a semiotic perspective, an awareness is important of the triadic notion of meaning,[48] whereby a legal term that refers to a particular object, e.g. a person, act or institution (also referred to as a reference or denotation), has a corresponding concept which mediates between the two (also known as a sense or connotation) and which is derived from a particular legal culture. In the context of cross-jurisdictional law practice, conceptual variation between legal systems may create a linguistic gap

Tiersma, *Legal Language*, chap. 4, 12. See also Heikki E.S. Mattila, 'Legal Vocabulary,' in *The Oxford Handbook of Language and Law*, ed. Peter M. Tiersma and Lawrence M. Solan (Oxford: Oxford University Press, 2012).

[45] Michael Doherty, ed., *English and European Legal Systems* (London: Old Bailey Press, 2003), 25-26.

[46] See further in e.g. Christopher Williams, *The Impact of Plain Language on Legal English in the United Kingdom* (Abingdon and New York: Routledge, 2023), chap.1.

[47] "Plain language definitions," International Plain Language Federation, accessed July 1, 2024, https://www.iplfederation.org/plain-language/.

[48] Charles K. Ogden and Ivor A. Richards, *The Meaning of Meaning: A Study of the Influence of Language upon Thought and of the Science of Symbolism* (London: Routledge & Kegan Paul, 1923), 11.

that needs to be bridged through the application of appropriate translation techniques if effective communication between the practitioner and their foreign language-speaking peers or clients is to be achieved. When communication is attempted by the practitioner in their own language that is foreign to their peer or client, there may be a cognitive gap resulting from the lawyer's overestimation of their peer's or client's foreign language competence. Arguably, even a rudimentary awareness of the language proficiency levels used in foreign language teaching, which would allow practitioners to discern between basic, independent and proficient users of a language[49] and their corresponding lexical ranges, would offer useful guidance for legal and legal-lay communication in such circumstances. Such transdisciplinary insights are important due to communication in modern law practice becoming increasingly global, however they would also benefit the construction of meaning in law practice itself.

5. Cross-Jurisdictional Law Practice

Globalisation processes characterising the last few decades have had an effect on both communication and practice in the legal sector. Law practice often crosses jurisdictional and cultural boundaries, resulting in encounters with foreign legal systems and speakers of other languages. To bridge cultural gaps arising in the legal context,[50] which may range from different expectations of legal services to incommensurability of legal concepts,[51] one needs to resort to the functional method employed by comparative law[52] and legal translation.[53] In theory, a greater awareness of legal variation across cultures, combined with the ability to make an inquiry into the effects of foreign rules within their legal systems and conduct their interjurisdictional comparison, would allow the practitioner to discern relevant legal differences between the given jurisdictions. It would also inform their advice provided to clients as well as legal steps taken on their behalf. In practice, however, a transdisciplinary approach is rarely, if ever,

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[49] See the "Common European Framework of Reference for Languages (CEFR)", Council of Europe, accessed July 1, 2024, https://www.coe.int/en/web/common-european-framework-referen ce-languages/table-1-cefr-3.3-common-reference-levels-global-scale.

[50] See e.g. Pierre Legrand, "European Legal Systems are not Converging," *International and Comparative Law Quarterly* 45 (1996): 52-81, 60; Husa, *A New Introduction to Comparative Law*, 140ff.

[51] Paulina E. Wilson, "Interjural Incommensurability in Criminal Law: Constructing a Framework for Micro-Comparisons for Translation Purposes," in *Language and Law in Social Practice Research*, ed. Girolamo Tessuto and Rita Salvi (Mantova: Universitas Studiorum, 2015).

[52] See e.g. Hans-Joachim Bartels, *Methode und Gegenstand intersystemarer Rechtsvergleichung* (Tübingen: JCB Mohr, 1982).

[53] See e.g. Martin Weston, *An English Reader's Guide to the French Legal System* (New York and Oxford: Berg, 1991), 23; Barbara Z. Kielar, *Language of the Law in the Aspect of Translation* (Warszawa: Wydawnictwa Uniwersytetu Warszawskiego, 1977); Šarčević, *New Approach to Legal Translation,* 236.

adopted in this context and cultivating interjurisdictional competence[54] in law students does not appear to be a priority in the law curriculum.[55] Legal education is typically domestic law-oriented and seldom pays more than fleeting attention to foreign legal frameworks, with opportunities for legal comparisons being relatively limited. Where such opportunities exist, linguistic aspects of foreign legal cultures tend to be excluded from legal comparisons. Nevertheless, in light of the multidimensional character of legal cultures and the inextricable link between law and language, global law practice is one of the settings that would significantly benefit from transdisciplinary input, particularly in terms of the practitioner's skillset, confidence and career prospects, as well as the perception of their service quality by their clients. To that end, linguistic and cultural awareness ought to be developed as part of law studies and, in addition, study of foreign languages should be encouraged in order to broaden the students' horizons.

In the same vein, transdisciplinary knowledge and skills are also pertinent to language professionals who enable cross-cultural law practice by providing interpreting and translation services. Despite their linguistic expertise, they often lack legal competence, yet the process of legal translation necessarily requires the practice of comparative law.[56] While full competence in both law and translation would require comprehensive education in both disciplines and thus would not be feasible for most linguists, legal methods and skills, and elements of comparative law should, ideally, feature in the syllabi of specialised legal translation and court interpreting modules. Furthermore, it is submitted that transdisciplinarity should be cultivated in students of both disciplines by encouraging law students to audit linguistic, translation and/or foreign language modules as part of their degree and, likewise, offering language students an opportunity to audit courses in law. Arguably, this would also encourage interlingual and intercultural communication between the two cohorts, expanding their skillsets and preparing them for professional practice in global settings.

6. The Role of a Transdisciplinary Chair

As the discussion above demonstrates, accurate interpretation and application of the law requires the adoption of a holistic, rather than discipline-spe-

[54] Paulina E Wilson, "Comparative law outside the ivory tower: an interdisciplinary perspective," *Legal Studies* 43 (2023): 641-57.

[55] Paulina E. Wilson, "Comparative Law in Legal Education: An Interdisciplinary Perspective," *Juridical Tribune - Review of Comparative and International Law* 14, no. 3 (October 2024, forthcoming).

[56] Gerard-René de Groot, "Problems of legal translation from the point of view of a comparative lawyer," in *Netherlands Reports to the Twelfth International Congress of Comparative Law* (The Hague: TMC Asser Institute, 1987), following Harold Cooke Gutteridge, *Comparative law: an introduction to the comparative method of legal study and research* (Cambridge: The University Press, 1946).

cific, approach. In order to achieve this, both in the academia and beyond, transdisciplinary leadership is necessary, which, ideally, would take the form of a transdisciplinary chair with both academic and practical experience that transcends the relevant disciplines. It is envisaged that a person in this role would not only explore the intersections of the law and language in their research, with a view to bridging the interdisciplinary gap, but also contribute to professional practice. Their contribution could take the form of developing methodologies that integrate the knowledge and skills from the relevant disciplines, for instance by incorporating linguistic analysis into legal studies in the context of legal drafting, statutory interpretation, legal problem solving and advocacy, thus innovating the law curriculum. The role of a transdisciplinary chair would also entail the promotion of and engagement in collaborative projects with experts in the relevant disciplines, both scholars and practitioners, with a view to producing research informing legal education and policy in language-related areas of law, as well as developing training programmes for stakeholders in the legal process. Furthermore, a transdisciplinary chair would be perfectly placed to offer consultancy and expert witness services to guide legal and judicial decision-making where legal issues require analysis of sources of law or evidence from a linguistic perspective, to ensure their correct interpretation and application of the law in a given context.

7. Conclusion

While legal education is discipline-specific, the law does not operate in a vacuum. Law practitioners address legal issues by applying the law to the facts of a particular case. Legal rules are, however, conveyed in the form of technical language that requires interpretation of its meaning to ensure correct application of the law; lawyers communicate with peers and clients, some of whom are speakers of other languages; some legal issues require the analysis of linguistic evidence; and the outcome of legal proceedings may depend on the lawyers' advocacy skills, particularly the persuasiveness of their argument. Legal practice thus requires a holistic approach to the law, which includes the language of the law, the language of the evidence and the language of the legal process. To instil such a holistic understanding of the law in students and prospective practitioners, academic leadership is required that transcends the disciplinary boundaries between the law and language.

It is submitted that a transdisciplinary chair could address both the theoretical and practical aspects of the gap between the disciplines. While some excellent interdisciplinary research has been and is being conducted at some of the interfaces between the law and language, there is scope for its further development and practical application to achieve true transdisciplinarity. For instance, transdisciplinarity could be promoted at all levels of research, from LLB and LLM dissertations, through PhD theses to post-doctoral and academic projects, with a view to its dissemination and application by practitioners to solve real-life

problems.[57] Greater collaboration is also needed between experts from the respective disciplines in order to integrate their methodologies, knowledge and skills, and thus approach legal issues from a perspective that acknowledges their context and its complexity. In the spirit of transdisciplinarity, such work must not be confined to the ivory tower but it must be used to inform law practice through provision of continuous professional development (CPD) training post-qualification, influencing policy, offering guidance for judicial decision-making and other forms of engagement with stakeholders in the legal process. All is all, it is imperative that academic leadership in this area be firmly rooted in transdisciplinarity in order to address the urgent yet unmet need to contextualise the law within its operational framework[58] and thus effectively advance legal education and practice.

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[57] See, in particular, art. 11 of the "Charter of Transdisciplinarity," First World Congress of Transdisciplinarity, Convento da Arrábida, Portugal, November 2-6, 1994, https://ciret-transdisciplinarity.org/chart.php.
[58] Ibid, arts 2 and 3.

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Developing a Transdisciplinary Curriculum in Law: Integrating Social, Technological, and Ethical Aspects. International Law *Quo Vadis*?

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Abstract

This study is based on the stage marked by the 30th anniversary of the Charter of Transdisciplinarity in 2024, serving as a moment of reflection-tribute to the academic Basarab Nicolescu. Transdisciplinarity acts as a fundamental approach, complementing disciplinary methods by fostering new perspectives and bridges through the interaction of various disciplines. As stated in the Charter, transdisciplinarity does not seek to create a super-discipline encompassing all others, but to open disciplines to their commonalities and to what lies beyond their boundaries. The inadequacies of traditional legal norms now have a real chance of resolution through the innovative attitude of transdisciplinarity in legal education and research. An international chair of transdisciplinarity would catalyse global academic collaboration, knowledge exchange, and development. Conceptually and practically, transdisciplinary education, through its framework, would develop universal rules and norms for new technologies, climate change, economic development, and human rights. Integrating digital law into international norms and practices stimulates new debates, particularly regarding the regulation of personal data, cybersecurity, and emerging technologies such as AI and autonomous robots. The article proposes efficient and clear solutions presented both textually and in the form of diagrams designed to reinforce the logic of their application.

Keywords: *transdisciplinarity, legal education, international law, innovation, integration, globalisation.*

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1. Introduction

This study includes an objective evaluation of the essential elements of law, particularly international law. This is a landmark moment as the Charter of Transdisciplinarity celebrates 30 years in 2024, marking a long struggle for the most appropriate form of knowledge. The role of transdisciplinarity is foundational, as the Charter states, transdisciplinarity complements the disciplinary approach; from the confrontation between disciplines emerge new results and new bridges; it offers us a new vision of Nature and Reality. Transdisciplinarity does not aim to develop a super-discipline encompassing all disciplines, but to open all disciplines to their commonalities and to what lies beyond their boundaries (Article 3)[1]. The Charter was adopted with these guidelines in mind: "whereas only an intelligence that considers the global dimension of current conflicts will be able to cope with the complexity of our world and the contemporary challenge of the material and spiritual self-destruction of our species; whereas life is strongly threatened by a triumphant technoscience that adheres only to the terrifying logic of efficiency for the sake of efficiency; whereas the contemporary disconnection between the ever-increasing accumulation of knowledge and an ever-impoverished inner being leads to the emergence of a new obscurantism, with incalculable individual and social consequences; whereas the unprecedented growth of knowledge in history increases the inequality between those who possess it and those who do not, thereby generating increasing inequalities within peoples and between nations on our planet; and whereas, at the same time, all the challenges mentioned have a corresponding element of hope, and the extraordinary increase in knowledge can lead, in the long term, to a mutation comparable to the transition from hominids to the human species."[2]

"Proponents of legal postmodernism have highlighted the inadequacy of legal norms and law in general. Under these circumstances, where the question arises as to whether legal globalisation will be realised, there is a need to accept other forms of research, extra-state or suprastate regulation, which go beyond the classical positivist conception." Law crosses borders as an export product. For law, transdisciplinarity represents an innovative attitude in legal education and research, capable of integrating and transforming perspectives and methodologies

[1] The Charter of Transdisciplinarity, adopted at the First World Congress on Transdisciplinarity, held in Convento da Arrábida, Portugal, November 2-6, 1994, paved the way for numerous studies that have made a considerable contribution to the development of scientific research worldwide.

[2] Ibidem. See preamble to the Charter. See more in McGregor, Sue L. T. (2015). "Transdisciplinarity and Conceptual Change". *World Futures*, 71(3-4), pp. 213-227; McGregor, S. L. T. (2011). ”Demystifying Transdisciplinary Ontology: Multiple Levels of Reality and the Hidden Third”. *Integral Leadership Review* 2011. Accessible at http://integralleadershi preview.c om/1746-demystifying, 28.04 2024; and McGregor, S. L. T. and Gabrielle Donnelly (2014). ”Transleadership for Transdisciplinary Initiatives”. *World Futures* 70, pp.164–185. McGregor, Sue L.T, (2015). ”Transdisciplinarity Knowledge Creation”, in P.T. Gibbs (ed.) *Transdisciplinary Professional Learning and Practice*, pp. 9-24, Ed. Springer New York.

from various disciplines to find the most appropriate legal solutions. To this end, an international chair of transdisciplinarity, if established, would serve as a catalyst for global collaboration, knowledge exchange, and development.

Conceptually and practically, transdisciplinarity transcends the limits of traditional disciplines, creating a common space for interaction. In the context of transdisciplinarity, the term 'integration' signifies the unification and combination of perspectives, knowledge, and experiences from various academic and non-academic fields, a process that is not limited to the collaboration between different disciplines but also includes the valorisation of local, traditional, or practical knowledge from outside the academic sphere. Integration represents a concerted effort to create a common space for interaction and dialogue, where methods and theories from various fields are continuously shaped and combined with the experiences and wisdom of local communities, contributing to a deeper understanding of the studied topics.

By 'integrating' diverse perspectives, a synergistic collaboration is promoted that not only brings together existing resources and knowledge but also creates new ways of understanding and applying them, reflecting an openness to epistemological diversity and recognising the value of each type of knowledge in constructing a complex and nuanced vision of reality. We discuss not only the collaboration between different academic fields but also the integration of non-academic perspectives, including local or traditional experiences and knowledge. Although integration has often been synonymous with transdisciplinarity due to the processes of unifying and combining knowledge and methodologies from various fields, it must be said that transdisciplinarity is characterised by transcending the limits of traditional disciplines and a strong feature of adaptability, serving to tailor research to present conditions.

1.1. The Origin and Evolution of Transdisciplinarity

The concept of transdisciplinarity was introduced in the 1970[s] in response to the need to adapt to society because law has always reflected and continues to reflect the way society has evolved. Unlike multidisciplinarity and interdisciplinarity, transdisciplinarity does not limit itself to collaboration between disciplines but seeks to create an integrative framework with a specific purpose that transcends disciplinary boundaries[3]. Transdisciplinarity in law has been influenced by various academic and social movements, including ecology, feminism and civil rights movements.

[3] Max-Neef, Manfred (2005). "Foundations of transdisciplinarity". *Ecological Economics*, 53(1), pp. 5-16 and, for a general view Nicolescu, Basarab (2002). "Manifesto of Transdisciplinarity". SUNY Pres.

2. The Role and Importance of an International Chair in Transdisciplinarity

Firstly, this facilitates effective cooperation between researchers and institutions from various countries, promoting the exchange of ideas and best practices and leading to the development of the much-needed innovative curriculum. Educational programmes that reflect the principles of transdisciplinarity can be practically developed. Additionally, various roles such as supporting applied research and improving public policies can be enumerated.

There are numerous examples of international chairs of transdisciplinarity that have had and continue to have a significant impact. The "Human Development and Peace Culture" UNESCO Transdisciplinary Chair promotes dialogue between science and society, addressing issues such as climate change and sustainable development. As the official description of the chair states: "The higher education, research, and international cooperation work carried out by the Chair is centered on "The Historical Challenge of Planetary Civilisation", which is the title of its new UNESCO-approved general project for the four-year period 2017-2021. The subtitle defines the field of research and the transdisciplinary character: "Towards the Earth's Humanism. In search of the 'co-science' and 'co-growth' beyond violence", which are articulated into three macro-programs: The Complex Research, The Earth Citizenship, The Care of the Common House."[4] It should be noted that when we talk about peace and human development, we cannot fail to emphasise the importance of international human rights and the maintenance of international peace and security. It follows that the ultimate aim is in fact a set of specific international law regulations. Paolo Orefice, the president of this chair, referring to the transdisciplinary paradigm, stated that 'a transdisciplinary point of view is essential to overcome the prospective criticisms of the historical limits of human development and the culture of peace from the 1900s. The fragmented approach to reality through separate disciplines and their proponents, torn and divided in research, work, and the development policies of people and societies, leads to a "liquid modernity," as the philosopher Zygmunt Bauman asserted in his later years'[5]. Furthermore, he argued for the exceptionally negative

[4] See UNESCO Chairs at the University of Florence, work updated on 29.04.2029, available here: https://www.unifi.it/index.php?module=CMpro&func=viewpage&pageid=11257&newlang=eng #pace, accessed on 30.04.2024. The Chair operates based on the Participatory Action Research on the fundamental interaction between the intangible development of the knowledge base of people, groups and cultures and the tangible development of anthropic territories. Hence the priority is given to the educational enhancement of knowledge in planetary coexistence beyond the logic of opposites that generates violence.

[5] Paolo Orefice (2017). *The Project 2017/2021 (Synthesis). The historical challenge of the planetary civilization. Towards the Earth's Humanism, in search of the co-science and cogrowth beyond violence*. University of Florence – October 31, 2017, pp. 2-3, available here: https://www.unifi.it/upload/sub/relazioni_internazionali/unesco_chair_project_human_development.pdf, accessed on 30.04.2024.

global impact of this, "with incredible damages to the lives of countless other species, as well as to the Earth system itself," which translates for international law specialists into the existence of many unacceptable regulatory gaps given the level of evolution claimed by humanity. I refer to the non-recognition of branches of international law such as animal rights, rights of nature, rights of the soul and biocamps of life forms, rights of all life forms, and many others that have been waiting too long to be born.

Such research always has at its core the epistemology that mobilizes knowledge from the broadest spectrum of disciplinary, cultural, and humanitarian cultures, as recommended by UNESCO, aiming to create a transdisciplinary strategy of complex science in its clarity and feasibility. This is the challenge of human knowledge unity over the complex problems, reality, and experimentation of open and transferable models of multidimensional development of individuals and societies, where their tangible and intangible variables are restored in the unity of diversity cited by Morin.

It is the most grounded hope of research, including legal research through which finally the separation between the science of nature, man, and technology, between science and ethics, between science and democracy, between reason and sentiment, could be dissolved, as beautifully described in ink words by Paolo Orefice. We are not far from this aspiration, and human rights represent the best material for applying transdisciplinarity, as I have developed in one of my recent monographs. It is a new type of international legal sociability that almost overturns the ways of producing and reproducing law on subjects as sensitive and diverse as these[6]. I have termed this development "transdynamics" of international law.

From the unity of reality unfolding in different dimensions and complexity, we reach the logic of inclusive thirdness, which, according to the Charter of Transdisciplinarity celebrating its 30th anniversary this year, operates at a more advanced level of reasoning than "the logic of contraries"; it does not exclude it but rather brings it to an intermediate level of analysis. Affirming the logic of inclusive thirdness can demonstrate the conquest of the next stage of human rights democracy among the earthly civilization.

Regarding transdisciplinary education, the Charter is very clear and encapsulates its essence in Article 11: "Authentic education cannot favor abstraction at the expense of other forms of knowledge. Education must emphasize contextualization, concretization, and globalization. Transdisciplinary education is based on reassessing the role of intuition, imagination, sensitivity, and the body in the transmission of knowledge." In short, it addresses the diversity of humanity and the adaptation of educational systems to each individual.

Examples of applicability can be found in all branches of law, but I will

[6] J. Allard, A. Garapon (2005). *Les Juges dans la mondialisation: La nouvelle révolution du droit*. Editions du Seuil, La République des idées, pp. 1-19.

follow by exemplifying the extensive content of international law, which has a mission to fulfill when discussing transdisciplinarity. The Charter of Transdisciplinarity itself provides a guideline for this in Article 8: "The recognition by international law of this dual belonging - to a nation and to the Earth - is one of the purposes of transdisciplinary research."[7] Therefore, international law must achieve that level of recognition of belonging both to a nation and to the Earth simultaneously, as any separation would alter this purpose.

Without delving into philosophical or historical details and remaining focused on the basic idea of transdynamics, it is worth noting that legal theory has been and continues to be used in international legal disputes as a basis for interpreting and applying norms. For example, in international litigation, parties and the arbitral tribunal or international court rely on legal theory to interpret and apply provisions of treaties and laws relevant to the case. Indeed, legal theory can be used to argue whether a particular law or treaty should be interpreted in a certain way or whether a particular solution should be adopted to resolve a dispute based on relevant legal principles and values.

Going further into illustration, a state may invoke the principle of its territorial sovereignty in a dispute with another state claiming that its territorial integrity has been violated. Also in practice, legal theory is used to defend the legal position of a party in international litigation and to provide a solid basis for the final decision of the arbitral tribunal or international court. Although final decisions are often influenced by political factors and other considerations, legal theory remains an important part of the decision-making process in international legal disputes.

In the case of Lotus (*France v. Turkey*, 1927)[8], therefore, international law must achieve that level of recognition of belonging both to a nation and to the Earth simultaneously, as any separation would alter this purpose.

Without delving into philosophical or historical details and staying focused on the core idea of transdynamics, it is worth highlighting that legal theory has been and continues to be used in international legal disputes as a foundation for interpreting and applying norms. For instance, in international litigation, parties and the arbitral tribunal or international court rely on legal theory to interpret and apply provisions of treaties and relevant laws. Indeed, legal theory can be

[7] Article 8: "The dignity of the human being is both planetary and cosmic. The appearance of the human being on earth is one of the stages in the history of the universe. The recognition of the Earth as the homeland of all human beings is one of the imperatives of transdisciplinarity. Every human being has the right to a nationality, but living on Earth is also a transnational being. The recognition by international law of this dual belonging - to a nation and to the Earth - is one of the aims of transdisciplinary research."

[8] The well-known Lotus case was heard by the Permanent Court of International Justice and concerned the collision on August 2, 1926, between the S.S. Lotus, a French ship, and the S.S. Boz-court, a Turkish ship, in a region north of Mytilene (Greece). The Permanent Court of International Justice, often called the World Court, existed between 1922 and 1946. It was an international court attached to the League of Nations.

utilized to argue whether a specific law or treaty should be interpreted in a particular manner or whether a specific solution should be adopted to resolve a dispute based on pertinent legal principles and values.

Furthering this illustration, a state may invoke the principle of its territorial sovereignty in a dispute with another state claiming that its territorial integrity has been violated. Similarly, in practice, legal theory is employed to defend the legal position of a party in international litigation and provide a robust foundation for the final decision of the arbitral tribunal or international court. While final decisions are often influenced by political factors and other considerations, legal theory remains a crucial aspect of decision-making in international legal disputes.

In the case of the Lotus (*France v. Turkey*, 1927), concerning a collision between a French warship and a Turkish commercial vessel, France argued it had the right to bring the case before its national courts, while Turkey contended it should be adjudicated by an international arbitral tribunal. Ultimately, the Permanent Court of International Justice ruled that France had jurisdiction over the dispute based on the principle of sovereignty, which states that countries are not obligated to submit to an international tribunal unless they have previously agreed to do so. This list could also include the dispute between Iceland and the United Kingdom regarding banking governance. Iceland invoked its sovereignty over its banking system against the United Kingdom, which used financial instruments to prevent the collapse of Icelandic banks, thereby affecting the Icelandic economy. Iceland argued that the UK's intervention was illegal, violating the fundamental principle of national sovereignty, and invoked international treaties on foreign investments and the protection of creditors' rights.

At a practical level, multidisciplinarity in legal theory involves integrating elements from other disciplines to enhance the legal analysis of a dispute and determine applicable law. In international commercial disputes, legal theory has been used to analyze norms and principles of international commercial law, while economics and political theory have been used to examine the political motives of each country's trade policy and its effects on others.

From this specific example, among many others that could be cited, we deduce that transdisciplinary education would develop universal rules and norms for issues affecting the entire world, such as new technologies, climate change, economic development, international peace and security, and human rights. Integrating new digital technologies and digital law into international norms and practices leads to new debates and visions, particularly concerning the regulation of personal data, cybersecurity, and norms governing emerging technologies such as artificial intelligence and autonomous robots. The legal regime of the digital nomad could, at some level, represent the practical application of a special cosmopolitan citizenship. This type of citizenship could increasingly be integrated into the legal theory of international law, promoting the idea that all individuals are equal and have universal rights that need protection under international law.

Greater collaboration and synergy between legal departments and other

disciplines will lead to surprising outcomes. In an atmosphere marked by increasing internationalization and interconnectedness in economics, politics, and culture, law can fulfill its mission in regulating and protecting the interests of the Earth, states, and individuals in a composite global environment. It is a unique opportunity to achieve harmony.

The Chair for Integrative Studies at the University of Basel is another example. It has promoted research projects integrating natural and social sciences, with remarkable results in public health and environmental protection. The Department of Environmental Sciences (DUW), with its five headquarters and four external sites, covers two major research areas: integrative biology and earth sciences. In 2022, DUW comprises 17 chairs and an Eccellenca-Professorship of the SNF, as well as more than 200 employees. DUW offers study programs in Biology, Earth Sciences, Integrative Prehistory and Archaeological Sciences, Sustainable Development, as well as the Transfaculty Transversal Sustainable Development Program. Additionally, it is possible to pursue doctoral studies in various fields[9].

In the quest for examples, careful attention must be paid to integrative education, not just what we call transdisciplinary education literally, because over time, the names have swung between various terms intended to reflect the same thing in reality. A definite demarcation point is that transdisciplinarity encompasses all these types of research or education in its understanding without prioritizing one over the other, but rather adapting to the purpose.

Although international chairs of transdisciplinarity have had a positive impact, they face numerous difficulties such as limited resources, institutional resistance due to their hierarchical structures and disciplinary compartmentalization, and the need for continuous training within transdisciplinary projects, both for faculty and students. Despite these challenges, the priority lies in the fact that an international chair of transdisciplinarity in law and beyond can facilitate partnerships between universities, non-governmental organizations, and governmental institutions from various countries[10].

Below we have developed a chart of the current priorities of international law, showing the synergy of innovation with the most pressing priorities of the field.

Diagram illustrating the necessary international law regulations according to priorities[11]:

1. Armed Conflicts and International Security - the highest priority;

[9] See details on the official website of the University of Basel, The Department of Environmental Sciences available here: https://duw.unibas.ch/en/department/, accessed May 1, 2024.

[10] These partnerships enable the exchange of knowledge and resources, promoting innovative and effective solutions globally.

[11] These areas are critical for addressing contemporary global challenges and ensuring international peace and stability. Prioritizing them reflects the need to address urgent issues and develop robust and effective legal frameworks. The diagram is based on my perception based on several studies.

2. Climate Change;
3. Global Pandemic;
4. Strengthening International Institutions;
5. Regional Cooperation;
6. Legal Innovation.

The last three are elements of synergy to solve the first three.

Diagram 1

Source: created by the author

Because the end of a study allows us to succinctly reformulate some concentrated remarks, I will present them in the form of a diagram that has these parameters:

Classification Breakdown

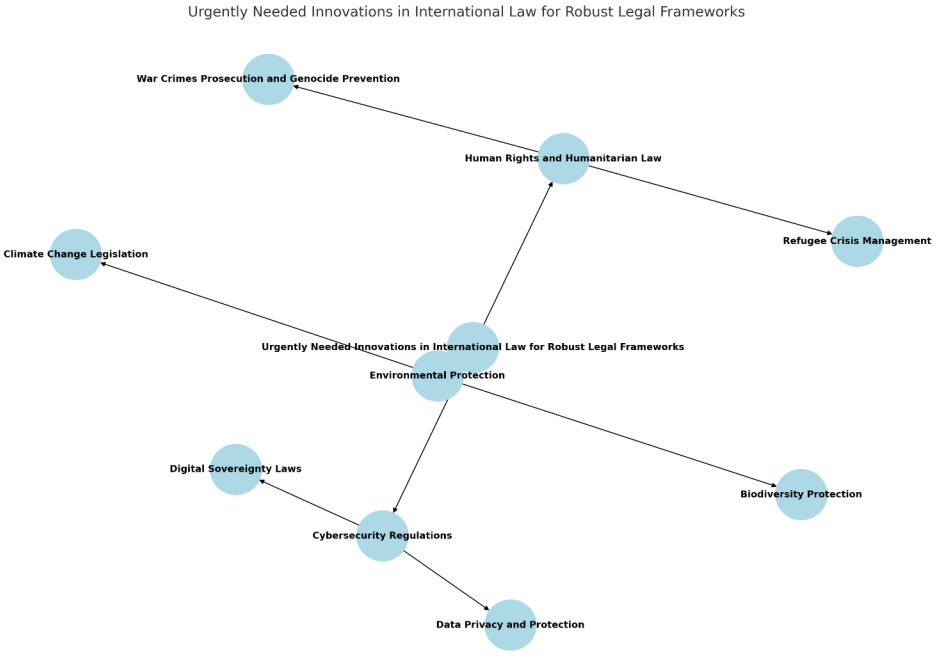
1. Cybersecurity Regulations
   - Data Privacy and Protection:
     Implementing global standards for data privacy to protect individuals' information.
   - Digital Sovereignty Laws:
     Ensuring nations have control over their digital infrastructure and data but respecting the general principles of international law.
2. Environmental Protection
   - Climate Change Legislation:
     Creating binding international agreements to combat climate change.
   - Biodiversity Protection:

Enforcing laws to preserve biodiversity and protect endangered species.

3. Human Rights and Humanitarian Law
   - Refugee Crisis Management:
     Developing comprehensive international frameworks for managing refugee movements and ensuring their rights.
   - War Crimes Prosecution and Genocide Prevention:
     Strengthening international mechanisms to prosecute war crimes and prevent genocide.
4. Objective of Innovations
   - Urgent Issues:
     These innovations address pressing global challenges like cyber threats, environmental degradation, and human rights violations.
   - Robust Legal Frameworks:
     They aim to establish effective and enforceable international legal standards that can adapt to evolving global dynamics.

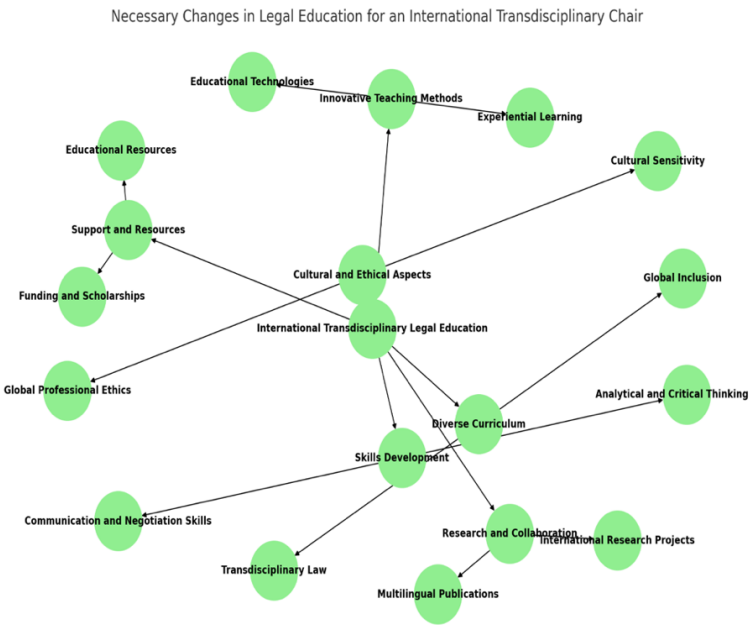
This diagram and classification highlight the urgent areas where innovation in international law is the key, ensuring that global legal frameworks remain robust and effective in addressing contemporary challenges.

Diagram 2



Source: created by the author

Diagram 3



Source: created by the author

3. Conclusions

The most appropriate way to summarize and draw some logical conclusions is to use a "mind map" diagram of the changes needed in legal education to create a transdisciplinary international legal education department. Each main branch and sub-branch is clearly indicated, giving as eloquent a view as possible of the essential elements for achieving this objective.

In the structure of the conclusions, I focused on the innovations necessary for developing a transdisciplinary curriculum in law in general, and international law in particular, to highlight the fundamental role of transdisciplinarity. It is seen as a catalyst for global collaboration and knowledge development, complementing and linking traditional disciplinary methodologies rather than nullifying them. Transdisciplinarity not only connects different disciplines but also creates bridges to what lies beyond their boundaries, offering a new vision of nature and reality.

The importance of an international chair of transdisciplinarity is emphasized, presented as a platform for cooperation among researchers and institutions from various countries, aimed at facilitating the exchange of ideas and best practices, developing innovative educational programs, and supporting applied research. Its positive impact on public policies and international regulations is underscored, citing examples such as UNESCO, which promotes dialogue between

science and society on an international level.

The diagram presented at the beginning of these conclusions outlines relevant solutions for implementing an international chair of transdisciplinarity concretely, focusing exemplarily on law in this case.

Acknowledgement and Conflicts of Interest

The author declare that she has no conflicts of interest with respect to the research, authorship, and/or publication of this article. Any errors or omissions are her own.

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11. UNESCO Chairs at the University of Florence, work updated on 29.04.2029, available here: https://www.unifi.it/index.php?module=CMpro&func=viewpage&pageid=11257 &newlang=eng #pace.

TECHNOSCIENCE AND HUMAN COMPLEXITY

Human and Digital Resilience, AI and Deep Learning, GAFAM and Ecological Footprint: Towards More Inclusive and Sustainable Technologies

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Abstract

This chapter addresses human and digital resilience, the impact of AI and deep learning, and the ecological footprint of tech giants (GAFAM), while exploring more inclusive and sustainable technologies. The authors propose a transdisciplinary approach to understanding digital resilience, integrating economic, political, socio-historical, and individual dimensions. They introduce a resilience model in the form of a 'Temple-Structure,' which articulates various levels of analysis, from biological to social, highlighting the conceptual and practical challenges of this integration. The emergence of AI and deep learning is analyzed through their potential to develop alternative solutions, emphasizing the importance of their ethical and sustainable use. The authors criticize the dominance of GAFAM and their environmental impacts, illustrated by energy consumption analogies. They question the effectiveness of market self-regulation and the sufficiency of scientific knowledge alone to solve these problems, advocating for an integrated approach combining science, culture, politics, and public engagement. An example of digital sobriety in music is presented to demonstrate how collective and low-tech practices can reduce the ecological impact. The chapter concludes by emphasizing the need for a multifaceted approach to mitigate the environmental impacts of digital technologies and promote a more sustainable future.

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Keywords: *human resilience, digital resilience, Artificial Intelligence (AI), deep learning, GAFAM, ecological footprint, sustainable technologies, transdisciplinary approach, temple-structure, digital sobriety, AI ethics, public engagement, participatory music, energy sobriety.*

DOI: https://doi.org/10.62768/ADJURIS/2024/4/07

1. General Introduction

In an era where digital technologies are omnipresent, the concept of resilience – both human and digital – has become increasingly significant. This article adopts a transversal and transdisciplinary approach to examine resilience, leveraging insights from the humanities, social sciences, and cognitive sciences. By exploring the multifaceted nature of resilience, from economic and political dimensions to psychological and spiritual aspects, we aim to provide a comprehensive understanding of how individuals and societies can adapt and thrive in the digital age. The intersection of artificial intelligence (AI) and deep learning with resilience further underscores the importance of developing inclusive and sustainable technologies, particularly in the context of the dominant influence of tech giants and their substantial ecological footprint.

2. Human and Digital Resilience

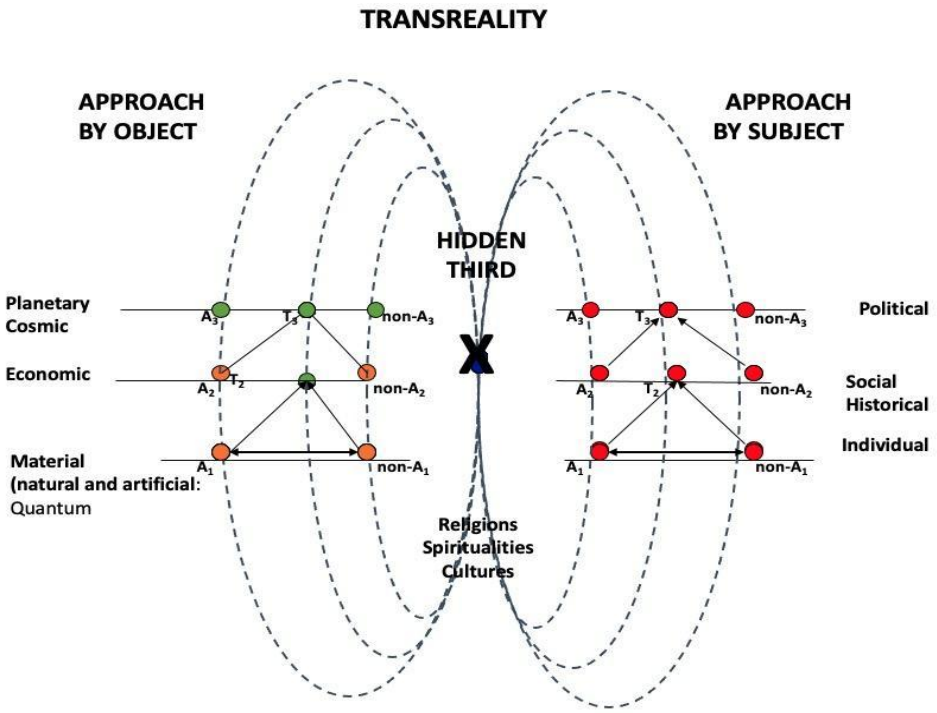
We present a transdisciplinary approach[1] to digital resilience, considering both objective (object-centered) and subjective (subject-centered) aspects. On one hand, we examine the economic, political, and socio-historical

[1] Ruano, J. C., & Pasquier, F. (2023). *Transdisciplinary.* In N. Wallenhorst & C. Wulf (Éds.), *Handbook of the Anthropocene*. Springer International Publishing, p. 491-495.

dimensions of digital resilience. On the other hand, we focus on individual, psychological, emotional, cognitive, and spiritual dimensions.

2.1. The Transdisciplinary Approach to Human and Digital Resilience

Fig. 1 *– Approach to Transreality (author Basarab Nicolescu)*



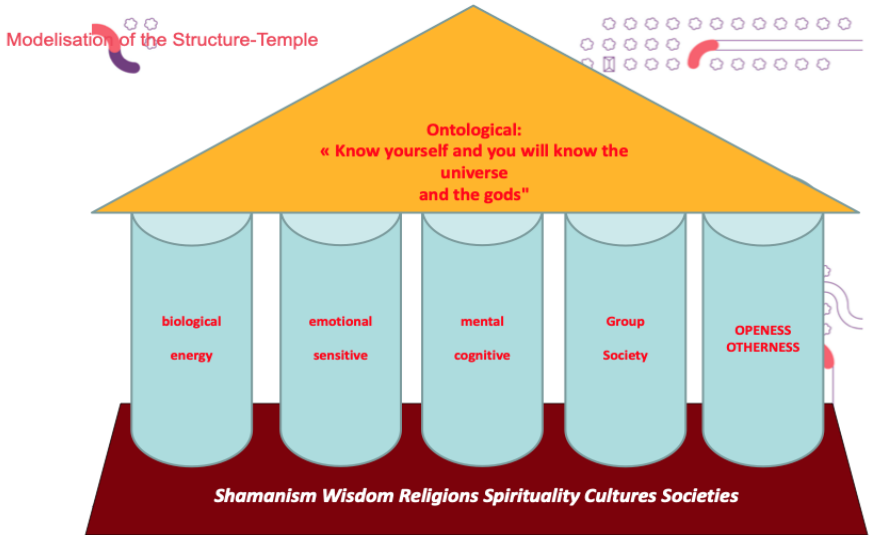
The dual approach presented in this diagram captures the complexity of human and digital resilience by considering interactions between micro (quantum/individual) and macro (cosmos/political) levels. We utilize concepts from philosophy, anthropology, neuroscience, and traditional wisdom to understand the mechanisms of human resilience in the digital age.

2.2. Theoretical Modelling of a 'Temple-Structure'

We propose a model of human and digital resilience in the form of a 'Temple-Structure,' inspired by holistic and integrative approaches. This model articulates different levels of analysis, from the ontological level (relationship to self and the universe) to the biological, energetic, emotional, mental, and social levels. This model highlights the individual and collective dimensions of

resilience, considering interactions between personal, social, and environmental spheres. It also shows how spiritual[2], cultural, and traditional dimensions nourish resilience processes, aiming for harmony between parts and the whole. Indeed, this model is fractal: each part contains all the others.

Fig. 2 *– The Temple-Structure (author Florent Pasquier)*



Here are some challenges posed by the 'Temple-Structure' model for achieving human and digital resilience:

* Complexity and Integration of Different Levels of Analysis: The proposed model articulates numerous dimensions (ontological, biological, energetic, emotional, mental, social, etc.) to capture resilience in all its complexity. Effectively integrating these different levels of analysis represents a significant challenge, both conceptually and methodologically.

* Practical Implementation Complexity: Since the model is based on a holistic and integrative vision, its application in concrete domains (education, organization, public policy, ecological music, alternative solutions, etc.) raises operational challenges. We need to develop suitable tools, methods, and systems to use this approach effectively.

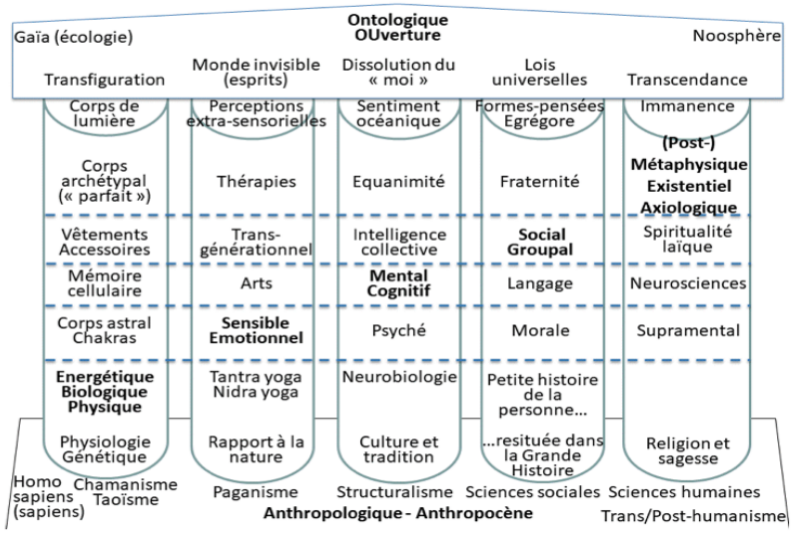
* Consideration of Individual and Cultural Specificities: Resilience has a strong subjective dimension, linked to individuals' experiences, beliefs, and cultural roots. The model must remain flexible and adaptable enough to integrate this diversity and avoid an overly normative approach.

[2] Pasquier, F. (2022). „From Spirituality to Technontology" in *Education. Journal of Systemics, Cybernetics and Informatics*, 20(6), 49–52. https://doi.org/10.54808/JSCI.20.06.49.

* Articulation Between Micro and Macro Levels: The model seeks to link individual and collective levels. Interactions between these different scales of analysis are complex, particularly in terms of mutual impacts and systemic dynamics.

* Empirical Validation and Development of Indicators: The transdisciplinary nature of the model requires empirical validation and the construction of relevant indicators to measure resilience. Ad hoc research and methodological innovations are necessary to meet this challenge.

Fig. 3 *– The Fractal Dimension of the Temple-Structure (author Florent Pasquier)*



2.3. Tools and Methods for Practical Implementation

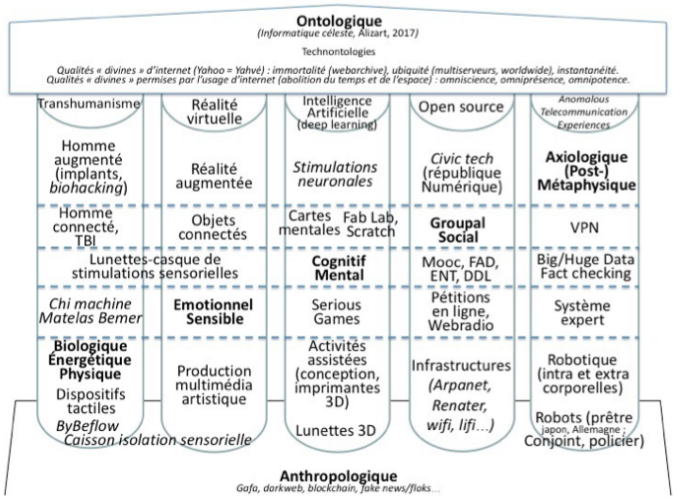
The first crucial step is a thorough analysis of the needs and specific application contexts. This involves precisely identifying the priorities, constraints, and leverage points of the different target audiences (individuals, organizations, communities, etc.) as well as the areas where the model will apply (education, businesses, public policies, etc.). This detailed analysis of real-world conditions will then guide the design of relevant tools and methods. In the case of digital tools, we can transpose this analysis into a corresponding diagram.

In this context, the design of evaluation and diagnostic tools is of major importance. We need to develop instruments capable of holistically measuring the various dimensions of digital resilience (individual, social, environmental[3],

[3] Pinheiro Lopes, S., & Pasquier, F. (2023). „Consciousness and Environmental Education: Transdisciplinary Urgencies from the Post-Pandemic Context". *Transdisciplinary Journal of Engineering & Science*, 14, 19–32. https://doi.org/10.22545/2023/00223.

etc.), based on the holagrammatic principles of the 'Temple-Structure' model. These tools should combine scientific rigor and accessibility for designers, allowing precise diagnosis while being easily usable by various stakeholders.

Fig. 4 *– The Temple-Structure Applied to Digital Tools (author Florent Pasquier)*

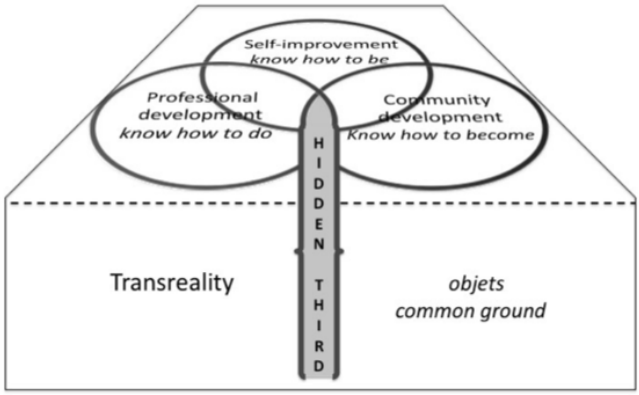


Thus, we aim to design adapted support and intervention methods: establishing training programs, workshops, coaching systems, etc., to deploy the model's principles among target audiences. We pay particular attention to integrating subjective and cultural dimensions, considering the diversity of individuals' and communities' experiences and roots. We employ participatory and co-creative approaches for this purpose.

The articulation between micro (individual) and macro (collective) levels of human and digital resilience is another major challenge. We conceive concepts to link these different scales of intervention, ensuring the coherence and complementarity of the actions taken. This requires the establishment of suitable bridges and coordination mechanisms, such as the theory of triple personal, professional, and collective development, to act reciprocally on transreality.

Experimentation and evaluation of the developed tools and methods are crucial to measure their effectiveness and identify necessary adjustments. We have implemented a continuous improvement approach to constantly adapt these systems to the evolving digital challenges with our students in new educational technologies, through the maintenance of a reflective learning journal. This iterative approach, involving many back-and-forths between theory and practice, ensures that proposed solutions remain relevant and adapted to field needs.

Fig. 5 *– Theory of Triple Development in Relation to Transreality (author Florent Pasquier)*



This work of developing tools and methods suitable for implementing the 'Temple-Structure' model for digital human resilience uses a collaborative approach, involving researchers, practitioners, and end users, to leverage the diverse expertise and perspectives needed to design truly effective and appropriate solutions.

2.4. An Example in Education and Training: From P2I to P4I

We illustrate our transdisciplinary approach to human and digital resilience with an example from the field of education. We have designed a pedagogy initially named 'Integrative and Implicative' (P2I)[4], then 'Integrative, Implicative, Intentional' (P3I), and now 'Integrative, Implicative, Intentional and Intuitive' (P4I).

This pedagogical progression aims to develop resilience skills in learners in the face of digital transformations, mobilizing not only cognitive and instrumental dimensions but also sensitive, emotional, and existential dimensions. Ultimately, it aims to train individuals capable of holistically adapting to digital challenges while preserving their personal integrity and relationship with the world.

This first part has proposed an innovative transdisciplinary approach to understanding human and digital resilience, articulating different levels of analysis and drawing on a variety of disciplines and traditions of thought. This perspective helps better grasp contemporary issues' complexity and consider individual and collective resilience pathways. The example of educational

[4] Pasquier, F. (2020). „Les nouveaux paradigmes éducatifs: Quelles nécessités et quelles possibilités ? Mise en œuvre et évaluation d'une pédagogie intégrative et implicative (P2i)". *Phronesis*, 9 (1), 70. https://doi.org/10.7202/1069709ar.

evolution illustrates the possibility of developing resilience skills in individuals by mobilizing their cognitive, sensitive, and existential dimensions. Such an approach opens promising perspectives for training citizens capable of harmoniously adapting to digital transformations, which we will now detail, while preserving their integrity and connection to the world.

3. The Ascendance of Artificial Intelligence and Deep Learning

The advent of artificial intelligence (AI) and deep learning (DL) has precipitated a profound transformation in contemporary society, fundamentally reshaping our interactions with technology and the surrounding world. However, the agglomeration of power within a few large technological conglomerates engenders significant concerns regarding platform hegemony, pervasive surveillance, and unsustainable environmental ramifications. In this milieu, the concept of digital resilience emerges as a pivotal paradigm, essential for fostering an inclusive, ethical, and sustainable digital ecosystem.

Deep learning, as a formidable technological innovation, possesses the potential to significantly contribute to the enhancement of digital resilience. Its applications can serve as catalysts for the development of alternatives to prevailing dominant platforms, thereby fostering innovation and diversity within the technological landscape. Deep learning can be harnessed to develop secure search engines and browsers that prioritize user privacy and data autonomy. These innovations offer secure and transparent alternatives to conventional platforms by leveraging distributed server networks[5], thereby mitigating the risks of surveillance and search result manipulation. Notable examples include decentralized search engines such as Searx and DuckDuckGo, as well as privacy-focused browsers like Brave and the Tor Browser, which implement robust mechanisms to block trackers and advertisements, effectively preventing data collection on users' browsing activities.

Moreover, deep learning can facilitate the creation of decentralized communication and collaboration tools that eschew reliance on centralized platforms, promoting data sovereignty and direct user interaction. Decentralized social networks empower users to retain control over their data and facilitate direct communication without intermediaries. Noteworthy instances include Mastodon and Diaspora. Similarly, open collaboration platforms enable collaborative project work devoid of dependency on singular corporate entities. Platforms such as GitHub and GitLab exemplify this approach.

In addition to these applications, deep learning can be utilized to design responsible and ethical AI systems that are conceived with an acute awareness of user needs and values, ensuring equitable and transparent AI interactions.

[5] This seems in similarity with the variety of the roles of neural networks (ex: Maalmi, R., Slama, A.B., Sahli, H., Trabelsi, H. (2022). „Auditory evoked potential-based hearing loss level recognition using fully convolutional neural networks". *Traitement du Signal*, Vol. 39, No. 2, pp. 611-616).

Explainable AI systems elucidate decision-making processes, which is imperative for fostering trust and transparency. Furthermore, inclusive AI systems are meticulously designed to ensure fairness and equity, accommodating diverse contexts and user requirements.

Nonetheless, it is imperative to acknowledge that deep learning, while a potent instrument, must be employed within a framework of ethical principles and social accountability. It is crucial to avert the perpetuation of existing biases and inequalities through AI systems and to ensure their contribution towards a more just and equitable society.

Moreover, the environmental impact of AI warrants critical attention. The data-intensive and computationally demanding nature of deep learning engenders substantial energy consumption and greenhouse gas emissions. Hence, there is an urgent imperative to innovate more efficient and sustainable deep learning methodologies, employing data compression techniques, optimized learning algorithms, and environmentally benign computing infrastructures.

In summation, deep learning[6] harbors significant potential to contribute towards a more resilient, inclusive, and sustainable internet. However, this potential can only be realized through responsible and ethical utilization, cognizant of the broader social and environmental implications. By synergizing technological innovation with ethical deliberation and collaborative effort, we can envisage a digital future that is beneficial to all stakeholders.

4. GAFAM vs. Planet Earth: How to Break Free from the Unsustainable Ecological Footprint of AI

The rise of generative AI has reinforced the monopolistic control of the digital landscape by GAFAM[7] (Google, Apple, Facebook, Amazon, and Microsoft). These tech giants exert tremendous influence, not only economically but also socially and environmentally. Their dominance poses significant challenges to citizens' rights, particularly in terms of digital privacy and environmental health. While the invasion of digital privacy through surveillance capitalism is being quite debated[8], the critical issue of the right, in an AI carbon emitting the world, to a healthy life in a clean environment has received

[6] Deep learning is considered here as a subcategory of machine learning (ex: Slama, A. B., Sahli, H., Mouelhi, A., Marrakchi, J., Trabelsi, H., & Sayadi, M. (2019). „Machine learning based approach for vestibular disorder diagnostic in videonystagmography". *Biomedical Research*, 30(4).

[7] The same trend seems to take place with BATX in China, even though the regain of control of the central State may slow it down.

[8] Zuboff, S. (2019). *The Age of Surveillance Capitalism: The Fight for the Future at the New Frontier of Power,* Profile Books, https://www.perlego.com/book/3708168/the-age-of-surveillanc e-capitalism-the-fight-for-a-human-future-at-the-new-frontier-of-power-barack-obamas-books-of-2019-pdf.

comparatively less attention[9]. This right is increasingly compromised by the techno-predatory practices of GAFAM, which often disguise themselves as 'green' initiatives but contribute substantially to ecological degradation.

4.1. Exponential Growth in Techno-Predation: The Energy Consumption 'Espresso' Analogy

The environmental impact of digital technologies, especially those driven by AI, can be dramatically illustrated through the indicator of energy consumption, and its growth with AI spreading. A standard Google search consumes as much electricity as brewing an espresso. This might seem negligible on an individual level, but the cumulative effect of billions of searches daily is significant. Furthermore, a more detailed Google search using the AI 'Gimini' summary feature consumes the equivalent energy of ten espressos, according to Google's own reports. More concerning is the energy usage of advanced AI applications like ChatGPT 4+, when coupled with a search engine, which can consume energy equivalent to brewing 100 espressos per query. These comparisons highlight the rapidly increasing ecological footprint of more sophisticated and resource-intensive AI applications, rapidly spreading through society[10] .

The exponential growth in energy consumption raises severe concerns about the sustainability of current technological practices. As AI becomes increasingly integrated into daily life, its energy demands grow exponentially. This growth is not linear but accelerates as AI technologies become more complex (generating fixed images, then video, then possibly 3D videos ….) and widely adopted[11]. The environmental cost of this digital revolution is a critical issue. Though, until 2023, little attention was paid to it by scholars, according to publications in the journal.

4.2. Market Self-Regulation: A Viable Solution?

A common argument suggests that the market can self-regulate to mitigate the ecological predation by tech giants. Advocates of market self-regulation argue that rising energy costs will naturally limit the expansion of GAFAM's offerings. They posit that as energy becomes more expensive, tech companies will be forced to curb production and end free services, thereby

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[9] OECD (2024). *In tune with ethics: Responsible artificial intelligence and the music industry*. Retrieved July 4, 2024, from https://oecd.ai/en/wonk/ethics-music-industry.

[10] Vaidheeswaran A. (2024) *Watt's in our Query? Decoding the Energy of AI Interactions.* Retrieved June 15, 2024, from https://www.linkedin.com/pulse/watts-our-query-decoding-energy-ai-interactions-archana-vaidheeswaran-gvmuc.

[11] Luccioni, S., Jernite, Y., & Strubell, E. (2024). *Power Hungry Processing: Watts Driving the Cost of AI Deployment*, ArXiv, DOI: https://doi.org/10.1145/3630106.3658542.

transferring costs to users (raise the prices) potentially reducing consumption. Additionally, proponents claim that technological advancements will lead to greater eco-efficiency of the delivery of AI-based services. They argue that the initial growth in consumption will eventually be balanced by improved production methods and more efficient functioning of generative AI, thereby reducing its environmental impact.

However, historical evidence challenges this optimistic view. The rebound effect, where gains in efficiency lead to increased usage, has consistently undermined the expected benefits of eco-efficiency improvements. For example, the introduction of fuel-efficient cars did not reduce overall fuel consumption because it made driving cheaper, thereby encouraging more travel. Similarly, as digital technologies become more efficient and less costly, their usage proliferates, leading to greater overall consumption rather than reduction. This pattern suggests that reliance on market self-regulation and technological improvements alone is unlikely to address the ecological challenges posed by generative AI and other digital technologies.

Moreover, market mechanisms often fail to account for the full environmental costs associated with technological advancements. The externalities of digital technology production and usage – such as e-waste, resource extraction, and energy consumption – are rarely reflected in the market prices of these technologies. Without comprehensive regulatory frameworks and policies, or community initiatives and public engagement that internalize these externalities, market self-regulation remains an inadequate solution[12].

4.3. Liberation through Science: Insufficiency of Scientific Knowledge Alone

The notion that science alone can liberate society from the ecological predation of GAFAM is also flawed. Despite five decades of climate science research, there has been minimal societal change in response to the environmental crisis. This indicates that scientific knowledge, while crucial, is not sufficient on its own to drive systemic change. Efforts to bridge the gap between science and society often involve popular education, science outreach, and participatory research. These approaches aim to democratize scientific knowledge and engage the public in meaningful ways.

However, while these initiatives are necessary, they are not enough to overcome the deep-rooted structural and cultural inertia that hinders significant change. The persistence of unsustainable practices despite widespread scientific consensus on climate change underscores the limitations of relying solely on

[12] Martina Willenbacher, Torsten Hornauer & Volker Wohlgemuth (2022). "Rebound Effects in Methods of Artificial Intelligence," in Volker Wohlgemuth & Stefan Naumann & Grit Behrens & Hans-Knud Arndt (ed.), *Advances and New Trends in Environmental Informatics*, Springer, pp 73-85.

scientific knowledge. Effective change requires a more integrated approach that combines scientific insights with policy interventions, cultural shifts, and active public engagement.

One of the critical barriers to effective action is the disconnection between scientific knowledge, policy implementation, and social behaviors. Scientific findings often struggle to translate into actionable policies and behaviors due to political, economic, and social resistance. Additionally, the complexity and scale of environmental issues necessitate coordinated efforts across multiple sectors and levels of governance, which is challenging to achieve without substantial public and political will.

4.4. A Case Study in Joyful Digital Sobriety: Participatory Music Creation

An innovative approach to addressing these issues is demonstrated through a research-creation experiment to be conducted in Amsterdam (EASST, 2024)[13], focusing on digital sobriety and conviviality[14] in music. This participatory action research event combined low-tech musical instruments and the voices of participants to create a collective musical experience. This approach highlights the potential of combining scientific understanding with cultural practices to foster sustainable behaviors.

Observations and Digital Actualization in Music. Over the last century, there has been a marked increase in the consumption of recorded and streamed music, promoting individual rather than collective musical experiences. This shift reflects broader societal trends towards individualization and technological mediation in cultural activities.

Concurrently, community-based musical practices, such as neighborhood dances and collective singing, have significantly declined. This trend is exacerbated by the rise of generative AI in music production, which facilitates the creation of music without direct human involvement. This shift not only concentrates creative power in the hands of a few industrial players but also increases the ecological footprint of music consumption.

Experimentation: Sensory and Convivial Engagement. The Amsterdam event is to employ acoustic instruments and participant voices, integrating sensory elements like smoke generation to visualize pollution from AI usage. Participants are encouraged to harmonize together, reducing reliance on AI auto-tuning and consequently decreasing pollution generation by AI use. This real-time feedback loop demonstrates the environmental benefits of collective musical practice over technologically mediated individual alternatives. The event

[13] Jollivet, P., Thouvenin, I., Duarte, A-B. (2024). *Translating the AI vs ecology controversy to the senses? A scientific mediation through a musical performance. Making and Doing Transformations.* EAAST Amsterdam.

[14] In the sense of: Illich, I. (1973). *Tools for Conviviality*. Marion Boyars Publishers Ltd.

emphasizes the importance of conviviality and sensory engagement in fostering sustainable practices.

In this experiment, the participants experienced firsthand the impact of their musical engagement on the environment. As they sang together and listened to each other to stay in tune, the need for technological intervention decreased, symbolized by a reduction in the artificial smoke generated. This tangible connection between human activity and environmental impact is aimed at providing a powerful illustration of how collective, low-tech convivial practices can mitigate ecological damage due to AI.

The integration of sensory experiences, such as the sight and smell of smoke, adds a visceral dimension to the abstract concept of digital pollution. This multisensory approach helps participants internalize the environmental costs of their digital behaviors in a way that purely cognitive understanding might not achieve. By making the invisible visible, the experiment fosters a deeper awareness and connection to the issue at hand.

5. Conclusion: Towards a New Paradigm of Science and Public Engagement?

This experiment in research-performance aims not to conclude with a single academic presentation but to inspire a series of participatory performances accessible to a general audience. The goal is to share scientific concepts in engaging ways and possibly redefine the practice of science itself. The real challenge lies ahead: attracting a participatory audience to engage with scientific issues, particularly in questioning the collective limitation of exponential energy consumption generated by ubiquitous and alluring AI technologies.

To address the ecological challenges posed by generative AI and other digital technologies, a multifaceted approach is necessary. This includes integrating scientific knowledge with cultural practices, policy interventions, and active public engagement. By fostering a deeper understanding of the environmental impact of digital technologies and promoting sustainable alternatives, it is possible to mitigate the ecological footprint of AI and move towards a more sustainable future.

The participatory science/art nature of some Amsterdam EASST sessions (Transforming engagement and communication through play and plays) highlights the potential for community-driven initiatives to effect change. The description stands: “Engaging actors across varying forms and levels of expertise comes with questions of power and possibilities. This combined panel considers how public engagement and science communication can be transformed by drawing on/using games, theatre and other creative modes”.[15]

[15] Présentation of the « play » panel of the conference: https://nomadit.co.uk/conference/easst-4s 2024#14063.

By involving the public in meaningful and engaging ways, such initiatives can build a broader base of support for sustainable practices. This approach also underscores the importance of accessibility and inclusivity in scientific and environmental outreach. Making complex issues understandable and relatable to diverse audiences is crucial for fostering widespread action.

Moreover, similar approaches could be applied to other areas of digital consumption. For instance, participatory workshops could be used to explore the ecological impacts of online shopping, social media use, or video streaming. By drawing connections between daily digital behaviors and their environmental consequences, such initiatives could encourage more mindful and sustainable practices.

6. General Conclusion

As we navigate the complexities of the digital age, it is imperative to foster resilience that encompasses both human and technological dimensions. This article has outlined a transdisciplinary framework that integrates diverse perspectives to address the multifaceted nature of resilience. The rise of AI and deep learning, while offering transformative potential, also necessitates a careful consideration of ethical and environmental implications. By advocating for inclusive and sustainable technologies, and through collaborative, community-driven initiatives, we can work towards mitigating the ecological impacts of digital advancements. Ultimately, achieving a balance between technological innovation and ecological sustainability is essential for ensuring a resilient and equitable future for all.

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The authors declare that they have no conflicts of interest with respect to the research, authorship, and/or publication of this article. Any errors or omissions are our own.

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Shifting Beyond the World of Duality

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Abstract

This world is made up of two polarities. These polarities often represent opposing qualities that exist in harmony. In the academic realm, the concept of duality can be found in a variety of disciplines, and the exploration of the duality can lead to a more complex understanding of the world and can assist researchers to explore the complexities of human nature more profoundly. Many problems nowadays in the real world are multifaceted and cannot be tackled by a single discipline. In particular, the 21st century is characterized by rapid technological progress such as data-driven technologies, and global challenges, and interconnected systems, the importance of interdisciplinary research has never been more pronounced. Transdisciplinary approaches function like a set of tongs to stair spaghetti with ragu sauce to make a perfect pasta dish. It surely symbolizes a concept like a Chinese symbol of the light and dark. To comprehend the strength of the opposing side, researchers should delve deeper into both poles. When it comes to interdisciplinary studies, this interplay of yin and yang can be likened to the relationship between science and metaphysics. The characteristics of each becomes defined, and then the perfect transdisciplinary process shall appear. More specifically, science and metaphysics can be marinated as a unity of the polarities. It is now time to merge one polarity with the other to make a concept of wholeness.

Keywords: *alchemy, duality, transdisciplinary, yin and yang, polarities, complexity, emerald tablets, knowledge, science and metaphysics, polarity.*

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1. Introduction

The idea of dualities is a common theme in many spiritual traditions, reflecting the human experience. It can be said that this world is made up of opposing qualities that generate both unity and contrast. The study of duality and transdisciplinary research in the global societies offer a fascinating way to understand the complexities that define our reality.

Indeed, as Emerson Brian and Lewis Kelly state in *Navigating Polarities: Using Both/And Thinking of Leading Transformation*, the brain is capable of functioning 'either/or thinking, and it does not like to be ambiguous being 'both/and'. The brain yearns for predictability whether to 'do it now' or 'do it later', which does not allow individuals to choose between the two. As they argue people often discuss various things in opposition such as 'stability vs. change,' 'structure vs. flexibility,' 'candor vs. diplomacy', while many problems cannot be solved by choosing a side. However, the best possible solution to complex problems is to comprehensively grasp conflicting perspectives[1].

However, people frequently struggle to express the harmonious coexistence of contrasting elements necessary for achieving success. Interestingly, in recent years, many scholars and researchers who study adult development theory argues many grownups see the world in a way of black/white mindset. According to Emerson and Lewis, transitioning from predominantly 'Either/or thinking' to incorporating more of a 'Both/and thinking' is a substantial cognitive growth that typically occurs in later stages of development[2]. In other words, in a broader sense, it can be said that humanity must live in an era where they are required to adopt a mindset of the 'and/both', as humanity is continuously evolving, as the author will discuss in detail later.

In transdisciplinary research, dualities play a crucial role in enhancing our understanding of the world and humanity. However, it is essential to recognize that these dualities are often simplified and can be fluid rather than rigidly fixed[3].

The human experience is multifaceted, and individuals tend to navigate a spectrum of experiences that may not fit into these binary categories.

In the academic realm, the use of clear-cut definitions of study fields can serve as a framework for understanding complex concepts. At the same time, it is also crucial to cultivate a nuanced and critical perspective that recognizes the limitations of these dichotomies. Ultimately, embracing the interconnectedness

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[1] Emerson, Brian, and Kelly Lewis. *Navigating Polarities: Using Both/And Thinking to Lead Transformation*. Washington, DC: Paradoxical Press, 2019, p. 15.
[2] Ibid, p. 17.
[3] Roux, D.J., Nel, J.L., Cundill, G. *et al.* „Transdisciplinary research for systemic change: who to learn with, what to learn about and how to learn". *Sustainability Science for Meeting Africa's Challenges* 12, 711–726 (2017). https://doi.org/10.1007/s11625-017-0446-0.

of all facets of existence can lead to a richer understanding of the world and promote a more integrated approach to knowledge and wisdom.

This paper approaches how the idea of dualities can fit into transdisciplinary research in the age that is filled with many complex problems around the world. It is about opening infinite possibilities for a rewarding future. Yet metaphysics is something that has not been scientifically proven. Yet many complex problems cannot be solved without inspiration and gut feelings.

Thus, it is important to transdisciplinary expand every aspect of any academic field of study. By recognizing the interconnectedness of opposing or different forces or ideas, we can strive for unity in a world that often seems divided.

2. Complexity of Duality

Duality is the concept of two things that are opposite to one another but also are closely intertwined. Light and dark are opposites, and yet they illuminate each other first like cell division, which is the first step of the evolution of life.

The divining line of the Chinese symbol of yin and yang not only symbolizes light and dark but also inspiration and expiration. Yin is a phenomenon that tries to expand from the inside out, while Yang is a phenomenon that tries to contract from the outside in. Christine Page in her *Frontier of Health: How to Heal the Whole Person* points out that one talks about 'inspiration' because they acknowledge 'expiration', which symbolizes life itself[4]. Both contain the potential for transformation into the opposite force – the differing two circles literary indicate the 'potential of transformation'[5], as Aristotle's famous proverb says: 'It's during our darkest moments that we must focus to see the light'[6]. The proverb indicates the global concept of truth, because in the East there is the concept of 'yin and yang', as mentioned above, while in the West, Aristotle also stated that the universe is composed of opposites.

There are 'two parts of one whole for everything,' which seems to be the 'law of the universe' that esoteric teachings reveal[7]. However, as humanity or human life evolves, the environment becomes more complex and unpredictable. Furthermore, the concept of duality also indicates that when a problem becomes complex, so does the solution, because there is no standardized or effortless way to solve it.

One facet of such complexity can often be created by the opposing force to highlight the relationship between light and dark. The depth of the problem is not acknowledged until the bright light is shed on it. Further, when one extreme

[4] Page, Christine. *Frontier of Health: How to Heal the Whole Person.* London: Random House, 2005, p. 30.
[5] Ibid, p. 31.
[6] Aristotle Onassis Quotes.' BrainyQuote. Accessed June 5, 2022. https://www.brainyquote.com/quotes/aristotle_onassis_119068.
[7] Page, Christine, *op. cit.,* p. 32.

is significantly stronger than the other, finding an optimal solution becomes challenging.

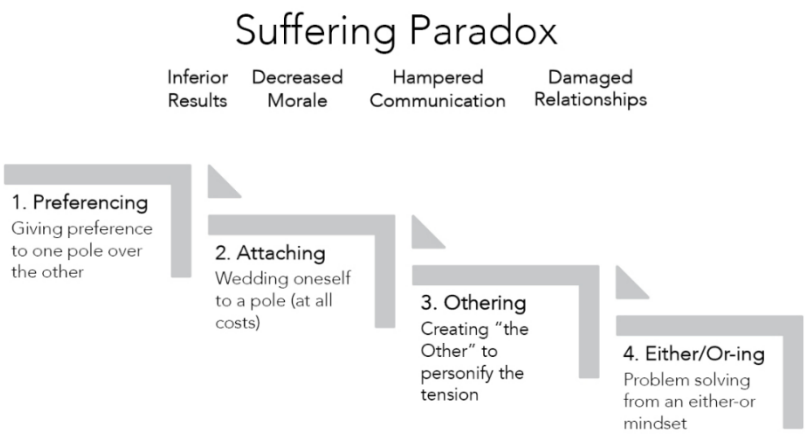

Figure 1. *Suffering Paradox*
Source: Emerson, Brian, and Kelly Lewis[8].

For instance, when an individual discusses a problem with someone who has the 'opposite' perspective, they often protect themselves to adapt their opinion as part of their identity[9]. Based on the research conducted by Emerson and Lewis, individuals in groups are faced with a polarity without a framework for understanding it as an interdependent duo, they go through a series of stages 'Preferring,' 'Attaching,' 'Othering,' 'Either/or-ing' as shown in **Figure 1**[10].

This phenomenon indicates that individuals soon enter their 'Preferring' stage in which they 'place more value on one pole over the other,' even if they acknowledge the other one is also as important as their pole[11].

As the process of the stages in the figure 1 proceeds, the ego strengths of groups grow, indicating a manifestation of 'yin and yang' as illustrated in **Figure 2**. Individuals with too much ego strength may become too rigid to destruct a harmony, while too little ego strength may become too dependent on others to neglect their own opinions.

In other words, the significance of the 'yin and yang' above not only represents the interconnectedness of all existence but also illustrates the concept of 'cause and effect'. People make choices, and their choices have consequences in

[8] Emerson, Brian, and Kelly Lewis, *op. cit*., 2019, p. 20.
[9] Ibid, p. 20.
[10] Ibid, p. 19.
[11] Ibid, p. 20.

this world. With the arrival of the new era, there is a possibility that various problems await humanity in the future.

Figure 2. *Yin & Yang (Implicitly & Explicitly)*
Source: https://hinohikali.com/yomoyama/taikyokuzu/[12]

Yet humanity has evolved by diving into the unknown. As the divining line of Yin and Yang shows, dark and light circulate, indicating that things will never stay the same. For instance, data-driven technologies, which symbolize modern society, will affect various fields in the future. It will be important to generate new knowledge and approaches to problem-solving. Emerson and Lewis note when the individual in their research understands polarities, their 'dynamic' could transform into a 'creative force' instead of a 'destructive one'[13]. When they finally understand a situation with a polarity mindset, they acknowledge their problem is 'solvable'. They begin to accept one another to 'synchronize' and 'better understand' that both views are necessary if they wish to accomplish their goal. A 'both/and perspective' is the way to find the 'sustainable third way'. This 'Both/and perspective' is the way to merge both yin and yang poles to harness the benefits of both poles, which illustrates how transdisciplinary research comes into a picture. The balance between structure and flexibility is crucial for any success. The stronger our preference for one extreme, the more inclined we are to accept the consequences of its excessive use, possibly overlooking the possibility that we may lose some of the benefits we originally sought[14].

Interestingly, Paul Gibbs notes in 'The Struggling Towards a Transdisciplinary Metaphysics' in that 'emergence' is the crucial aspect of human life, and

[12] The Tai Chi Diagram at the Heart of Japan | The Encyclopedia of a Wonderful Life (Lucky Life and Happy Living). 2024. https://hinohikali.com/yomoyama/taikyokuzu. Accessed June 5, 2024.
[13] Emerson, Brian, and Kelly Lewis, *op. cit.,* p. 20.
[14] Emerson, Brian, and Kelly Lewis, *op. cit.,* p. 22-23.

all knowledge development which is concerned with human beings and their activities in the world might be triggered from a 'transdisciplinary metaphysic contingent'. He also points out a 'whole integration', or 'genuine transdisciplinarity' is now required[15].

A new solution can be created when seemingly contradictory things unfold. Sue L. T. McGregor notes in 'Transdisciplinary Logics of Complexity' that 'high level of expertise' can be advantageous, but that is not 'sufficient' to solve the complex problem. She argues that complexity is 'nonlinear', which indicates that the 'interwoven strands' are characterized in relation to 'what they are connected'[16].

When such 'interwoven strands' are unwoven, an innovative approach can be formulated as a solution – that is being 'knowledge'. Humanity must strive to create a better future, as it leads them to live better. Joe Dispenza writes an insightful forward in Dawson Church's *Mind Matter: The Astonishing Science of How Your Brain Creates Materials* that when one learns something new, they start failing to 'see things the way they were'[17]. That is called 'knowledge', which literary makes new synaptic connections, allowing the learner to initiate it to into a new knowledge[18]. When humans are undergoing in the current age result in numerous complex challenges such as the emergence of AI technologies in everyday life, climate change and social diversity, a thoughtful and new approach to change the global communities to shed a light on to the challenges to make see things the way they were.

As Javier Collado notes in 'Transdisciplinary Education as Ethic of the Diversity Reform in the World-Society of the 21st century,' transdisciplinary is defined as: Research or education that brings integration of different disciplines, where 'religions and science are complementary'[19].

In recent years, the power of such collectivist religions has waned, the concept of diversity has become more prevalent, an era of individual spirituality has arrived, and technological innovations affecting the labor force and job market may threaten the future existence of humanity. While the 20th century was defined by 'conflict' and 'division', the 21st century has seen a greater emphasis on 'cooperation' and 'sustainability' in the face of global challenges[20]. As unity

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[15] Gibbs, Paul. 'The Struggling Towards a Transdisciplinary Metaphysics.' *Postdigital Science and Education*, vol. 4, Issue 3, October 2022, pp. 649–657.

[16] McGregor, Sue L. T. 'Transdisciplinary Logics of Complexity.' *Integral Leadership Review*. July 2020. https://integralleadershipreview.com/17501-7-31-transdisciplinary-logics-of-complex ity/. Accessed June 5, 2024.

[17] Church, Dawson. *Mind to Matter: The Astonishing Science of How Your Brain Creates Material Reality*. Hay House, India, 2018, pp. xi-xxii.

[18] Ibid, p. xi.

[19] 'This vs. That.' *20th Century vs. 21st Century – What's the Difference?* - https://thisvsthat.io/20th-century-vs-21st-century. Accessed June 5, 2022.

[20] Collado, Javier. 'Transdisciplinary Education as Ethic of the Diversity Reform in the World-

may be the key to the 21st century in the age of AI (science) and metaphysics, including religions, will be essential to 'shed light' on one's true nature.

3. Scientific Mindset vs Metaphysical Mindset

If science is a representation of the empirical data of the past, metaphysics is a representation of the possibilities of the future. Man can find his own position when these facets merge. For fixing complex problems in global challenges both analytical (scientific) and metaphysical mindsets may be required, as Church states that he sees certain patterns between 'thought' and 'thing'. He sees that much of one's evidence can be found when they are simply 'aware,' which he defines as the simplest state of consciousness. He notes: the way we use that consciousness – the way we direct our awareness – produces profound and immediate changes in the atoms and the molecules of our bodies. Sciences also show us that our consciousness affects the material reality around us. As our consciousness changes, so changes the world[21].

The scientific mindset can be viewed as a discipline of 'thing' or concrete evidence in three-dimensional reality such as 'atoms' and 'molecules'. It navigates a researcher to give a profound impact to his scientific research. The accumulation of data leads to significant research results. Such a 'linear' process is effective for those decisions with 'relatively less ambiguity', such as placing 'measurement devices' for pollution monitoring or budgeting to set regulation. However, in the case of the growing interconnectedness of 'social and environmental' problems, such as 'climate change and pandemics like COVID-19', metaphysics is the single discipline that cannot address the unpredictable and nonlinear phenomena[22].

Research often shows that with the scientific minds, used deliberately, one can create things beyond the ordinary[23]. They can create material form out of their subconscious minds, even if there are times that they fail to manifest their thoughts[24].

Interestingly, Ihoko Kurokawa in her *Maemukini Ikirunante Bakabashii*: *Noukagakude Kokoronokoriwo Hogusuhouhou* [Thinking Positively and Living Optimistically Is Foolish*:* How Brain Science Relieves Mental Tension] states there is a phenomenon in psychology called the 'cocktail party effect'. It refers to one's ear ability to notice their name being called in a softer voice amidst the 'noisy background chatter', which may sound like just a 'murmur'. At the hustle

Society of the 21st Century.' *Global Education Magazine*, June 20, ISSN 2255-033X, https:// globaleducationmagazine.com/transdisciplinary-education-ethic-diversity-reform-world-society-21st-century/.

[21] Church, Dawson, *op. cit.,* 2018, p. xxii.

[22] Lawrence, Mark G., Stephen Williams, Patrizia Nanz, and Ortwin Renn. 'Characteristics, potentials, and challenges of transdisciplinary research.' *One Earth*, vol. 5, no. 1, 2022, pp. 44–61.

[23] Church, Dawson, *op. cit.,* 2018, p. xxi.

[24] Ibid, p. xxi.

and bustle of an airport, for instance, one can turn around if their name is called out. Amidst all the announcements at the check-in counter, they may only hear to urge them to board their bullet train as soon as possible[25].

This is made possible by the fact that the subconscious mind can 'perceive all kinds of information from background noise' and 'selectively relay only the necessary information' to the conscious mind. The subconscious mind captures 'tens of times more information than the conscious mind' does and filters out unnecessary information[26].

In academic research, numerous researchers avoid metaphysical concepts, as they are often vague and experimental. To them, metaphysics is something that has not scientifically been proven. As stated before, when a light sheds onto darkness, one can no longer see things the way they were. Louise Dalingwater argues metaphysics shows a 'substance of reality' that cannot be found by observing and experimenting in a 'scientific' way[27].

A substance of reality indicates the basic material that makes up physical reality. Indeed, the nature of complex reality remains a complex and ongoing philosophical and scientific inquiry. Human beings are not only made of matter, and it is significant to acknowledge what they carry beyond matter by living in a three-dimensional reality. Everything that exists in this world is made up of 'people,' 'objects,' 'places', and 'time', as Joe Dispenza argues in *Becoming Supernatural. How Common People are Doing the Uncommon*. He further notes that in the three-dimensional reality, people cannot experience them without their 'five senses'[28], which can be said as a dimension of 'particles and matter'[29]. Through their senses, humans experience these things as density. In the realm of the quantum, 'mind' and 'matter' are indivisible. As a body, Humans use their senses to define this present moment we live in.

Traditional Newtonian discipline is the world of the predictable or known, allowing people to reach outcomes, whereas quantum is the world of the unpredictable or unknown. In three-dimensional reality, the more we experience separation and scarcity. As individuals move their attention away from the outer world and toward the inner world, into the present moment, our consciousness aligns with its unconsciousness. This may be a 'third way' to find a solution to complex problems using transdisciplinary approaches.

Bill Dennison notes in his blog, *Transdisciplinary Literacy: Seven Prin-*

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[25] Kurokawa, Ihoko. *Maemukini Ikirunante Bakabashii* [*Thinking Positively and Living Optimistically Is Foolish: How Brain Science Relieves Mental Tension*]. Magazine Haus, 2018, p. 54.
[26] Ibid, p. 54.
[27] Dalingwater, Louise. 'Challenges in Transdisciplinary Research: Response to "The Struggling Towards a Transdisciplinary Metaphysics" (Gibbs 2021).' *Postdigital Science and Education*, vol. 4, 2022, pp. 671–675. https://doi.org/10.1007/s42438-022-00292-6.
[28] Dispenza, Joe. *Becoming Supernatural. How Common People are Doing the Uncommon.* Carlsbad: Hay House, 2017, p. 48.
[29] Ibid, p. 219.

ciples That Help Define Transdisciplinary Research, transdisciplinary approaches are 'best used for problems that are the most complex', to resolve. As he notes there are a few good reasons as to why transdisciplinary research can be useful for difficult problems. First, it consumes more 'effort', more 'resources', and more 'time' than traditional research, so that problems can be tackled more 'quickly' with less intensive means. Second, transdisciplinary approaches help to structure problems in a way that makes them 'resolvable' with the 'available resources' and 'people involved'. Finally, the 'co-design' of the research program and the 'co-development' of strategies and products, which are essential to address complex problems, allow for the development of trusting relationships so that the solutions developed by the research program are owned by all partners, enhancing the implementation of solutions[30].

The **Figure 3** below shows how the unity of both binaries can equally merge into each other in transdisciplinary research, without any boundaries. When the analytical mind of science merges with the non-analytical mind of metaphysics, it can be said that there is coherence between the outer world and the inner world. When the analytical mind of science merges with the non-analytical mind of metaphysics, there is coherence between the outer world and the inner world.

By using the analytical mind, humans can analyze their problems based on their past experiences and can predict their future at the same time. The analytical mind, as Dispenza argues, can be defined as a world of 'matter', which is based on 'predictable known'[31]. Complex problems can be solved by finding solutions through innovative approaches based on past data or experiences.

Transdisciplinary research allows researchers to discover an innovative path by creatively addressing the inherent contradictions within a polarity. A unity of polarities allows to 'merge' or 'transcend' disciplinary boundaries that lead to the solution of a complex problem, it is essential to approach it from a broad perspective, which may be something that science has overlooked. As mentioned before, if the transitional third way is the key to resolve the complex problem, it requires individuals to 'get out of their heads' to eliminate old beliefs, social, and past experiences to represent their EITHER/OR mindset. Third way requires, as Emerson and Lewis point out, a more 'intuitive' or metaphysical way of knowing to experience the reality of being with both 'this' and 'that'[32].

[30] Dennison, Bill. 'Transdisciplinary Literacy: Seven Principles That Help Define Transdisciplinary Research.' *University of Maryland Center for Environmental Science Integration and Application Network*, March 6, 2017, https://ian.umces.edu/blog/ transdisciplinary-literacy-seven-principles-that-help-define-transdisciplinary-research/.
[31] Dispenza, Joe, *op. cit*., 2017, p. 238.
[32] Emerson, Brian, and Kelly Lewis, *op. cit.,* p. 69.

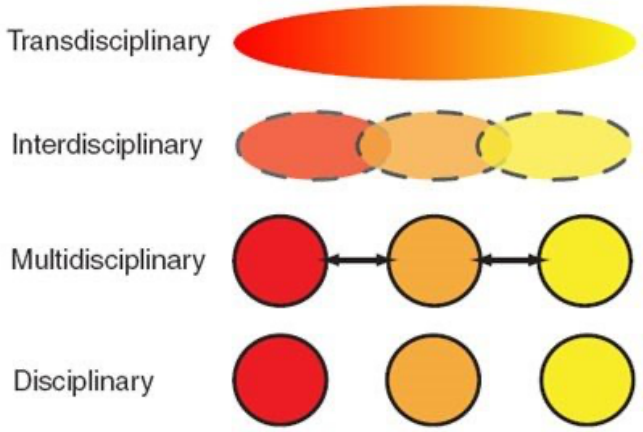

Figure 3. *Diagram of Transdisciplinary Process*
Source: http://www.nature.com/nchembio/journal/v4/n9/fig tab/nchembio0908-511 F1.html[33]

Experiencing and acknowledging BOTH/AND (scientific/metaphysical) mindset reveals that separation is an illusion; they are merely varied expressions of a common aspect. As a circle of the yin and yang represent unity and the wholeness, the third way of BOTH/AND mindset can be viewed as a pole that is shown in the middle of a circle as shown in **Figure 4**. The pole can show the wholeness that represents the divine perspective.

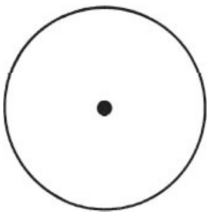

Figure 4. *Unity and Divine Perspective*
Source: Page, Christine. *Frontier of Health: How to Heal the Whole Person.* London: Random House, 2005.

As the figure shows the divine perspective can reveal a transcended solution to a complex problem. Interestingly, Page describes this solution as a 'common principle' that can look from the side like a shape with 'two sides' and a central pole like a 'tepee'[34]. The 'common principle' is like a mountain peak,

[33] Schneider, Jay W., Zhengliang Gao, Shijie Li, Midhat Farooqi, Tie-Shan Tang, Ilya Bezprozvanny, Doug E. Frantz, and Jenny Hsieh. 'Small-molecule activation of neuronal cell fate.' *Nature Chemical Biology*, vol. 4, no. 9, 2008, pp. 408–410.
[34] Page, Christine. *op. cit*., 2005, p. 30.

which allows climbers to see the whole view of the scenery. To find such a magical solution, there must be chemistry between opposite disciplines such as science and metaphysics. A chemical reaction only occurs when multiple molecules collide with the right orientation and sufficient force to form unity. The holistic perspective approach highlights the transdisciplinarity of microcosm (earthly) and macrocosm (universe): that is being a new alchemical product of the data-driven technologies.

4. Conclusion

A broad concept of transdisciplinarity can be figuratively interchangeable with that of alchemy, which is defined as 'a form of chemistry studied in the Middle Ages that involved trying to discover how to turn ordinary metals into gold like the expression: 'As above, so below.' Paul Gibbs argues that many researchers who are seeking the definition of transdisciplinary research are not willing to jettison their disciplinary positionally, to seek something which cannot be acknowledged from what we now refer to as 'knowledge'[35].

When the transcended solution to create gold from base metals, for instance, there must be some chemistry between those substances. Hermes Trismegistus states: 'That which is below is like that which is above, and that which is above is like that which is below, to accomplish the miracles of one thing' on the Emerald Tablet, which is interpreted that what happens in the universe affects individuals to show the world of duality.

The concept of light and dark is more focused on that of the duality itself, while Hermes's concept on alchemy is more focused on what happens after the boundary between the two transcend, and the magic happens when the substances merge. Alchemy is known as a form of thought that tried to transform 'base metals' such as copper into 'gold'[36]. Even if it is 'speculative', there is a certain truth to the universal law that anyone could relate themselves to.

The specialization of subjects extends even to the naming of university chairs. The ability to think within a larger scientific unit, let alone to study beyond it, is declining. This indicates that the boundaries between subjects and disciplines increasingly threaten to become not only institutional boundaries, but also the boundaries of knowledge.

Mark G. Lawrence et al. argue in 'characteristics, potential, and challenges of transdisciplinary research' that academic research across various disciplines has consistently offered 'valuable insights'[37] into these obstacles. This

[35] Gibbs, Paul, *op. cit*., 2022, pp. 649–657.
[36] 'Alchemy.' Wikipedia. Last modified August 2, 2022. https://en.m.wikipedia.org/wiki/Alche my. Accessed June 5, 2024.
[37] Lawrence, Mark G., Stephen Williams, Patrizia Nanz, and Ortwin Renn. *op. cit.,* 2022, pp. 44–61.

knowledge has frequently played a crucial role in assisting the policymaking process by creating 'regulations', providing 'incentives', and implementing 'other mechanisms' to tackle these problems.

Additionally, it supports social advocacy efforts that aim for broader political and societal responses to predictable challenges. For instance, one of the greatest social challenges now for the humanities in modern society is to define what makes humans human, as data-driven technologies such as AI may soon manipulate the physical world. As noted above, to understand the strength of the other, individuals or researchers must have a deeper focus on one pole and the other.

By defining what makes humans human, and what makes human evolve, individuals can reaffirm the value of human existence. Acknowledging the strength of humanity can create the 'common principle' to find the 'third way' to solve unpredictable problems.

As Dispenza notes in *You Are the Placebo: Making Your Mind Matter,* the analytical mind measures what an individual does not know to assess the 'greatest chances of survival'[38] that allow individuals to learn from experience and apply to future outcomes. Such data-driven technologies will gradually change human life. Based on past experiences and patterns, man explores the unknown using what inspires him. Being creative means: Having the ability to ask questions based on concrete data.

Transdisciplinary approaches harmonize to allow humans to get the benefits of both poles in any situation. The scientific minds serve them to build coherence their outer worlds. There is a harmonious relationship between the different planes of reality, with structures, patterns, and phenomena found in the higher levels mirroring those in the lower levels. As mentioned above, the expression 'As above, so below' symbolizes the macrocosm (the universe) and the microcosm (individuals) resonate with each other. Interestingly, astrologically, it is often said that an astrological age affects humanity. It can influence the currents of cultural trends. The 'Age of Wind' will represent the world beyond boundaries, as Aquarius (water flowing boundlessly) will dominate philanthropy. The 'Age of Earth' had represented the world of duality for 240 past years, as Pisces (two fish swimming in opposite directions) has dominated it. We are now moving beyond it by exploring and merging various aspects that take us into the world of wholeness – that is being the world of transdisciplinary.

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The authors declare that she has no conflicts of interest with respect to the research, authorship, and/or publication of this article.

[38] Dispenza, Joe. *You Are the Placebo: Making Your Mind Matter.* Carlsbad: Hay House, 2014, p. 139.

Any errors or omissions are her own.

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7 skills + 1 for the Survival of Humanity

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Abstract

In a transdisciplinary document published by UNESCO, sociologist and philosopher Edgar Morin sets out seven fundamental principles that are essential for the future of education. These principles address critical issues such as the understanding of human nature, the development of earth identity and the promotion of ethical values. The document stresses the need for a transformative approach to education, advocating interdisciplinary knowledge and cognitive reform. In this article, the author proposes an eighth principle centred on awareness as a fundamental element, encouraging the integration of self-awareness and inner freedom to overcome deterministic and fatalistic mentalities. The ultimate aim is to cultivate a more unified, joyful and fraternal humanity, capable of navigating the complexities and uncertainties of the modern world.

Keywords: *transdisciplinary education, complex thinking, cognitive reform, fraternity, awareness, conscience.*

DOI: https://doi.org/10.62768/ADJURIS/2024/4/09

1. Introduction

In a transdisciplinary document published by UNESCO, sociologist and philosopher Edgar Morin highlights seven principles that he considers vital for the education of the future. I believe that an eighth piece of knowledge is essential if these principles are to be universally fruitful.

In October 1999, the United Nations Educational, Scientific and Cultural Organisation (Unesco) published 'The Seven Knowledge Areas Necessary for the Education of the Future'. It asked Edgar Morin to express his ideas on the very essence of the education of the future in the context of his vision of 'complex thinking', which is dear to Ciret.

One of the most difficult challenges we face,' writes Federico Mayor, the organisation's Director General, 'will be to change our ways of thinking in order to cope with the growing complexity, rapid change and unpredictability that characterise our world. We need to rethink the way we organise knowledge. To do this, we need to break down the traditional barriers between disciplines and work out how to link up what has hitherto been separated'.

2. Educating for a Viable Future

In this transdisciplinary document 'Educating for a viable future', E. Morin puts forward seven principles that he believes are necessary for the education of the future: the blindnesses of knowledge: error and illusion; the principles of relevant knowledge; teaching the human condition; teaching Earth identity; confronting uncertainties; teaching understanding; the ethics of humankind.

These are the seven 'fundamental' areas of knowledge that 'the education of the future should address in every society and every culture, without exclusion or rejection, according to the modes and rules specific to each society and each culture'.

For their author, 'the cognitive problem is of anthropological, political, social and historical importance. [Indeed,] so much suffering and misguidance has been caused by errors and illusions throughout human history and, terrifyingly, in the twentieth century! So if there can be any basic progress in the twenty-first century, it would be for men and women no longer to be the unconscious playthings not only of their own ideas but of their own lies to themselves.

It is a vital duty of education to arm everyone in the vital battle for lucidity'.

He adds: 'What bears the greatest peril also bears the greatest hope: it is the human mind itself, and that is why the problem of thought reform has become vital'.

3. From Hominisation to Humanisation

The philosopher's text is driven by a lively faith in the possibility of transforming society, of 'continuing hominisation into humanisation, through accession to earthly citizenship'.

This transformation must be based on 'the complex exercise of thought that enables us to inter-criticise, self-criticise and inter-understand each other (...) The problem of understanding has become crucial for human beings', starting with self-understanding through 'constant critical self-examination'.

It is at this point that I would like to propose an eighth branch to this preliminary tree of knowledge: that of consciousness itself. The nature and mode of being of this faculty are not addressed at all in this document. While E. Morin does speak of the 'living flame of consciousness', he says nothing more about

this very special 'light', which is the only source that illuminates all knowledge. It therefore predates even the seven principles developed by the philosophical sociologist.

4. The '0' Branch at the Root of All Knowledge

This is why I suggest giving it the number '0', signifying the absolute root of everything that can enter the human mind or emerge from it before constituting knowledge. The seven knowledges remain the pillars underpinning the cognitive process that is essential to the advent of a humanity that is both learned and united, joyful in its creative powers that are definitively turned towards the good of one and all.

It seems to me, however, that to ensure the solidity of these perspectives, it is essential for everyone to discover within themselves the infinite freedom offered to the mind's eye when it manages to turn in on itself[1]. The mind, although inseparably linked to matter, is absolutely untouchable by it, hence its freedom without assignable limits.

Seeing this truth within ourselves is a prerequisite for emancipating ourselves from the determinism apparently imposed by appearances. This determinism is also sustained by the principle of materialist causality and by the lack or inadequacy of reflection. Under the domination of this inexorable determinism, fatalism and despair have invaded hearts and minds, to the point where the ideal of fraternity has been abandoned by most.

5. Two Entirely New Facts

The modern era is witnessing two entirely new developments in the history of humanity:

Firstly, we know that fraternity is a prerequisite for the proper functioning of our societies, whatever their cultures. Democracies themselves are in danger if this prerequisite is not put into practice. We have seen this bitterly in the first quarter of this century.

This moral and political obligation, forgotten by many, was clearly formulated at the end of the Second World War. The Universal Declaration of Human Rights, adopted by the United Nations on 10 December 1948, states in Article 1: 'All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood'.

Without this requirement, without a firm commitment from every citizen and a constant educational effort, it is clear that the 'Never again' of our Poilus

[1] J-L Martin-Lagardette, *Voir la conscience, philosophie radicale, une science de la liberté*, L'Harmattan, Paris, 2023.

will remain a derisory and pathetic wish.

Secondly, the technical power developed by our contemporaries has reached a level of total destruction: no philosophical, ethical, religious, moral or political question will have any meaning on the day the apocalypse is unleashed. A threat that could materialise at any moment.

In 1979, the German philosopher Hans Jonas published 'The Responsibility Principle', revolutionising our concept of ethics[2]. Taking the future into account became a new priority, insofar as the impact of our actions and behaviours on the planet could lead to widespread pollution and, therefore, to the extinction of species, including our own. Since then, the devastation caused by climate change has made the threat even more tangible.

It is no longer a question of knowing what is right and good to do per se, but of how to act to avoid a quasi-programmed collective suicide.

6. An Irresistible Current of Joy in Knowing and Living Together

Suicide by nuclear power or by 'natural' disasters, on the one hand, or thought reform (democratising epistemology in particular) and giving priority to fraternity, on the other - such is the dilemma that faces us, with no room for procrastination.

To keep up the momentum, Edgar Morin advocates multiplying the 'oases of fraternity'[3] that he sees springing up all over the place: 'We must create islands of a different kind of life, we must multiply these islands, because either things will continue to regress and the oases will be islands of resistance to fraternity, or else there will be positive possibilities and they will be the starting points for a more widespread fraternity in a reformed civilisation'.

Today, we can no longer procrastinate: a 'more generalised fraternity' has become the very condition of humanity's survival. It's no longer even a question of 'resisting', but of wanting to generate an irresistible current of awareness and a joy in knowing and living together that alone can motivate individuals and crowds alike.

Experience shows us that reacting to necessity, even if this is essential to curb an evil, is always less fruitful than producing value and creating the good that was lacking.

That's why I invite you to experience this freedom within yourself, because it opens up the exciting prospect of a communion of humanity. Without it, the vision of a 'more generalised fraternity' is always believed to be impossible, limited and burdened as it is by the accusation, external or internal, of being nonsense or a utopia, despite the thousand-year-old dream that burns in people's hearts.

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[2] Hans Jonas, *Le principe responsabilité, une éthique pour la civilisation technologique*, Champs Essais, Flammarion, Paris 2024.

[3] Edgar Morin, *La Fraternité. Pourquoi ?* Actes Sud, 2019.

This psychological and philosophical brake on the development of unprejudiced and confident thinking about the evolution of humanity is so deeply ingrained in our mentalities that it has come to be seen as the indisputable fruit of the ultimate intelligence.

7. Tyranny of the Concept and Passivity

Yet - and the younger generations are undoubtedly more inclined to think this than the older ones - the heaviest chain, the most hermetic prison, the most irremediable obstacle to human freedom in its hope of universal brotherhood are not material conditions, political regimes or religious systems. The ball and chain that we carry around with us everywhere is in fact our submission to the tyranny of the concept, on the obverse side, and, on the reverse side, our lack of motivation and faith, our passivity in the face of evil and injustice, and our insensitivity to the suffering of others.

The tyranny of the concept is the tyranny that we inflict on ourselves by taking as truth everything that seems obvious to us: what our senses show us and tell us; the evil that we observe (more often than not, moreover, in others than in ourselves).

The tyranny of the concept is the tyranny that we inflict on ourselves by taking as truth everything that seems obvious to us: what our senses show us and tell us; the evil that we observe (more often than not, moreover, in others than in ourselves) with the judgements that we make; the knowledge that we have acquired and that we do not know how to question. In short, any thought, perception, sensation or feeling that crosses our mind and that we take at face value.

8. Breaking the Shell of the Ego

As Edgar Morin quite rightly said, our knowledge is 'biodegradable', including that developed by our sciences. In the absence of a single truth to share as far as knowledge is concerned - and, of course, with the support of the evolving knowledge we manage to develop - the sociologist and inventor of complex thought suggests an attitude that will enable us to cope with life: 'introducing poetry, that is to say, intensity, celebration, joy, communion, happiness and love'[4]. In other words, the vibration of the blossoming human soul, the free expression of individual subjectivity through sharing.

That's for the fuel.

But another intimate act is needed to make the transition from hominisation to humanisation a reality: breaking the shell of the ego, piercing the veil of appearances through the exciting discovery, deep within ourselves, of an unlimited source of luminous and creative energy: our own consciousness, a particle of

[4] Edgar Morin, *Vers l'abîme ? 10 essais pour penser l'avenir,* Champs Essais, Flammarion, 2020.

universal Consciousness.

9. Conclusions

The article highlights the pressing need for transdisciplinary education, as advocated by Edgar Morin, to effectively address the complexities and rapid changes of the contemporary world. Morin argues for the dismantling of traditional disciplinary barriers, promoting an integrated approach to knowledge that equips individuals to pas uncertainties and tackle global challenges. A profound cognitive reform is essential to prevent the errors and illusions that have historically plagued humanity. This includes fostering a continuous critical self-examination to enhance self-understanding and mutual comprehension. The principle of fraternity is underscored as fundamental, not only as a moral value but as a crucial condition for the survival and proper functioning of democratic societies. Education must, therefore, cultivate a spirit of fraternity to build more cohesive and supportive communities.

Furthermore, the article emphasizes the importance of awareness and inner freedom, recognising consciousness as the root of all knowledge. This awareness liberates individuals from the deterministic constraints of materialism, opening new avenues for human communion based on creativity and goodwill. Introducing elements of poetry, intensity, and celebration into education can nourish the human soul and facilitate the transition from hominisation to humanisation[5]. This holistic approach fosters a culture of joy and communion, which is essential for the development of a harmonious and sustainable human society. Through this transformative educational framework, humanity can aspire to a more unified, enlightened, and fraternal future.

Acknowledgment and conflicts of interest

The author declare that they have no conflicts of interest with respect to the research, authorship, and/or publication of this article.

Any errors or omissions are his own.

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GLOBAL IMPACT AND FUTURE DIRECTIONS OF TRANSDISCIPLINARY CHAIRS

The Transdisciplinary Chair and the Mainstream Shadow: An Analysis Starting from the ADJURIS Volumes 1 and 2 through the HPTD-M Theory Perspective

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Abstract

The objective of this article is to compare the many approaches of TD presented in the 2024 ADJURIS Book Volumes 1 and 2 'For an International Transdisciplinary Chair', showing that the HPTD-M theory can dialogue with all of them and be used as a mediation tool. Considering the HPTD-M concepts of Analytic or Hard and Synthetic or Soft: the first is related to rational and empirical types of intelligence, and the second to emotional and intuitive. Through our analysis two TD mainstreams were found, regarding the dominance of one or another, but in the end TD is about the dialogue of the two complementarities, i.e., Analytic-Synthetic and Hard-Soft. From an emotional intelligence shadow perspective, it is not enough to induce transformation and paradigm shift through intellectual convincement. More than that, emotional acceptance is necessary on personal and collective levels. The findings in this text involve i) the connection of the mainstream emotional shadow with the reduction of Subject to Object, ii) a list of four dysfunctions in universities, and iii) the gap in awareness among Jungians in the USA and Europe about TD and among TD academics in these regions about Jungian Analytical Psychology, despite their convergence in many aspects. TD is not a mere theoretical framework but also a practical tool for addressing complex problems, as evidenced by the various HPTD-M schematic models. To conclude, some reflections on the mainstream shadows through complementarities and reductionisms are demonstrated as fol-

lows. 1. Complementarities (dualities in interaction): 1.1 Subject and Object. 1.2 Analytic-Hard and Synthetic-Soft. 1.3 Generalists and Specialists. 1.4 Bureaucracy and Innovation. 1.5 Complexity and Simplicity. 2. Reductionism (broader concepts that tend to be in the shadow): 2.1 Understanding replaced by Knowing. 2.2 Ideas replaced by Ideologies. 2.3 Technoscience replaced by Scientism.

Keywords: *HPTD-M, transdisciplinary chair, psychological shadow.*

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1. Introduction

The objective of this article is to compare the many approaches of transdisciplinarity (TD), as shown in the 2024 ADJURIS Book Volume 1 (*For an International Transdisciplinary Chair: About the Dialogue Between Culture and Technoscience)* and Volume 2 (*For an International Transdisciplinary Chair: From Knowledge to the Future*), showing that the HPTD-M theory can dialogue with all of them and be used as a mediation tool, through the analysis made in the Conclusion section.

Our background of 15-year contact with colleagues who have M.Sc. and Ph.D. in public service has been meaningful, especially with a 12-year experience in coordinating work groups in the Brazilian federal public administration. The result of such an experience was a well succeeded 14-hour course for TD mediating managers given by this author in 2023 for the National School of Public Administration. The participants public managers with an average of 44 years old evaluated the course very well. So, the HPTD-M approach can be seen as an alternative tool, focused on the dialogue between the analytical and synthetic methods, especially through schematic models that can provoke insights for troubleshooting.

In that sense, Figures 1, 2, 3, and 4 schemas reflect the core of how we understand TD as a promoter of a paradigm shift in a new rising culture and construction of technoscience, not merely focused on scientism, envisaging concrete problem solving in universities, organizations, and civil society, starting from the personal in dialogue with the collective levels from a psychological perspective, i.e. subject in dialogue with the object in many levels of collectiveness.

Considering the HPTD-M concepts of ANALYTIC or HARD and SYNTHETIC or SOFT: the first is related to rational and empirical types of intelligence, and the second to emotional and intuitive. Through our analysis, two TD mainstreams were found, regarding the dominance of one or another, but in the end, TD is about the dialogue of the two complementarities, i.e., ANALYTC-SYNTHETIC and HARD-SOFT (see HPTD-M model in Vol 1, p. 179).

So, the following comments are in the direction of exposing what we

understand can promote the mainstream confrontation of its own shadow, envisaging the effective international promotion of TD in universities, organizations, and civil society.

Like the personal psychological types in the MBTI System[1] and the Jungian taxonomy, by analogy there can be considered geographic psychological tendencies in some groups, as Dr. Marie-Louise von Franz demonstrated when explaining the Jungian typology[2]. Besides, given the levels of collective unconscious approach demonstrated by HPTD-M (ADJURIS Vol. 1, p. 183), each geographical region tends to have its shadows. In this sense, also considering the mainstream rational hypertrophy, emotional intelligence is the shadow.

Here we need to review the psychological concept of shadow: It is the part of ourselves we don't know consciously or unconsciously repress because we are not fond of it. In Analytical Psychology there is nothing wrong in recognizing our shadows in personal levels, on the contrary, it is part of the consciousness development process, what Jung called individuation. In this sense, HPTD-M tried to map levels of shadows to be worked in various collective levels (Vol. 1, p. 183). Some of the findings in this text involve i) the connection of the mainstream emotional shadow with the reduction of subject to object, ii) a list of four dysfunctions in universities, and iii) the gap in awareness among Jungians in the USA and Europe about TD and among TD academics in these regions about Jungian Analytical Psychology, despite their convergence in many aspects.

2. Roberto Crema: *Understanding: Convergence Between Knowing and Being* (Vol. 1, pp. 136–151)

Roberto Crema, an anthropologist, psychologist creator of the Fifth Force in Therapy, group therapist, and dean of UNIPAZ in Brazil (excerpts taken from the whole text in sequence): *Hology refers to the rational path of study, critical reflection and experimentation of the holistic paradigm, aimed at the dimension of knowledge, while holopraxis consists of the experiential path of awakening to the holistic vision, through practices from the wisdom traditions of East and West, aimed at the dimension of being. Perhaps we can expand […] by affirming the existence of a mega-factor that impedes understanding, which consists of what*

[1] Cherry, Kendra (2021). An overview of the Myers-Briggs Type Indicator (MBTI). Medically reviewed by David Susman, Ph.D. *Verywell Mind website*. https://www.verywellmind.com/the-myers-briggs-type-indicator-2795583; INSPIIRA (n.a.). The individual preferences model [O Modelo das Preferências Individuais]. http://inspiira.org/teoria/modelo-das-preferencias-individu ais/; FDC – Fundação Dom Cabral (2017). Self-Leadership and Management Program: MBTI [Programa Autoliderança e Gestão: MBTI de 29 a 30.11.2017]. *Fundação Dom Cabral (FDC)*. Nova Lima-MG, Brazil.

[2] Franz, Marie-Louise von, Hillman, James (1971). *Lectures on Jung's typology*. Spring Publications. ISBN Stanford: 36,105,034,382,171; Franz, Marie-Louise von (1980). *Projection and recollection in Jungian psychology: reflections of the soul.* Open Court Publishing.

Pierre Weil, Jean-Yves Leloup and this author call normosis, a pathology of normality. […] ignorance and a priori judgements, with stereotypes, conformism and arrogant conventional ideas, what we can call the normosis of scientism. […] The great teachers and educators of humanity have always warned us about the danger of judgement, which is the source of so many conflicts and tears. Understanding is an effective antidote to this destructive power struggle, because those who understand do not judge. Judgement is the failure of listening and understanding. […] The Tao of understanding is the Alliance between knowledge and being. A realisable utopia, a path to peace. (Vol. 1, pp. 146–151)

HPTD-M Comment # 1: Besides being a group therapist creator of the Fifth Force in therapy. Roberto Crema is the only living among the three creators of the holistic TD, in Brazil: Pierre Weil and Ubiratan D'Ambrosio are deceased. The concept of holopraxis influenced the HPTD-M with the focus of concrete problem solving through the practice of the whole, not only the study of the whole (hololology). So, the name of the theory came from that view: *Holopraxis Transdisciplinary Management* (HPTD-M). Crema shows clearly that I) UNDERSTANDING is much more than KNOWING, ii) normosis as a TD concept, and iii) the idea of judgment as the failure of UNDERSTANDING. Besides, the author is the only living theorist of the original Brazilian holistic TD, which was influenced by the Analytical Psychology of Jung. The four epistemic ways of **technoscience. philosophy, tradition, and art** can be seen in combination with the Jungian four functions (**sensation, feeling, thinking, and intuition**), as the Brazilian holistic TD mapped. In turn, HPTD-M has established essentially the same correlation but instead of the Jungian functions used the four types of intelligence, i.e.: **1) technoscience – empirical and rational, 2) philosophy – rational and intuitive, 3) tradition – intuitive and emotional, and 4) art – emotional and empirical.** Just to corroborate the HPTD-M, the demonstration of what Crema says through a holistic TD: *According to the vast research of psychiatrists Carl Gustav Jung, there are four psychic functions inherent to human beings: thought, feeling, sensation and intuition. It's not hard to see that the dialogue between thought (rationalism) and sensation (empiricism) gave rise to contemporary science. Just as the alliance between sensation and intuition gave rise to art; from thought and intuition, philosophy; and from feeling and intuition, mysticism, from the Wisdom Tradition. So, as far as the individual foundation is concerned, the four well-known classical epistemological fragments arise from the creative dynamics of our psychic functions.* (Vol. 1, p. 141)

HPTD-M Comment # 2: It is interesting to note that American and European Jungian analysts tend not to know TD and the TD academics vice versa. However, they converge, especially considering the archetypal quaternary structure in physics and psychology, which seems to be explored only by the Brazilian holistic TD in dialogue with Jung. Crema and HPTD-M are connected in that sense, especially when considering Jung the predecessor of TD in the first half of

the 20th century, although also having in mind Nicolescu's TD methodology developed in the late 1980s. Nicolescu, as a physicist, seems to have few connections to Jung, like the complementarity of subject and object, maybe because this view reflects Niels Bohr as a physicist in the first half of the 20th century. Bohr's view also shows a clear dialogue with Jung, as far as the conscious and unconscious are concerned[3]. In turn, Franz, the most well-known Jungian analyst, explains complementarity not only as a physics principle but in connection to the subject object and conscious unconscious[4]. Just to clarify: The subject object involves the inner-outer or personal-collective aspects. The idea is different from the subjective-objective duality in this text, as presented in the models of Figures 1, 2, 3, and 4, since the latter duality is connected to the emotional rational, as shown in the MBTI System, which considers the 'feeling' function subjective and 'thinking' objective[5]. As a final clarification: In physics, complementarity and duality are synonyms, practically speaking. So, De Broglie's particle-wave duality in physics has the same sense of the complementarity principle (Vol. 1, p. 163).

Finally, another important aspect of this article needs to be clarified: How could we effectively diagnosis the shadow of the mainstream in this text? The next excerpt from Crema, who is an experienced psychologist and group therapist, continues with the Jungian four functions: *In general, individuals only develop one or two of these functions, while the others remain atrophied and undifferentiated. The development of the deficient functions and their integration and harmonisation with the others leads, according to Jung, to a fifth function, which he called the Self, the intelligence of the psychic totality. The pioneering Jungian approach postulates, beyond mere healing, a process of individuation that can lead the individual, through an inner path and a movement of circumvolution, from the periphery of the ego to the centrality of the Self, which is the psychic instance from which real understanding emanates. This conception of psychic functions has guided us in the fundamental theory of the International University of Peace, UNIPAZ, since its founding event, the First International Holistic Congress – I CHI, which we held in Brasilia (1987), and is also at the heart of our well-established transdisciplinary project, Holistic Basic Training – FHB, which has been in fruitful practice for over twenty years.* (Vol. 1, p. 141)

HPTD-M Comment # 3: In this context, HPTD-M was created thinking about this Jungian quaternary structure of four elements balanced by a fifth, the *Self*. For HPTD-M, those are translated into the four types of intelligence, and the

[3] Khrennikov, Andrei (2021). Quantum-like model for unconscious – conscious interaction and emotional coloring of perceptions and other conscious experiences. *ELSEVIER Biosystems Volume 208, October 2021, 104,471* https://www.sciencedirect.com/science/article/pii/S0303264721001234.

[4] Franz, Marie-Louise von (1980). *Projection and re-collection in Jungian psychology: reflections of the soul.* Open Court Publishing.

[5] NSPIIRA (n.a.). The individual preferences model [O Modelo das Preferências Individuais]. http://inspiira.org/teoria/modelo-das-preferencias-individuais/.

fifth element that is in search of integrating all others for concrete problem solving in individual and organizational levels is TD, as seen clearly in Figures 3 and 4. This quaternary structure is ancient and archetypal, as seen in Greek philosophy (since Empedocles) and European Alchemical Tradition (which declined after the 17th century) through the four principles of **earth, water, air, and fire**. Those can be connected to the physical states of matter, respectively **solid, liquid, gas, and plasma**, besides the Jungian psychological functions of **sensation, feeling, thinking, and intuition**, respectively (see Vol. 1, p. 154).

So, physics and Analytical Psychology configures a psychosomatic framework of four elements coming from ancient times. The archetypal four elements have also implications in mythology and concrete Jungian dream analysis for solving patient problems. After all, the Greeks created logic through mythology (see Vol. 1, p. 173). Jung is among the few who developed a pragmatic system to deal with symbolic archetypes, as a doctor and psychiatrist.

HPTD-M goes in the same direction through an engineer and manager, who is used to mapping processes in work groups, focused on organizational levels in integration with the personal levels. That is where the mainstream shadow analysis comes from. It is reasonable to assume that if rationality is dominant in a group, the emotional, its complementary opposite, will be in the shadow and may appear in destructive and uncontrolled ways if excessively repressed, like in Newton's action and reaction law. Another possible way to see the same complexity of human phenomena is through the HPTD-M levels of the collective unconscious (see Vol. 1, p. 183). In the example, this means the emotional is the unconscious level to balance the rational conscious level of the group.

3. Domingo Adame*: Transformation of the Sense of Knowledge and the University Subject through the TD Chair* (Vol. 2, p. 14-30)

Prof. Dr. Domingo Adame's article, from Mexico, described consolidated information about TD, clearly, didactically, and with simplicity, in our opinion. Adame explains that University knowledge can be applied or not, it is fragmented, and we need to integrate the subject, like effectiveness and affection, and the spiritual axis of Nicolescu. Since Adame only mentions KNOWING, not UNDERSTANDING, our article completes with the idea of UNDERSTANDING more than KNOWING. This view is corroborated by the article of psychologist Roberto Crema, dean of UNIPAZ in Brazil, and economist Manfred Max-Neef, quoted by this author (Vol. 1, pp. 152–200).

Adame mentions the TD of Nicolescu and Zurich, by the way. We understand important the following Adame´s direct quotes. *The main objective of current education is to inculcate the desire to have control of reality and accumulate goods, in this lies triumph, success. There are disguises that hide the underlying truth and only rarely does a professor or researcher appear who questions dogmas, however established they may be, to energize the paralyzing and*

*endemic behavior of the human species. That is why education in the 21st century, as **Jacques Delors** noted in his report to UNESCO, will have to be based on four pillars if we aspire to transform our present condition: **Learn to know, learn to do, learn to live together and learn to be.** […] **Nicolescu** proposes a new way of conceiving thought and education based on four pillars (**learning to do, learning to live together, learning to learn, learning to be**) where the quality of what is taught is important, and not the enormous mass of assimilated 'scientific knowledge'.* (Vol. 2, p. 22, 23, **emphasis added**.)

HPTD-M Comment # 4: We did not know Nicolescu's approach as shown by Adame but the HPTD-M article model (Vol. 1., pp. 152–200) shows the following correlation to the four types of intelligence and the complementarity of analytic hard vs. synthetic soft:

- Learning to know (rational intelligence) – analytic hard.

- Learning to do (empirical intelligence) – analytic hard.

- Learning to live (emotional intelligence) – synthetic soft.

- Learning to be (intuitive intelligence) – synthetic soft.

- Learning to learn (the fifth element integrating the four in the circle – TD).

The form of viewing Figure 1 by HPTD-M is based on Prof. Dr. Nita's original design of four elements in the same sequence of quadrants (a new type of education he proposes for public administration). However, in Figure 1 three innovations of the HPTD-M view can be seen, as a new model: i) the connection between hard and soft skills, ii) the four types of intelligence, and iii) the idea of 'Learning to Learn' in the center as TD.

As per Nita[6]: *The International Commission of Education Report for the twenty-first century belonging to UNESCO, also known as the Delors Report, focuses on four pillars of a new type of education […]: 1. to learn to know, 2. learning to do, 3. learning to live with the others, 4. learning to exist [...]. Note that the last pillar of the new type of education – learning to be – could determine the elimination of one of the fundamental tensions of the contemporary era, the one between spiritual and material […].*

Just to be sure and compare Adame´s and Nita´s view, we checked the original 1996 UNESCO Report[7]. What is mentioned there: *to learn to live together, learn to live with others.* However, HPTD-M understands "learning to

[6] Nita, Mircea Aurel (2013). Types of truth, transdisciplinarity and a new type of education in public administration. *Curentul Juridic, 16,* pp. 157-170. Available at: http://revcurentjur.ro/old/ arhiva/attachments_201304/recjurid134_17F.pdf.

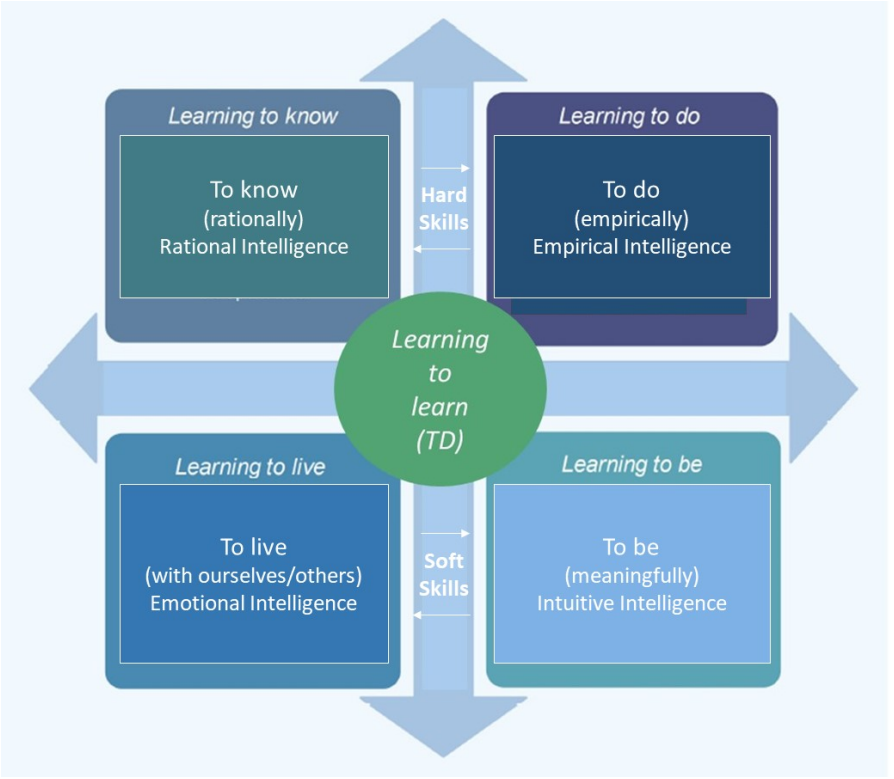
[7] UNESCO (1996). *Learning: The Treasure Within*. Report to UNESCO of the International Commission on Education for the Twenty-first Century. Members of the Commission: Jacques Delors, Chairman, In'am Al Mufti, Isao Amagi, Roberto Carneiro, Fay Chung, Bronislaw Geremek, William Gorham, Aleksandra Kornhauser, Michael Manley, Marisela Padr6n Quero, Marie-AngPlique Savane, Karan Singh, Rodolfo Stavenhagen, Myong Won Suh, and Zhou Nanzhao. UNESCO Publishing. https://unesdoc.unesco.org/ark:/48223/pf0000109590.

live" in a broader sense, through the context of emotional intelligence, i.e., learning to live with ourselves (subject) and others (object), not only live together and with others as UNESCO´s framework presents.

This means, in the HPTD-M view: Understanding and managing our emotions and behaviors (subject) is a condition sine qua non for developing relationship skills (object), thus there is a complementarity principle involved. This is evidence to corroborate the HPTD-M view for the mainstream shadow: The subject is reduced to object and learning to live with ourselves is not considered. Another way to see the mainstream emotional shadow, as diagnosed in this article.

Besides, Nicolescu's view, as presented by Adame, has the difference of replacing 'Learning to Know' with 'Learning to Learn'. Finally, HPTD-M improvement not only considers a fifth element of 'Learning to Learn' as TD, if compared to the quaternary view of UNESCO-Delors, Nita, and Nicolescu, but also establishes a connection with the four types of intelligence and hard skills vs. soft skills.

Figure 1: New Type of Education adapted and enhanced from Volume 1.
Source: Vol. 1, p. 176, HPTD-M model improved as shown in the schema



Another Adame´s quote: *Zurich proposes the integration of academic experts and social actors, of scientific knowledge and nonscientists.* (Vol. 2, p. 23)

HPTD-M Comment # 5: We agree completely with Adame when saying he looked at other perspectives besides Nicolescu, so as not to be dogmatic, mentioning Zurich, a scientist approach in our opinion. Even being focused on science, it seems that Zurich shows signs of the complementarity view, as Adame observes (academics and non-academics, scientists and non-scientists). *It is urgent to establish an adequate relationship between science, art and spirituality within the university.* (Vol. 2, p. 23)

HPTD-M Comment # 6: We agree but HPTD-M can go beyond, i.e. not only science but technoscience, and not only spirituality but tradition which includes spirituality. Philosophy can also be included in this formula, as far as I can see in the four epistemic ways. *4) The International Transdisciplinary Chair will include scientists, technologists, humanists, musicians, poets and artists, working on different media and using new technologies, with the aim of founding university dialogue between different cultural visions, including interior experience.* (Vol. 2, p. 27)

HPTD-M Comment # 7: The statement perfectly in line with the HPTD-M approach. *Renounce finding a solution to a problem in terms of 'true' and 'false' of the binary logic. Also, the solution to a problem cannot be more than temporary reconciliation of opposites, re-likened at another level of Reality where contradictions are manifest.* (Vol. 2, p. 28)

HPTD-M Comment # 8: Reflection in line with the HPTD-M perspective. Our article (Vol. 1, pp. 152–200) goes beyond, when defining three levels of complexity for problem solving, i.e. the a.m. binary logic, feedback logic, and Included Third logic.

4. Éric Carrey: *Economics of Care and Meaningfulness for an International Transdisciplinary Chair* (Vol. 1, pp. 83–89)

Éric Carrey has an MBA in Economy and Management, member of the management committee of the French Red Cross: *The Economy of Care and Meaning expresses, in this spirit of going beyond classical economic theory, a philosophical approach based on solicitude, concern for the other or attention to the other, this other being a human being, a non-human living being or the planet as a whole. It was born in opposition to moral theories inherited from economic analysis, which are based on two central assumptions about human behaviour: the assumption of rationality and the existence of selfish preferences. As we have seen, these founding assumptions lie at the heart of the thinking of classical economists such as Adam Smith, David Ricardo, John Stuart Mill and later Leon Walras, Stanley Jevons and Vilfredo Pareto, and have made it possible to construct the figure of Homo oeconomicus.* (Vol. 1, p. 88)

HPTD-M Comment # 9: We will add two other excerpts from Crema's article and HPTD-M to help us analyze the question.

In Crema's article (Vol. 1, pp. 136-151): *On the occasion of the International Holistic Encounter in Mendonza1, I came into contact with Manfred Max-Neef, an alternative Nobel Prize winner in economics. In his talk, this famous scientist said that, from an early age, he wondered what the unique characteristic of the human species was. Culture, intelligence, language? No, because other species also develop them. Was it humouring? When he met another scientist, Nobel laureate in ethology Konrad Lorenz, he learnt that it wasn't there are other humorous species. So, he continued with this enquiry until an unexpected moment when his father, a man for whom he had great respect, asked him: – My son, isn't it stupidity? Max-Neef said that at that moment a light went on and he became the first stupitologist! Stupidology is a science that needs to be studied with rigour and urgency. It is important to clarify that it differs from harmless imbecility in that it has a logical rationality and is exercised mainly through technical language.*

In our HPTD-M article (Vol. 1, pp. 152-200): *[...] Manfred Max-Neef (1932–2019), Economics and TD: — I was used to diagnosing and analyzing but not used to understand [...] the idea [...] of demonstrating what economics looked like behind its mask of supposedly exact, mathematical, and judgment-free science. [...] — Max-Neef: economist and academic, Alternative Nobel for his Barefoot Economics theory. As per Max-Neef, 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.*

Considering our experience in the Brazilian public service as the federal auditor of finance and control (AFFC), economic models may be rational, but, depending on the concrete case, not reasonable (no emotional intelligence) or feasible (empirical intelligence). Moreover, there may be a dialogue between reductionist (objective) quantitative econometric models and the psychology of economic agents' expectations (subjective). When the complexity of human phenomena enters the game, the binary logic is not enough, so in some cases the Included Third logic is the way for problem solving. For example: A work group of economists could hypothetically produce very rational public policy modeling, however, with an intolerable burden to society under the political aspect of reasonableness. No matter how rational this model is, it can be a risk to governability and therefore is unfeasible, considering other aspects of reality and human phenomena. In this context, there are limitations of economics as a hard science. Economics is a remarkable field of study but tends to be a very Cartesian and mechanistic science, to be applied according to its scope, not more or less. Eric Carrey's approach is different from the analytic mainstream not only in economics but also in TD. When talking about the economy of care and meaning, there is a clear correlation between meaning and intuitive intelligence, besides care and

emotional intelligence. Both are involved in the synthetic method, as demonstrated by HPTD-M. Carrey himself reflects on this concept, in opposition to the economy mainstream of analysis, so it is a mainly synthetic approach, more connected to Latin America and Japan in terms of TD, as far as we can see in Volumes 1 and 2 and will show in the next comments. By the way, Max-Neef, mentioned by Crema and the HPTD-M, was a Chilean economist with a similar approach.

5. Éric Carrey & Hubert Landier: *A Transdisciplinary Chair in the Service of an Economy of Care and Meaning* (Vol. 2, p. 176-183)

People's need for meaningful activities is not confined to their private lives; it also extends to their professional lives. In the workplace, when meaning is lacking, people resign. […]. The economy is based on entrepreneurship. Entrepreneurship is about finding solutions to problems. But human activity, as it was conceived and is experienced, has itself become a problem. Entrepreneurship must now be the entrepreneurship of care and meaning. That's why we're inviting you to move towards an economy of care and meaning. The creation of an international transdisciplinary chair would be an invaluable step in this direction.

HPTD-M Comment # 10: Ideological partisanship and dogmatic scientism are a mainstream bias in connection to rationalism, as demonstrated in the conclusions (see Figure 3). Both are similar in the sense of no space for reasonableness and meaning. Meaningfulness in HPTD-M models is an essential troubleshooting requirement, related to intuitive intelligence. If an idea has no meaning, i.e. if it does not make sense, it is useless for effective problem solving. Naturally, ideology and dogmatism reject new ideas, in a tendency to defend the status quo and keep power. So, HPTD-M converges with this idea of economy of care (related to emotional Intelligence) and meaning (related to intuitive intelligence). Both configure the soft skills, correlated to the synthetic method. However, in the mainstream the hypertrophy of analysis is a reality. Max-Neef observed this as a Stanford economy professor in the 1960s, before creating his *Barefoot Economics*, awarded with the Alternative Nobel, a theory also in line with the economy of care and meaning. Nor by coincidence, Max-Neef also wrote an article on the foundations of TD, which we commented on (Vol. 1, pp. 152–200): *[…] one of the options available to the West, as illustrated by Messire François's attitude to the wolf of Gubbio. It's the 12th century, and a terrible wolf is terrorizing the inhabitants of the small Italian town of Gubbio. Messire François, who is rumored to have the ability to talk to animals, arrives. What he's asked to do is to stop the wolf devouring the town's children, and to do that, it's thought, he must get rid of it. In fact, this is what Brother Dominic, a contemporary of Messire François, would have done. Instead, he went to find the wolf, spoke with him and returned to town with the following proposal: the wolf would stop devouring the little children, but in return, the townspeople would give him*

something to eat. Both parties are thus satisfied, and the townspeople even end up entrusting the wolf with the care of their children. But this is not the path followed by the West. The option most generally adopted is the one supported by Brother Dominic: to impose the point of view that claims to be true, and thus to impose a certain vision of the world […] (Vol. 2, p. 179)

HPTD-M Comment # 11: The essential question of Landier's social audit theory, as seen indirectly through all his articles in Volumes 1 and 2, seem to be present in this excerpt. We refer here to mediation for concrete problem solving through the Included Third logic. Not by binary logic of true and false, good and evil, as the short-sighted dogmatic Brother Dominic looked at the wolf problem. This means the wolf was seen as an evil to be eliminated, not a possible partner that would be part of the community and take care of the children if some food was given to him.

6. Hubert Landier: *How to Deal with the Unthinkables of World Transformation: The Purpose of a TD Chair* (Vol, 2, p. 164-175)

Prof. Dr. Hubert Landier, one of the coordinating editors of this ADJURIS book Vol. 1 and 2.

On types of logic, considering Landier's view: *Classical logic would have dictated that they should appear either as a corpuscle or as a wave, but not both. After much trial and error, physicists had to go beyond the logic they had inherited […]. We'll call this overcoming of the binary logic of the 'excluded third' the 'logic of the included third'. The three principles of what will come to be known as 'transdisciplinarity' are as follows:*

- principle of the included third, as opposed to the principle of the excluded third, falsely attributed to Aristotle,

- the existence of different levels of reality from the one we are familiar with,

- principle of complexity, as the different parts of reality only exist through the relationships they maintain with each other, whether at the same level of reality or at different levels of reality. (Vol. 2, p. 167)

HPTD-M Comment # 12: In the same direction goes our article, considering the Included Third concept based especially on De Broglie's wave-particle duality, which Landier described as incompatible to binary logic, since in physics nothing can be considered 'either as a corpuscle or as a wave': *De Broglie demonstrated the wave-particle duality and Einstein the convertibility between mass and energy ($E= mc^2$). All of this was intuitively already known by the Alchemical Tradition, as seen in the Ouroboros symbol and the Taoist Philosophy, through the circular Tai Chi symbol of Ying-Yang. The Tao means the way, i.e. the true way is not the true way (like in a Zen koan to provoke meditation through paradoxes). So, complementarity can be seen clearly through technoscience, philosophy, tradition, and art to demonstrate that binary logic can be applied only to*

certain contexts in practical terms. Complementarity also involves the balance of opposites. (Vol. 1, pp. 152–200)

7. Debora Santille: *Transdisciplinary Chair in the Context of Leadership in Organizations* (Vol. 1, pp. 216–234)

Debora Santille, an executive, business administrator, and accountant expert in governance and finance, also mentions metaphysics in the context of TD: […] we can affirm that transdisciplinary is not tied to any discipline, and that in fact, this methodology seeks to rely on disciplines to better explain and make understanding the totality of knowledge. D' Ambrosio considers that: *[…] Transdisciplinary does not constitute a new philosophy. Not metaphysics. Not a science of sciences and much less, as some say, a new religious stance. Nor is it, as they insist on showing it, a fad. The essential thing about transdisciplinary lies in a stance of recognition where there is no privileged cultural space and time that allows us to judge and hierarchies – as more correct or truer – complexes of explanation and coexistence with the reality that surrounds us.* (Vol. 1, p. 218)

HPTD-M Comment # 13: As we have shown in our article (Vol. 1, pp. 152–200), D'Ambrosio was a mathematician and educator, cosignatory of the 1986 UNESCO Venice Charter, and one of the Brazilian TD theorists. At the end of the 1980[s], together with Pierre Weil and Roberto Crema, D'Ambrosio developed the holistic TD, parallel to Nicolescu's TD methodology in Europe, corroborating the soft approach perspective which is also the tendency of HPTD-M, especially through the four epistemic ways of technoscience, philosophy, tradition, and art, which are a perspective originally from Brazil.

8. Margaret Kimishima: *Shifting Beyond the World of Duality* (Vol. 2, pp. 116-128)

Margaret Kimishima, a holistic therapist from Japan, has impressed us in terms of alignment from a different perspective to the HPTD-M view, in a way that can be used to explain the difference of TD based on definitions (KNOWING) and TD based on concepts and ideas (UNDERSTANDING).

HPTD-M Comment # 14: The terms in bold letters, mentioned in her article, can provoke deep discussions:

- **Duality, dichotomy, polarities**, and the Tai Chi symbol (**Ying and Yang**) reflect the Eastern way of seeing reality as the balance of opposites (Kimishima is from Japan). In Modern Physics and Analytical Psychology the complementarity principle is the same, just defined, in other words. Nicolescu's Included Third or Hidden Third reflects the same idea of opposites in dialogue.

- **Metaphysics**, exposed by Kimishima as a holistic therapist, is in her view a mindset complementary to **science.** In that sense we would provoke all our readers with Descartes, the father of the mechanistic view who also had an

incredible TD aspect, presented by Capra through his systemic view (not yet TD) in a 1989 interview: In an allegory of a tree, Metaphysics is the root, physics, the trunk, and the other disciplines the branches[8].

Kimishima sent us an e-mail on June 16 about the a.m. quote, showing her enthusiasm for our a.m. view. On June 19, she authorized us to publish her remark: *Wow, what a beautiful quote! Fascinating indeed.* ***Metaphysics*** *is the root,* ***physics*** *the trunk, and the* ***other disciplines*** *the branches. I was born in Europe and raised back and forth between Japan and Europe/US. I've experienced both perspectives like I had to study various versions of modern history and that of Christian teachings as someone from a strict Christian family with their westernized background. That's partly why I wanted to inspire someone to gain some 'transcended knowledge' as an Easterner.*

9. Vladimir Mokiy: *Systems Transdisciplinarity Chair as Pathway to Fulfill Global 'Social Orders'* (Vol. 2, pp. 31-39)

Prof. Dr. Vladimir Mokiy, from Russia (ITT), express through his text a clear TD approach connection to Europe (CIRET) and the USA (ATLAS and CGU): *Within the scope of 'transdisciplinarity for scientific research', as announced by Jean Piaget (Piaget, 1972) and later actively developed by B. Nicolescu (Nicolescu, 2006), it is assumed that transdisciplinarity should be the highest form of natural integration of disciplinary discourses, scientific and artistic cultures. The goals of this direction are achieved through the following activities:*

- forming actively subdisciplines that provide integration and syntheses of knowledge of complementary disciplines within a platform of basic discipline (such as economics, ecology, etc.). For example, ATLAS is working towards creating a subdiscipline that provides integration and syntheses of knowledge of complementary disciplines within the platform of engineering discipline[9];

[…]

- implementing transdisciplinary innovations (special curricula) to develop general cultural competencies in students during their education at the universities. At Clermont Graduate University (CGU), for example, graduate students must complete a T-Course (transdisciplinary course) during the first two years of their curricula[10].

Starting from 2023, this organizational work is being carried out through two international transdisciplinary projects in higher education and sustainable development (2023–2030). These projects are carried out by the Institute of

[8] Capra, Fritjof (1989). The Emerging New Culture: 27-minute interview in the *New Thinking Allowed* show with Jeffrey Mishlove. Available at: https://youtu.be/e-UQ1QqeTYs.
[9] ATLAS Transdisciplinarity: https://theatlas.org/index.php/transdiscipline.
[10] CGU Transidsicplinary Studies (Claremont Graduate University): https://my.cgu.edu/transdisciplinary.

Transdisciplinary Technologies (ITT) in collaboration with International Center for Transdisciplinary Research (CIRET), as well as by teachers, academics, and researchers from different countries, who have provided the necessary informational and other support[11].

HPTD-M Comment # 16: Mokiy's article is evidence of similar TD approaches in the USA, Russia, and Europe in general. All of them tend to have a dominantly analytic and hard approach to TD, correlated to rational and empirical types of intelligence. Russia and the USA also tend to be more pragmatic. HPTD-M is also pragmatic but mainly synthetic, as seen by the schematic models, especially when appointing the need to integrate emotional and intuitive types of intelligence for concrete problem solving. So, here is the 'pragmatic' paradox as a direct example of Third Included logic and dialectics, i.e. a dialogue to be established between those two types of TD approaches. The first is harder, more analytic, and involves science and education (Russia, USA, and Europe). The second, like HPTD-M focused on the mediating management for concrete problem solving, seems to be softer and more synthetic. Also, in connection to the second we have already commented on authors from Latin America and Japan, which tend to follow the same dominant synthetic and soft approach. A European exception to this pattern is Éric Carrey's economy of care and meaning, besides Hubert Landier, for his background as an economist, social auditor, and mediator. Both also seem to be keen on synthetic and soft approaches.

10. Hubert Landier: *A Transdisciplinary Chair to Save the University* (Vol. 2, pp. 40-47)

Prof. Dr. Hubert Landier is one of the coordinating editors of this ADJURIS book Vol. 1 and 2.

Some of Landier's reflections about the university in France in connection to management: *[…] it's safe to say that this is a major danger for the university. Implicitly, it is being asked to serve society as it is, and no longer, or no longer only, to think about it independently and, if necessary, critically, by prejudging what it might become beyond the majority doxa and the interests that dominate it. […] For knowledge to qualify as scientific, it is not enough to survey the academic 'literature' published in peer-reviewed journals on the problem under examination, and then present the results of a generally very limited survey, always accompanied by supposedly convincing statistical precautions, to produce a work that would be truly scientific. The scientific approach, in fact, does not consist in accumulating details. It is also, and even primarily, about questioning what is held to be true, and questioning the meaning of the results obtained on the basis of knowledge that cannot be merely academic, but must appeal*

[11] ITT and CIRET Information Letter – International Systems Transdisciplinary Projects (2023–2030): http://www.td-science.ru/images/kart/Information_letter_2026_2030.pdf.

to the vision of the world, of cultural essence, in which it takes place. […] increasing specialization: marketing experts or management controllers. This compartmentalization means that researchers are unable to go beyond what is taken for granted, regardless of what they think. The institution is reduced to a place for reproducing what already exists. Transdisciplinarity rebels against this compartmentalization and enclosure in the commonly accepted existing. Its aim is to open windows onto what lies beyond the village, and therefore beyond the university institution. Such would be the ambition of a transdisciplinary chair, whether in a university or in any other place recognized for ensuring freedom of the mind. (Vol. 2, pp. 47)

HPTD-M Comment # 17: In our perspective, Landier's remarks, as quoted, can reflect the problem of universities in general, not only management-related universities. The HPTD-M identified four main university issues in which TD could help:

a) replicating KNOWLEDGE through the perpetuation of authors liked and accepted by the university mainstream instead of stimulating UNDERSTANDING through the comparison with new authors outside the university-accepted perspective.

b) promoting dogmatic scientism instead of understanding the feedback process between technology and science through the epistemic form of techno-science (see Figure 2). In this sense, a 2013 video of a 17-minute talk by Prof. Dr. Rupert Sheldrake can provoke insights[12].

c) promoting ideologies instead of accepting new ideas that can create new research fields.

d) considering (b) and (c), a feedback process between ideology and dogmatic science can be created to manipulate information through 'science' and eventually defend certain types of ideology, partisanship, or groups of interest. As we have already mentioned in Brazil through a 14-hour mediating manager course with TD tools, reflected in a 2023 publication in Portuguese: *The HPTD-M proposes the understanding of how the four epistemic ways are imbalanced nowadays, in the sense that the epistemic form of tradition has been distorted into pernicious ideology, while technoscience tends to become reduced to a bureaucratized and self-centered science, which disregards individual professionals and lived experience, only considering the publications of those who, if not careful, may assume the role of 'editors of society'. This situation suppresses philosophical reflection and the expression of creativity for solutions through art*[13].

[12] Sheldrake, Rupert (2013). Science Delusion. Seventeen-minute talk. *TEDx Whitechapel 2013*. https://youtu.be/sF03FN37i5w?si=wHstjpMKcJIdMy.

[13] Costa, L. S. G. M. (2023). Skills of the transdisciplinary mediator [Habilidades do mediador transdisciplinar]. *Centro de Educação Transdisciplinar (CETRANS).* CETRANS INTER@TIVO 56, Ano XIV, 2023 (article attached, p. 7, translated by the author). http://dx.doi.org/10.13140/RG.2.2.20330.29124.

11. Mariana Thieriot: ***A Plea for a Transdisciplinary Chair: Tradition and Innovation*** **(Vol. 2, pp. 184-197)**

HPTD-M will comment on two direct-quote sequences from Dr. Mariana Thieriot, who has postdoc research in philosophy and technoscience. *Research in the field of philosopher training has shown that the unintentional and involuntary attitudes that emerge during a human relationship are sometimes experienced as problematic, because they reveal a contradiction between the desires or subjectivity of both parties and the very complex problems encountered during a training course […] In fact, the increasingly mechanical, impersonal, pragmatic and fragmented way in which scientific knowledge is produced and retransmitted, the lack of space for the development of individual subjectivity in contemporary societies, the impoverishment of meaning due to the reductive levelling of cultural content transmitted without ever being questioned, the lack of problematisation that is often found in highly standardising and moralising scientific projects […] Our constitutive plasticity means that we can learn to deal with our unintentional and involuntary attitudes. The unintentional attitudes aroused by subjectivity or by the unconscious can, thanks to the dialogue that will signal our know-how with subjectivity, allow the interaction of the desire that is expressed with the intention and the explicit and objectified project of elaborating knowledge. […] During a training course, our emotions can come into conflict with the intention of learning to live together. It is necessary to perceive these emotions and identify the nature of the conflict in order to resolve it. […] Transdisciplinary dialogue is essential for promoting deep and reflective understanding across various disciplines. Such dialogue can contribute to the development of a more inclusive and collaborative academic environment. Education should avoid the pitfalls of dehumanizing relationships and conditioning behavior, focusing instead on personal development through the promotion of dialogue and mutual understanding.*

HPTD-M Comment # 18: Reflecting the deep philosopher the author is, this excerpt is correlated with Intuitive Intelligence or "Learning to Be" when she mentions "meaning". HPTD-M understands "meaning" in such way: The most abstract troubleshooting requirement (see Figure 1 combined with Vol 1, p. 179). When talking about the need of subjectivity, Thieriot refers indirectly to Emotional Intelligence or "Learning to Live" as it can be seen in Figure 1, learning to live with ourselves, not only with others, as HPTD-M innovates with this model, an improvement from UNESCO-Delors' view of "Learning to Live Together". Thieriot also corroborates the HPTD-M conscious and unconscious complementarity through her Grey Zone Theory, shown in her article by the idea of the "unintentional" as the unconscious. The mainstream emotional shadow is demonstrated philosophically, corroborating what HPTD-M has already described. Just to remember: The shadow is what is consciously unknown or unconsciously repressed. Considering the mainstream Objective and Rational bias, the shadow is

complementary, i.e., Subjective and Emotional, in line with what Thieriot presents. Finally, she mentions dialogue as the place of philosophy in TD groups, i.e., very similar to what HPTD-M defends: Dialectics as the most abstract problem-solving attribute in work groups, one of the four in the quaternary-complementarities framework (see Vol 1, p. 179). *Training that should enable people to acquire, through sometimes ancient traditional knowledge, the ability to think and live on their own and together […] the subject who is supposed to know does not dare to question the knowledge inherited from tradition… One speaks, another thinks in secret, another act as if everything is fine and the conscience hibernates, anaesthetised or intimidated by the volume of information.*

HPTD-M Comment # 19: The article´s title demonstrates the complementarity between tradition and innovation, i.e., a mere ancient knowledge replication does not promote a TD paradigm shift. The author uses "tradition" not in the sense of one of the four TD epistemic ways involving spirituality and religion, but as the authors considered "traditional" in their disciplines. So, an analogy between tradition-innovation and bureaucracy-innovation can be made. Empirical Intelligence (sensation, based on facts and concreteness) is manifested through procedures and bureaucracy, based on the traditional authors and antecessors in the educational process or management activities. In turn, Intuitive Intelligence (intuition, based on meaning and abstraction) is the agent of new ideas and innovation. Those two complementary functions are defined by Jungian Psychology and the MBTI System as Perception Functions. HPTD-M understands that those must be balanced for management optimization. In public administration, for example, there is a tendency of bureaucratic excess, especially of controls before managerial discretion, which limits innovation initiatives. In addition, managers currently lack incentives to exercise their creativity and take advantageous initiatives, through discretionary acts. Bureaucracy is necessary to establish the standardization of processes, but it cannot be used as a punishment or constraint to any kind of innovation. The risk is that only the binding acts of the Administration will remain. The same can be applied to education in the TD Chair: It cannot be based only on the traditional author´s definitions, it must go beyond, with new ideas to establish new concepts for effective problem solving of complex problems, in organizations and civil society.

12. Synthesis of the HPTD-M in dialogue with the TD mainstream

Just to clarify: The HPTD-M comments have no personal preference for an article or author whatsoever: Those simply reflect an analysis based on ADJURIS Vol. 1 and 2 quotes we understood as relevant for explaining in a summarized way what follows.

In the HPTD-M view, **TD means 'beyond and through disciplines'** but many other definitions are possible. UNDERSTANDING essential concepts is

more important than KNOWING formal definitions. Transdisciplinarity (or **holistic view**) is the answer to problem-solving processes that demand complexity of variables beyond the (i) binary logic – mechanistic view for machines and (ii) feedback logic – systemic view for environment/biology, i.e. we are dealing with (iii) **Included Third logic and dialectics** for human phenomena, the most sophisticated tool in concrete cases that (i) and (ii) are not enough for troubleshooting. Unfortunately, the mainstream mind tends to be focused on binary logic (true and false, right and wrong, 0 and 1).

As seen through the HPTD-M theory (Vol. 1, pp. 152–200), the dialogue with Nicolescu's three TD principles can be demonstrated, now with the HPTD-M View the same items pointed out by Landier:

- **Complexity**: Our framework understands TD as a response to complexity for problem solving, considering the complementarity between complexity and simplicity. Just to remember what some scientists said about simplicity i) da Vinci - the ultimate sophistication, ii) Newton - nature is pleased with, and iii) Einstein - everything should be made as simple as possible, but no simpler. So, in the HPTD-M view, TD is the answer to questions that cannot be solved by the mechanistic paradigm – machine approach and systemic approach – environment/biology. TD is the third level of complexity for problem solving, considering the human phenomena.

- **Included Third**: HPTD-M sees three types of logic, respectively according to the a.m. levels of complexity, i.e. (i) binary logic (ii) feedback logic, and (iii) Included Third Logic. After all, all three mental models are mere approximations of reality.

- **Levels of Reality**: There are many possible ways to understand this principle, in our opinion, especially through quantum physics. One of them (not the only) can be the four types of intelligence as levels of understanding reality: 1) intuitive/abstract, 2) rational/objective, 3) emotional/subjective, and 4) empirical/concrete. This framework sequence is more complex and involves the quaternary complementarities established by HPTD-M.

Finally, The ADJURIS book Volume 1 presents two concepts in connection, as seen in the Introduction (pp. 12–15) and the article about our HPTD-M theory (pp. 152–200):

- **Complementarity:** A principle of Modern Physics and Analytical Psychology, i.e. transdisciplinarity represents the dialogue between specialists and generalists, respectively disciplinarity and transdisciplinarity.

- **CULTURE and TECHNOSCIENCE:** Considering the interaction of theory and praxis, CULTURE (philosophy, tradition, and art) needs to dialogue with TECHNOSCIENCE (technology in interaction with science).

Especially considering this duality of CULTURE and TECHNOSCIENCE, Figure 2 establishes a dialogue between HPTD-M and the cover of the ADJURIS book, which symbology is described in the Volume 1 Cover Description (p. 5) and Introduction (p. 15).

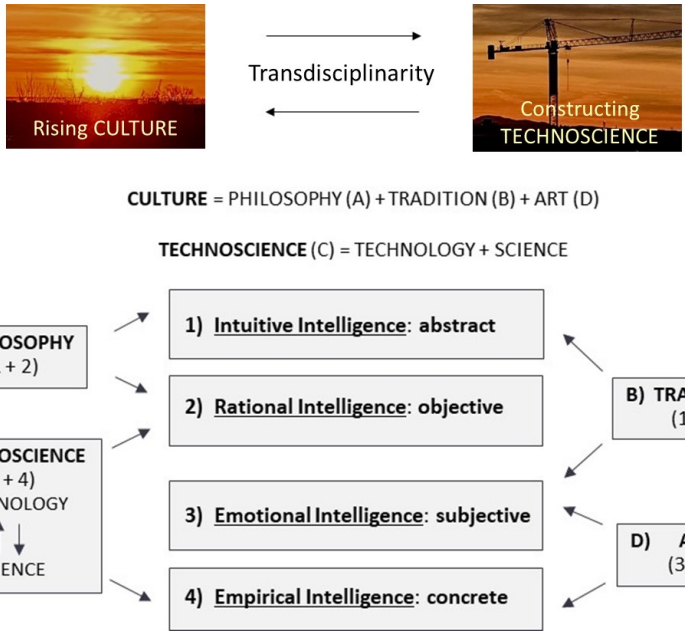
Figure 2 is presented in an analytic form, with arrows, and its view can be complemented through the synthetic schemas of **Figures 3** and **4**.

Figure 3 shows the current mainstream, i.e. the dominance of polarization and dichotomy through the indiscriminate use of binary logic. Then, most of the civil society tends to be unaware of the feedback processes between opposites (represented by the arrows in **Figure 4**, absent in **Figure 3**). Even worse, as this text demonstrated, few people have an idea of the Third Included concept, which is the most sophisticated type of logic for complex problem solving, as we have shown. This means part of the mainstream culture still doesn't understand the complementarity principle and the balance of opposites.

The quaternary-complementarities synthetic model of HPTD-M presented in the ADJURIS Volume 1 (p. 181) is in Figure 3: It can provoke insights into dogmatic science and ideology. Furthermore, the corroboration of the schematic structure in Figures 3 and 4 comes from six articles published on the HPTD-M from 2022 to 2024 in the USA through the ATLAS Transdisciplinary Journal of Engineering and Science.

Figure 2: TD as Culture and Technoscience Complementarity in the HPTD-M Quaternary View

Source: Cover of the ADJURIS Book in conjunction with the HPTD-M quaternary framework



Finally, here are the basic complementarities as shown in the schema of Figures 3 and 4 which reflects a synthesis of the HPTD-M. There can be more combinations two by two:

- Judgment vs. Perception (red horizontal axis and blue vertical

axis).

- Rational Intelligence vs. Emotional Intelligence (complementarity in Judgment).

- Intuitive Intelligence vs. Empirical Intelligence (complementarity in Perception).

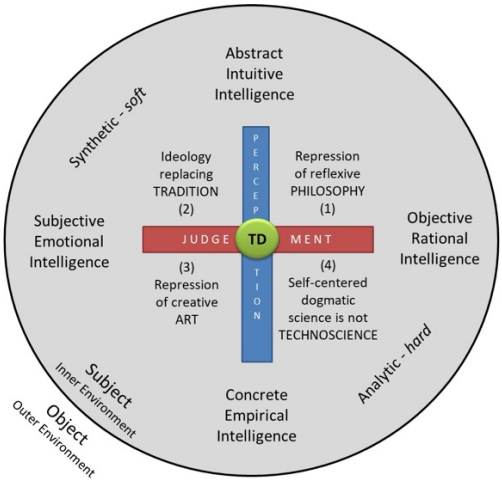
- Analytic vs. Synthetic.

- Hard vs. Soft (Skills).

- Subject vs. Object (inner vs. outer environment of each person or collective level).

- Culture (Philosophy, Tradition, and Art) vs. Technoscience (Technology and Science).

Figure 3: HPTD-M Model for the Mainstream Ideological Dogmatism Imbalance in the Four Epistemic Ways (1) to (4)
Source: Adapted from the model published by CETRANS in Portuguese[14]

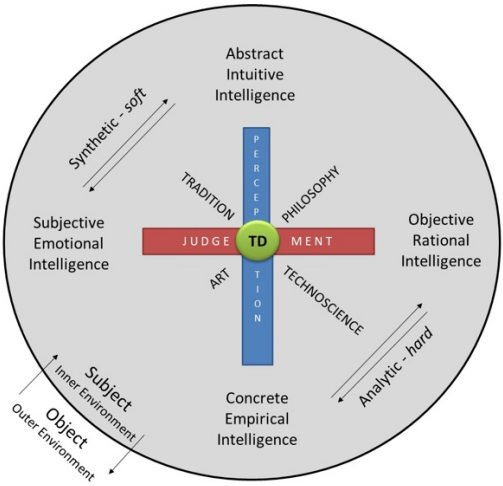


The result of such reflections was a well-evaluated 14-hour transdisciplinary mediating manager course given by us in the Brazilian Government National School of Public Administration – ENAP (2023). In the course, this author presented the models of Figures 3 and 4. The schemas were well received by the participants, mainly public service managers with a 44-year-old average. The course content was not institutional and reflected this author's independent opinion through the HPTD-M[15].

[14] Costa, L. S. G. M. (2023). Skills of the transdisciplinary mediator [Habilidades do mediador transdisciplinar]. *Centro de Educação Transdisciplinar (CETRANS).* CETRANS INTER@TIVO 56, Ano XIV, 2023 (article attached, p. 9, translated by the author). http://dx.doi.org/10.13140/RG.2.2.20330.29124.

[15] Costa, L. S. G. M. (2023). The mediating manager. A course of transdisciplinary tools applied to organizations, based on the HPTD-M theory and the new conception of mediation and leadership. *Brazilian National School of Public Administration (ENAP).* https://suap.enap.gov.br/portaldoal

Figure 4: HPTD-M Model for the Paradigm Shift Promoted by TD Theory and Praxis.
Source: Adapted from the TD model for the MBTI System – published by ATLAS-TJES[16]



13. Conclusion

Through our analysis, the shadow can be seen simply as what our consciousness does not perceive. In his 1928-1930 seminars on dream analysis, Jung made an analogy: Consciousness is like a headlight that travels across the field; only the illuminated points are conscious. The unconscious, or dark side, the habitually unconscious part, is the sphere of the shadow[17].

This means the shadow, in line with the TD approach, has also a complementarity in its concept: The unknown part of the conscious and the unconsciously rejected or repressed part.

The mainstream tends to reduce the subject to object, instead of considering the subject-object complementarity: This helps to detect the mainstream emotional shadow, especially considering emotional intelligence is subjective, and supposed to be in dialogue with objective rational intelligence. Moreover, the subject is the inner or individual environment and the object is the outer or collective one. So, the 1996 UNECO´s view is focused on the object, i.e., in the

uno/curso/2136/?area=16. The ENAP certificate is in the following link, which also explains the course's main topics through translation from Portuguese to English. http://dx.doi.org/10.13140/RG.2.2.28025.54884.

[16] Costa, L. S. G. M. (2023). The mediating manager for effective troubleshooting in organizations: A transdisciplinary view from HPTD-M. *Transdisciplinary Journal of Engineering & Science (ATLAS-TJES) 14*, p. 177. https://www.atlas-tjes.org/index.php/tjes/article/view/619/342.

[17] Jung, Carl Gustav (1984). *Dream analysis: notes of the seminar given in 1928-1930*. Princeton University Press, 757 p.

collectiveness (Learning to Live Together, with Others). Figure 1 is clear by evidencing the HTPD-M view of Learning to Live (subject and object) as demonstrated.

From an emotional intelligence shadow perspective, it is not enough to create a TD chair and induce transformation or paradigm shift through intellectual convincement. More than that, emotional acceptance is necessary on personal and collective levels, as corroborated by our 12-year experience in coordinating work groups in the Brazilian public service.

Our experience includes contact with specialists, colleagues with M.Sc. and Ph.D., many of them university professors besides public servants. Through the HPTD-M view, the academy needs a generalist formation to enable a complementary dialogue between specialists and generalists, like the "dual career ladder" or "dual career path". Those are a career development model that allows one to advance either as a technical expert (specialist) or as a manager (generalist), providing parallel pathways for progression within an organization. For example: some Brazilian public institutions have adopted this organizational system.

So, we need to interact subject and object besides generalists and specialists as a TD Chair is supposed to work. By analyzing Figures 1, 2, 3, and 4 in terms of quaternary complementarities, emotional intelligence is the mainstream shadow, as HPTD-M demonstrated in the final model of psychosomatics presented in the USA ATLAS Publishing book of 2024: *Artificial Intelligence and Human Mediation.*[18] In this connection, our analysis understands the mainstream shadow contributing to the following university dysfunctions in which TD can help. The rational bias tends to focus on KNOWING instead of UNDERSTANDING, and the shadow of merely KNOWING is dogmatic science and ideology which hinders the dialectics and UNDERSTANDING that the TD paradigm and the HPTD-M defends:

a) replication of KNOWLEDGE through the perpetuation of authors that are liked and accepted by the university mainstream **instead of stimulating UNDERSTANDING** through the comparison with new authors outside the university accepted perspective.

b) promotion of dogmatic scientism instead of understanding the feedback process between technology and science through the epistemic form of technoscience, as seen in Figure 2.

c) promotion of ideologies instead of accepting new ideas that can create new research fields.

d) considering (b) and (c), a possible negative feedback process between ideology and dogmatic science can be created to manipulate information through 'science' and eventually defend certain types of ideology, partisanship,

[18] Costa, L.S.G.M., Loisel, M.T., et al. (2024). *Artificial Intelligence and Human Mediation* (Editors and co-authors among 12 authors: Leonardo da Silva Guimarães Martins da Costa & Mariana Thieriot Loisel). ATLAS Publishing. ISBN: 978-0-9998733-8-0 (PDF), p. 25. https:// theatlas.org/index.php/td-teaching-materials/td-books.

or groups of interest.

A discussion involving this author's 16-year experience with business administration and international trading may help in this context (before public administration, since 2009). After reading the draft of this paper, Debora Santille, the only author from the corporate world in the ADJURIS Volumes 1 and 2, understands that the practice of replicating and promoting the same individuals is not exclusive to the academic segment or universities; it's prevalent across various industries. This practice involves substantial marketing efforts, including investment in various media, publicity, and promotional channels. These investments are intended to sustain promotional activities until resources are depleted (an idea referred to as 'billing') to achieve scalability. This product sales model is applied across all sectors and segments. However, as this approach tends to block new entrants, its effectiveness vs. its ethical implications needs to be questioned.

So, one possible way to promote TD in universities, organizations, and civil society, in our opinion, is the honest dialectics process, not excluding any actor, otherwise the shadows of the mainstream will remain through the incapacity of effective problem solving in higher collective levels or instances.

In summary, the HPTD-M understands the levels of reality through the quaternary complementarities, i.e. the four types of intelligence and the four epistemic ways need to be balanced two by two. In the mainstream concrete case, the dominance of rational intelligence puts emotional intelligence in the shadow, as an opposite in terms of judgment function (see the red axis in Figures 3 and 4). Also, in this context of balance two by two, Figure 3 shows the complementarity between SYNTHETIC-SOFT and ANALYTIC-HARD as different TD styles of approach already commented. In our opinion, a dialogue between the two is a necessary condition for being TD.

So, HPTD-M is not only a theory but also an effective tool for problem-solving in practice. As evidence:

- Dialogue with the authors of ADJURIS Volumes 1 and 2.

- Application of the three widely accepted principles of TD: Included Third, complexity, and levels of reality.

- Dialogue with Brazilian holistic TD, which considers the four epistemic ways correlated to Jungian functions.

All that said, a relevant finding of this study comes from the analytical-hard dominance of TD in Europe, USA, and Russia, as already demonstrated. The Brazilian holistic TD, synthetic and softer, is not very well known outside Latin America. Then emerges as a leading gap in awareness among Jungians in the USA and Europe about TD and among TD academics in these regions about Jungian Analytical Psychology, despite their convergence in many aspects. As mentioned, Jung is considered a predecessor of TD by our HPTD-M and by Brazilian holistic TD theorist and psychologist Roberto Crema.

To conclude, **TD is not a mere theoretical framework but also a practical tool** for addressing complex problems, as evidenced by the various HPTD-M schematic models. In the quest for an effective TD Chair, some reflections on the mainstream shadow through complementarities and reductionisms are demonstrated.

1. Complementarities (dualities in interaction)

1.1 Subject and Object are in a feedback process and cannot be reduced to Object, as seen in the idea of *Learning to Live* (with ourselves and others), in connection with emotional intelligence.

1.2 Analytic-Hard and Synthetic-Soft views must dialogue for effective problem solving, as demonstrated in the HPTD-M schematic model of Vol 1 p. 179.

1.3 Generalists and Specialists must work together in the organizations if effective results are pursued, as seen formally in the "dual career ladder" or "dual career path" systems.

1.4 Bureaucracy and Innovation need to dialogue, i.e., traditional authors who established previous definitions can be updated by new ones in terms of concepts. Principles are more important than formal definitions for problem solving, as HPTD-M understands.

1.5 Complexity and Simplicity to deal concretely with problem solving, i.e., the binary logic has valuable applications in mechanistic variables but needs to be complemented by the third included logic of TD (when the complexity of human phenomena is involved).

2. Reductionisms (broader concepts that tend to be in the shadow)

2.1 Understanding (through the four types of intelligence and epistemic ways) **cannot be replaced by Knowing** (merely rationally).

2.2 Ideas cannot be replaced by Ideologies otherwise no innovative research or new theories will emerge.

2.3 Technoscience cannot be replaced by Scientism because dogmatism does not solve problems concretely and empirically.

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How to Deal with the Unthinkable of World Transformation: The Purpose of a TD Chair

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Abstract
The world is facing a complex polycrisis, encompassing environmental, geopolitical, and socio-economic challenges. These crises are interconnected, reinforcing each other and creating an unpredictable global transformation. Traditional disciplinary approaches are inadequate for understanding this polycrisis; instead, a transdisciplinary analysis is necessary. This article outlines the components of the polycrisis, emphasizes the need for transdisciplinary methods, and explores strategies for dealing with the unforeseeable future. It argues for moving beyond predictable frameworks and adopting new mental models to navigate the complexities of global change.

Keywords: *polycrisis, transdisciplinary analysis, global transformation, unpredictability, socio-economic challenges.*

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1. Introduction

The world has entered a time of crisis. These crises can be seen at several different levels: that of humanity in relation to the planet, that of the West in relation to the rest of the world, that of the State in relation to the population, and finally that of employers and each of us. We can speak of a time of crisis in the

sense that it does not involve a modification of the system such that it would roughly return to equilibrium after a period of integration of external noises[1], but that it most probably involves a transformation with an unpredictable outcome, which could consist of its disintegration or its reorganization at a higher level of complexity.

It's important to note here that these crises are of different natures are of unequal scope and take very different forms, but that they interfere with each other and reinforce each other, so that overall they constitute a "polycrisis". This polycrisis cannot be analyzed using the same means as those used to analyze its individual components. It calls for another level of investigation and understanding, one that goes far beyond the scope of each of the disciplines through which we seek to apprehend the world. We would therefore say that this mode of understanding comes under the heading of transdisciplinary analysis, which needs to be presented and defined beforehand.

If the contemporary polycrisis represents a genuine transformation of the world in which we live, it follows that we cannot know what will become of it or what it will consist of tomorrow. We therefore need to prepare ourselves for the unforeseeable, and to do so, we must first rid ourselves of the predictable, which in such a context comes to constitute a confinement in certainties that are already in the past. As Thomas Aquinas puts it, "We must not conceive that the beings of nature are distinct in the same way as the logical abstractions that are part of our way of understanding"[2]. If we want to continue to understand "the beings of nature" and eventually exert some influence on them, we must therefore get rid of our way of blinding ourselves.

Starting from a very global level, this problematic must bring us back to the local level of our more immediate and very concrete preoccupations, the treatment of which cannot, however, be conceived correctly, if the above is right, by neglecting the context in which they are situated. A few precepts of mental hygiene may help us to do this, as we have already explained what this transformation of the world consists in.

Hence the plan adopted here:

- the components of the polycrisis,
- the need for transdisciplinary analysis,
- how our future is rigorously unpredictable,
- how best to deal with the unpredictable.

2. Inventory of Polycrisis Risks

An inventory should be complete, but in this case it cannot be, for the very reason that it comes up against the impossibility of imagining the future

[1] Henri Atlan, *Entre le cristal et la fumée, essai sur l'organisation du vivant,* Le Seuil, 1979.
[2] Thomas Aquinas, *Summa Theologica*, I, qu.76, a.3, Christian Classics, 1948.

beyond what we can conceive of in the world as it is, and as it may already belong to the past. It's like an equation with multiple variables. Nevertheless, a certain number of facts, which are already visible - and which would undoubtedly be of an anecdotal nature if they were to remain isolated - are of such a nature as to attract our attention, either by their novelty, or by their multiplication in relation to what seemed to us to be "the order of the world". I'll be borrowing from the book published by Eric Carrey and myself, "Après la guerre contre la COVID, de l'économie financière à l'entrepreneuriat social", in which each of these risks is developed at some length. A point of clarification is in order here: having been published in a book dated 2021, it was drawn up in the course of 2019, and the order of presentation has not been altered in the version that follows. The reason for this is understandable, and the increasing acuity of some of these risks confirms the relevance of mentioning them:

1. *Environmental risks*
2. *Appearance of pandemics*
3. *Major atomic accident*
4. *Collapse of the state*
5. *False prophets multiply*
6. *Unexpected and sometimes irrational movements*
7. *Increased verbal and physical violence*
8. *Shaking up traditional identities*
9. *Large population movements*
10. *Anarchic development of violence*
11. *Development of shortages*
12. *Looking for scapegoats*
13. *Local collapses*
14. *More and more de facto situations*
15. *Growing daily insecurity*
16. *Development of mafia groups*
17. *Development of rumors and* fake news
18. *Confrontations between collapsed states*
19. *Rise of communitarianism*
20. *Increasing number of industrial and commercial wastelands*

It goes without saying that these different risks are all interrelated. It is therefore not possible to treat them independently of one another, and the analysis procedures that would apply to one risk will not apply to another. On the other hand, the very interferences between one risk and another need to be taken into consideration. It is therefore permissible to speak of "polyrisks" as a factor in the polycrisis we are currently experiencing, and which is arguably only just beginning. This requires us to adopt a perspective that cannot be limited to an academic approach restricted to a single field of reality, or even to an interdisciplinary or multidisciplinary approach. We therefore call for a transdisciplinary approach,

as formulated by Bassarab Nicolescu[3].

3. The Need for Transdisciplinary Analysis

What is the transdisciplinary approach? To understand it, it's important to remember that Bassarab Nicolescu spent his career as a quantum physicist at the CNRS. Physicists are at the origin of a revolution in thinking. About a century ago, they were confronted with a reality that was beyond their comprehension. With some instruments, the electron appeared as a corpuscle, while with others, it appeared as a wave function. Added to this was the fact that the same electron could not be observed simultaneously by two different instruments. Classical logic would have dictated that they should appear either as a corpuscle or as a wave, but not both.

After much trial and error, physicists had to go beyond the logic they had inherited. Bernard d'Espagnat[4] came to evoke a "veiled reality", beyond the image we have of it. But it was probably Bassarab Nicolescu, inspired by the philosopher of science Stephane Lussato[5], who came up with the most accomplished solution. To assert that a is contradictory to non-A, he says, is to be situated at a certain level of reality. But at another level of reality, A and not A, far from being mutually exclusive, can be compatible in a more global affirmation. We'll call this overcoming of the binary logic of the "excluded third" the "logic of the included third". The three principles of what will come to be known as "transdisciplinarity" are as follows:

- principle of the included third, as opposed to the principle of the excluded third, falsely attributed to Aristotle,
- the existence of different levels of reality from the one we are familiar with,
- principle of complexity, as the different parts of reality only exists through the relationships they maintain with each other, whether at the same level of reality or at different levels of reality.

  This logic can be expressed as follows:
  - A is A (identity principle)
  - A is not A (exclusion principle)
  - A and non-A are not mutually exclusive (including third parties).

Here, it's worth noting that such logic is not absolutely new, even if it challenges the postulates of positivist science inherited from the last century. Aristotle, to whom the principle of exclusion is wrongly attributed, reconciles Heraclitus and Parmenides by describing motion as follows: everything in motion is maintained and not maintained at the same time. Form remains even if substance

[3] Bassarab Nicolescu, *Nous, la particule et le monde*, Le Mail, 1985; Bassarab Nicolescu, What *is reality?* Liber, 2009.
[4] Bernard d'Espagnat, *Penser la science ou les enjeux du savoir*, Dunod, 1990.
[5] Stéphane Lupasco, *L'énergie et la matière vivante*, Le Rocher, 1987.

changes. Substance changes, but the form remains. What I will be tomorrow already potentially exists in what I am in the act. What I will be tomorrow will then exist in the act, and what I am today will be reduced to the potential state corresponding to another moment in time. The Stagirite thus appeals to this passage of time, reconciling Parmenides's vision of being with Heraclitus's vision of movement:

Each thing, necessarily, is or isn't, will be or won't be, and yet if we consider these alternatives separately, we can't say which of the two is necessary. Let me give you an example. There will be necessarily a sea battle tomorrow, or there won't be; but it's not necessary for there to be a sea battle tomorrow, any more than it's necessary for there not to be one. But whether or not there will be a sea battle tomorrow, that is necessary"[6].

This is what we call "hylomorphism": to be matter and form, to be and not to be at the same time, to be both in the act and in potential. This is what allows us to assert that "myself is another" (Ricoeur). Western logic is therefore not limited to the "yes or no" dilemma. But it's worth adding here that the Greek philosophers were probably well aware of Eastern wisdom, and in particular of the debates taking place in India. So here's what Nagarjuna (2/3ème century CE) says in his "Treatise on the Middle"[7] , part of the Perfection of Wisdom Sutras (*Prajnaparamita*):

- Everything is true (or) not true
- True and untrue
- Neither true nor untrue
- This is the Enlightened One's teaching.

The principle of the inclusive third is thus to be found in the Buddhism of the Great Vehicle (Mahayana). The great contemporary Japanese philosopher Yamauchi Tokuriû[8], however, modifies the order as follows, the third lemma being, he observes, the condition for the fourth:

- True
- Not true
- Neither true nor untrue
- True and untrue.

Nicolescu's trilemma was already contained in Nagajuna's quadrilemma. We can see from this that the dilemma on which our logic is based is by no means a universal principle that it is localized and dated, and that quantum physicists will therefore have been justified in abandoning it in their understanding of the phenomena they were led to attempt to explain. And of course, this transdisciplinary logic can be transposed to many other fields of reality. Such is the case with

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[6] Aristotle, *Peri Hermeneias*, https://isidore.co/aquinas/english/PeriHermeneias.htm. Thanks to Mariana Thieriot-Loisel, who brought this passage to my attention.
[7] Nagarjuna, *Traité du Milieu*, tr. Éditions du Seuil, col. Points Sagesses, 1995.
[8] Yamauchi Tokuriû, *Logos et Lemme, pensée occidentale, pensée orientale*, translated by Augustin Berque, CNRS Editions, 2020.

polycrisis and polyrisk situations. These cannot be dealt with through "interdisciplinarity" or "multidisciplinarity". Interdisciplinarity" means using the methods of a neighbouring discipline within the framework of a given discipline; "multidisciplinarity" means examining the same object from the point of view of different disciplines; but both are at the same level of reality, unlike "transdisciplinarity".

4. How our Future is Rigorously Unpredictable

In the passage quoted above, Aristotle uses the example of a naval battle that may or may not take place tomorrow. Can we know in advance? The answer to this question is negative. We can formulate hypotheses based on certain pieces of information, imagining different possible scenarios, but we can't say for sure. We must think of this:

- the future is not determined; otherwise history would not exist,
- it can only be conceived in the terms in which we think of the world today, and which tomorrow may give way to a completely different axiomatic, taxonomy and praxeology - we'll come back to this in a moment.

Polycrisis can thus lead to a dynamic whose outcome could be totally unexpected. The risks it represents are therefore not measurable. But to understand it, we need to understand how the transformation it leads to is situated beyond, or at a different level of reality from, what results from the juxtaposition of partial changes or innovations. To understand this, we call on two analytical tools:

- on the one hand, the distinction between type 1 and type 2 changes, borrowed from Gregory Batteson, and which is too well known to be developed here;
- on the other hand, Karl Popper's ternary ontology, which he presents as follows: "We can call the physical world: 'world 1', the world of our conscious experience: 'world 2', and the world of the logical contents of books, libraries, computer memories and so on: 'world 3'"[9].

Apart from partial changes (e.g. the transition from an internal combustion engine-driven vehicle to an electric vehicle) that leave the entire system intact, a Type 2 change results in a global transformation of the system. And this system can either disappear as an organized system, or reconstitute itself, after integrating "noises" from the outside, according to different organizational principles. These principles of organization, however, do not only concern Popper's "world 1", as worlds 2 and 3 remain invariant. Worlds 2 and 3 will themselves change, more or less in relation to the changes that have taken place in World 1. This means that the architecture of society, for example, and the moral values recognized as such, will themselves be overturned. What we can expect, then, is

[9] Karl Popper, *Conjectures and refutations*, tr. fr., Payot, 1995.

not an aggregation of partial changes, but a global change which, in order to be understood, requires a shift to a different level of reality from that of the partial changes to which a type 1 change corresponds.

To illustrate what such a transformation might entail, let's take the example of the fall of the Western Roman Empire. The Roman Empire corresponded to a certain world order, a certain *Weltanschauung*, which is largely incomprehensible to us today. When Alaric seized Rome in 410, the Roman senator of the time saw a world collapsing, "the" all-encompassing catastrophe that seemed unavoidable at the time, even though he didn't really believe in it. And this same senator, trapped in this world of his, is incapable of imagining what might follow. The world that follows will obey principles other than those he takes for granted, while at the same time adopting and reorganizing certain elements (the Christian bishop taking the place of the imperial prefect, for example, and the pope that of the emperor himself). So, we shouldn't ask the Roman senator what the next world will be like, because it's beyond his comprehension, at a different level of reality from that at which he stands as an observer of events he can see, but whose meaning escapes him.

There are a number of observations to be made here, which we will develop further below:

- the world after takes on elements of the world before, but which now take their place in a different *Weltanschauung,*
- the transformation in question is manifested in Popper's three worlds,
- the transition from one to the other can be analyzed as a bifurcation occurring at a breaking point reached by an imbalanced system that can no longer maintain its homeostasis (Prigogine),
- this imbalance is the result of an accumulation of risks exceeding what the system is capable of bearing,
- the bifurcation itself can be either abrupt (the sack of Rome) or extended in time (the decline of the Empire), or both (the sack of Rome being a culmination of the slow decline of the Empire),
- the bifurcation leads to a rigorously unpredictable "new world", usually beyond a period of chaos, with the past order giving way to a new one.

One final point: not only is what the "next world" will be rigorously unpredictable, apart from certain details that will be examined a little further on, but the timing and circumstances of the bifurcation, or transformation, are equally unpredictable. Everyone sees a storm approaching, looks to the sky with anguish or hope, but no one can say exactly when it will break out, or even if it will break out. The storm comes from the depths of the distant forest, unknown to us, and it is only after it has passed that "the secret of the dawn" (Heidegger) is revealed.

5. How Best to Deal with the Unexpected

The future, then, is a "veiled reality" (d'Espagnat). To imagine it, we need to escape the mode of understanding inherent in the world we live in today. This mode of understanding, as it animates everyday action, is based on principles that seem so self-evident that we lose sight of the fact that they are located and dated, the fruit of a historical evolution punctuated by epistemological ruptures, and destined to change again, more or less profoundly. Let's take a few of these principles as examples.

Linear time prevails over circular time; it corresponds to the arrow of progress (and not to progressive decay, as some other traditions admit); progress itself tends to be identified with technological progress, which takes precedence over other dimensions such as art or spirituality; but technological progress itself is linked to the pursuit of material prosperity, which thus constitutes the goal to justify the pursuit of economic growth and imposing itself as the priority standard for public action.

But this is a *Weltanschauung that is* necessarily contingent and open to debate. Other civilizations have based their values on presuppositions other than those briefly listed above. There is therefore no reason to suppose that this is an invariant of humanity. Circumstances can lead to their modification, and a sudden rupture can lead to their rejection and the adoption of an entirely different value system, responding to problems that were ignored or could not be solved in the conditions prior to the rupture. This "secret of the dawn", however, does not preclude reflection on what the future might hold. The future is obscure, but its anticipation does not exclude the designation of what it cannot be. By analogy with theological thinking, this approach can be described as "apophatic". We cannot say what the future will be, but we can say what it cannot be.

What, then, is the major obstacle facing our civilization as it struggles to find the means to overcome it within the framework of its own *ethos*? The obstacle seems clear: it's the limits imposed by the planet on human *hubris.* There's no need to repeat everything that's been said today about the deadly effects of human industry on our terrestrial environment. The "environmental crisis" is a direct consequence of our way of life and the principles on which it is based. Within the limits imposed by these principles, there is everywhere talk of "sustainable development", "green growth", "ecological transition" and "renewable energies". The trouble is that these are rather short-sighted ideas, and that such an approach leads nowhere - and we won't attempt to explain why here, as this is already well documented in a vast body of literature. It's a dead end, based on a denial of a risk that is too great to assume, whether by public authorities, business leaders or, ultimately, by each and every one of us.

What is certain, then, is that humanity's future cannot be conceived as an extension, albeit modified at the margins, of its current path, within the limits of its current *Weltanschauung.* It will necessarily be about something else, but to

the exclusion of what has brought us to the current breaking point, which can only lead to a transformation of the system as a whole. This means that the words "growth", "development", "prosperity", "progress" or "technology" will no longer have the meaning and value they have today. Many debates risk becoming irrelevant. Many certainties, and therefore assertions, risk appearing as nonsense or absurdities. Scientific knowledge (in the sense of "scientism") risks being devalued in relation to other fields of knowledge that are currently marginalized - all of which leaves room for words, subjects of attention and the search for forms of action that we cannot imagine today. Here, perhaps, we can quote the great Shi'ite thinker Ja'far al Sâdiq when he evokes "a secret within a secret, the secret of something that remains veiled, a secret that only another secret can teach; it is a secret about a secret that is veiled by a secret."[10].

Today's risk, whether for company leaders, public services or individual members of society, is not limited to partial, limited risks that could be conceived in an unchanged space. It's the system that disappears as a system organized in a certain way, to make way either for a chaotic situation, or for another system, itself organized in a different way. But this change in no way excludes the reuse, by this other system, of certain parts of the system that is now ours. After all, the columns of Syracuse's temple, in Sicilia, were abundantly reused by the cathedral that has now taken their place. And so, it is with many elements of the Roman Empire. Prefects have given way to bishops, and the philosophical constructs of antiquity have been re-employed in Christian thought as it has become established. In other words, the future doesn't start from nothing. It starts from what we are today, but what we can no longer be, because we come up against insoluble contradictions in the *ethos that* drives us.

This transition from antiquity to the "Christian era" was not without violence. The transition from one system to another (bifurcation, type 2 change or transformation, as the case may be) involves a moment of chaos, when supporters of the old and those of the new confront each other. When misunderstanding sets in, violence is a major risk. This violence is all the more threatening when the confrontation concerns fundamental, mutually exclusive principles of which the players are often unaware. It's a question of one worldview (based on continuity with the past) confronting another worldview, based on the rejection of that past and the affirmation of axioms hitherto relegated to the periphery of "politically correct" discourse and beliefs. It's only with time that the old can find its place in the new, once the new has become established as the dominant reality.

And so, the question arises as to how to overcome the major risk posed by this transformation, for which we need to prepare, without knowing when, how or in what direction it will manifest itself. Here, we propose a few avenues that undoubtedly need to be explored in greater depth:

- firstly, we must avoid becoming locked into what seems to be "self-

[10] Cité par Henry Corbin, *Histoire de la philosophie islamique*, Gallimard, col. Folio Essais, 2020.

evident"; nothing is self-evident in a changing world, and we must therefore make a clear distinction between the ethical convictions that constitute a person in his or her own right, and the beliefs that nourish these convictions, which do not belong to the person himself or herself but to the social and civilizational context that conditions his or her thinking.

- this means distancing ourselves from the "obvious" and opening up to otherness, to what is new and strange, far from the "self-evident". And, therefore, it requires us to prepare ourselves for what is utterly unthinkable within the framework of our inherited worldview, which seems to impose itself on us as a definitive reality beyond which there would be nothing but nonsense.

- added to this is the need not to give in to the emotion necessarily aroused by the collapse of what seemed "self-evident". In other words, it's a question of accepting that we must give up the "village saying" and take the risk of delving into the vast, thick forest of the unknown, in search of more relevant reference points for understanding what's going on than those that were valid in yesterday's world, as it's receding into the distance - whether we like it or not, and which are an impediment to thinking about reality as it is.

- but at the same time, we need to guard against false prophets, as they express themselves abundantly and confidently. This calls for a kind of information hygiene, similar to that used by intelligence services to evaluate information as false, plausible, probable or certain. Only a critical mind can keep us from getting caught up in what could be false leads. We need to train ourselves to interpret weak signals, where many people see only anecdotal events, in order to give them their full meaning beyond what we thought we already knew.

And so, it's a question of moving from a certain way of understanding reality to another way of conceiving it. This was the problem faced by quantum physicists when, a century ago, they had to admit that a thing could be one thing and another at the same time, depending on the instrumentation they used to apprehend it. To get out of the contradictions they were confronted with, they had to move on to another level of reality, one that better expressed the complexity of the reality they were confronted with, as it resisted them. It's this same reality that resists our inherited way of understanding it, and so the best way to deal with the risk it poses for us is to modify the level of reality at which we stand.

6. The Purpose of an International TD Chair

Readers who have had the patience to get to the end of this presentation are entitled to ask themselves what conclusions they should draw from it in practice: how can we anticipate risk through innovation? The answer must be based on the nature and scale of the risk in question:

If the aim is to find an innovation to deal with a risk linked to a type 1 change (Bateson), this may be limited to a technical improvement to the existing

system, aimed at providing a better service within a globally unchanged framework. This would involve replacing a mechanical coffee grinder with an electric one. The intention remains the same: to grind the beans with the least effort. All that's needed is to ensure that the necessary technologies are available and that the whole package can be offered at an acceptable price. The same applies to a reorganization aimed at improving overall performance.

The same cannot be said of type 2 change, which is bound to occur, although it is impossible to say when or under what circumstances. Innovations of interest in the foreseeable short term must therefore be considered in the light of type 2 change, which may occur unexpectedly. Let's take a very concrete example. The owner of a house refurbishes it, installing roller shutters and an electric gate. These are very welcome comfort features. But what happens in the event of a prolonged power cut? Can such an eventuality be absolutely ruled out? It's best to plan for an exit equipped with a mechanical lock and the ability to operate the gate manually.

In other words, when it comes to a technically possible innovation that seems desirable in the short term, it's important not to allow ourselves to be locked into a vision that excludes a type 2 change, i.e. a global modification of our horizon. This means anticipating the unforeseeable: "what if...?", with this unforeseeable change affecting both technical possibilities and the foundations of human values? Assuming the collapse of techno-industrial civilization, a young person from an African village, whose way of life has hardly changed in 20,000 years, and who knows how to produce his own food and clothes and build his own house, would be infinitely better prepared to survive than a young person from a Parisian suburb, who knows how to do nothing but a well-defined task in the world he lives in today.

Limiting our perspective to an essentially unchanged time horizon is a potentially mortifying form of confinement. We need to prepare ourselves for the unforeseeable. It would be the purpose of an international TR chair.

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A Transdisciplinary Chair in the Service of an Economy of Care and Meaning[1]

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Abstract

The article digs the historical difficulty of envisioning future paradigms amidst periods of societal upheaval and how this mirrors modern uncertainties regarding the future of Western civilization. Drawing parallels from the fall of the Roman Empire to the current challenges posed by environmental degradation and socio-economic instability, the authors argue for a radical shift towards an "economy of care and meaning." This new economic model emphasizes sustainability, social responsibility, and empathy, advocating for a profound re-evaluation of values and priorities to ensure the survival and flourishing of both humanity and the planet. The authors propose that meaningful engagement in both professional and personal spheres can drive this transformation, highlighting the importance of a societal shift towards collective well-being and environmental stewardship.

Keywords: *economy of care, environmental sustainability, social responsibility, historical paradigm shifts, future of civilization.*

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1. Introduction

We can imagine a Roman patrician in the 6th century AD. How could he imagine the future? For him, nothing could be conceived outside the centrality of the Empire. Of course, the Empire faced difficulties of all kinds. Beyond the *limes*, the barbarians were pressing; resources were scarce; rivalries within the imperial house were running riot. Undoubtedly, some were unaware of the situation, either uninformed or with their eyes riveted on their shelves and short-term preoccupations. Others, most likely, hoped that solutions would eventually emerge that would put an end to the present difficulties. Others, finally, might be tempted to sink into the darkest pessimism and retreat to their villa or province[2].

How could this patrician, beyond the Empire and the vision of the world that had always corresponded to him, and which constituted his indisputable cultural heritage, have imagined what we have, *ex post,* called the Middle Ages? Rome, the Eternal City, fallen to the point of being invaded and sacked by Alaric's Visigoths. The Empire scattered into multiple local powers. A new authority arose from the Christian sect in place of Caesar, with bishops taking the place of prefects, reorganizing space and beliefs according to principles foreign to the pantheon with which he was familiar. How could one imagine such a rupture and the advent of a new world order, albeit one founded, in a way, in the continuity of the one that was collapsing?

And how could he have imagined the future, this last little emperor of the Southern Song dynasty, or at least those who watched over his childhood, wandering on the junk that was his last refuge, from cove to cove, pursued by the Mongol fleet? Or the entourage of Montezuma, the all-powerful Aztec emperor, facing down the newcomers with their horses and firearms? And so many others, whose memories have only just reached us, who believed they were living in a world outside of which nothing could be imagined and which could only last? For them, it was almost impossible to imagine a future outside the framework of their understanding of the world. And the more this framework seemed self-evident, built for eternity, the more difficult it was for them to imagine the future, even though sometimes it was already there, discreetly developing at the very

[2] Joseph A. Tainter, *L'effondrement des sociétés complexes*, tr. fr., Éditions Le retour aux sources, 2013.

heart of the old order, whose obsolescence was concealed beneath the debauchery of ultimate preciosity.

And so, how can we modern Westerners, for whom economic growth, prosperity and 'progress' seemed assured until recently, imagine that things could be otherwise, and imagine a future that would not be a continuation of what we take for granted? A look back at the way in which, a century or a century and a half ago, we imagined what our time would be like, gives us a rather pleasant picture: we see giant transatlantic liners, urban airships, and so on. These are all visions, drawn from the reality of the moment, of what seemed at the time to be a trend that could only continue. Dystopias rarely come true. They are, after all, products of the imagination, and imagination can only call on the techniques and values it relies on to envisage the future.

Chemistry teaches us that when a complex system in disequilibrium moves towards its bifurcation point, its future becomes unpredictable. There can be no doubt that our thermo-industrial civilization is moving towards this bifurcation, perhaps more rapidly than was thought possible just a few years ago[3]. And no one can predict what the outcome will be, since it will involve a global upheaval in our beliefs and the worldview that serves as the framework for our understanding:

- our reference values will be shaken up: what we thought was important may no longer be so important; the paradigm described by economic science may belong to a bygone era;

- certain phenomena currently considered negligible, or at best described as 'weak signals', are likely to become a central concern for our descendants;

- the knowledge and skills deemed important will no longer necessarily be those that are important to us today, because they are useful in our current environment;

- economic, social and political institutions and hierarchies could be profoundly shaken up and give way to something else;

- language itself will necessarily evolve, and the meaning of words will change to reflect the concerns and realities they need to express.

2. A Transdisciplinary Chair in the Service of an Economy of Care and Meaning

During the two centuries of the industrial era, mankind paid little attention to the consequences of its actions on the earth's environment. It's only in the last few decades that the consequences have become apparent, with the climatic disorders that we know about and the scale of the discharges constituting so many sources of pollution damaging living organisms and their diversity[4]. Of course,

[3] Jean-François Fressoz, *Sans transition, une nouvelle histoire de l'énergie,* Le Seuil, 2024.

[4] Jared Diamond, *Effondrement, Comment les sciétés décident de leur disparition ou de leur survie*, tr. fr., Gallimard, Essais, 2006.

since the beginning of the 18th century, there have been many whistle-blowers. But they were not listened to, so powerful were the interests they challenged, and the minds of the 21st century are very similar to those of the Roman patricians.

Since then, climate denial has become almost impossible to sustain, but this does not mean that public and private behavior has really changed. They continue in the same vein, with the state, on the one hand, arguing against the abusive artificialization of land, and on the other supporting 'major development projects' (agricultural areas taken from the forest, freeways, high-speed railroads) that represent a major encroachment on farmland and 'green zones', despite their dubious interest. What's more, we advocate 'economic growth' even though we know it is mortifying for the planet.

The real question, therefore, cannot be limited to the search for more virtuous solutions (renewable energies or limiting CO2 emissions). It's a question of knowing whether to consider the cause of humanity independently of the consequences for the planet, or whether to take a more global interest in the future of the planet as humanity finds it. Such an option obviously represents a very different stance from that to which we are invited by the religious and philosophical traditions whose skein constitutes the Western memory and the foundation of its identity, as the West is striving to impose it on the whole of humanity to the detriment of the diversity of traditions and cultural foundations that weave humanity into its diversity and globality.

However, this is just one of the options available to the West, as illustrated by Messire François's attitude to the wolf of Gubbio. It's the 12th century, and a terrible wolf is terrorizing the inhabitants of the small Italian town of Gubbio. Messire François, who is rumored to have the ability to talk to animals, arrives. What he's asked to do is to stop the wolf devouring the town's children, and to do that, it's thought, he must get rid of it. In fact, this is what Brother Dominic, a contemporary of Messire François, would have done. Instead, he went to find the wolf, spoke with him and returned to town with the following proposal: the wolf would stop devouring the little children, but in return, the townspeople would give him something to eat. Both parties are thus satisfied, and the townspeople even end up entrusting the wolf with the care of their children.

But this is not the path followed by the West. The option most generally adopted is the one supported by Brother Dominic: to impose the point of view that claims to be true, and thus to impose a certain vision of the world – that of humanity – on the living world as a whole. To consider this point of view as the only valid one, and to subordinate to it the totality of being[5]. In other words, to consider what happens in the 'clearing' where man lives as being what must be imposed on the whole forest, even if it means compromising the existence of all that lives there.

[5] In Heidegger's sense.

And so, beyond the tinkering represented by 'renewable energies', what is required today for the survival of humanity, given that its very existence is compromised in turn by what comes from the forest, and which it is struggling to understand? First and foremost, a rediscovery of the living and the intelligence of the living[6]. If we define intelligence as that which enables a living being to face up to reality and adapt to it in order to stay alive, then intelligence obliges humanity, in the circumstances it has itself provoked, to question the conditions of its survival, and thus to reconnect with a reality from which it never ceases to seek escape. This intelligence presupposes, first and foremost, empathy. If Messire François has succeeded in making the wolf and the inhabitants of Gubbio coexist, it's because he has questioned the wolf's motives for devouring the children. But it was simply because he was hungry. Hence the second dimension of this intelligence of the living today: taking care of others in order, in a single movement, to take care of ourselves.

This is where we need to change the object to which we attribute value. Should the creation of value consist in building a new freeway, or an airport, or in preserving the green spaces that will thus be destroyed for a very long time? Rather than producing new artefacts, which we don't know will be really useful in the long term, whatever their impact on the planet, isn't it first and foremost a question of taking care of what already exists, without which we couldn't exist? To take care of biotopes and landscapes, to take care of the living non-human beings who live there, to take care of everything that surrounds us and without which we could not live, to take care of other humans, near and far, and to take care of ourselves[7].

To achieve this, we need to start from the social foundations. The word economy originally referred to the art of running a household. The economy is the bundle of rules, customs and instruments (from money to bills of exchange to securitization) that ensure the survival of societies.

Through our approach, we hope to build a set of rules, customs and instruments which, because they ensure care and meaning, will ensure the survival of societies. This economy of care and meaning can only develop if it is in phase with the expectations of individuals. Individuals are looking for meaning in their work.

Individuals need recognition, to share a common identity, to meet and interact socially. In the voluntary sector, for example, after the turbulence experienced by voluntary work during the health crisis, we are approaching pre-crisis levels: 24% of French people volunteered in associations in 2019, rising to 23% in 2023. In Switzerland, in 2020, 41% of the population over the age of 15 were involved in institutionalized or informal volunteer work.

People's need for meaningful activities is not confined to their private

[6] J. Baird Callicot, *Pensées de la terre*, tr. fr. Wildproject, 2011.

[7] Jean-Christophe Combes, *L'humanité ne se négocie pas,* préface du Pr. Mohamed Yunus, L'Aube, col. Paroles d'acteurs, 2021.

lives; it also extends to their professional lives. In the workplace, when meaning is lacking, people resign.

In the USA, more than 24 million people have left their jobs since April 2021 – a figure never seen before. A situation that is not without consequences for the economy and society. According to a recent study by McKinsey, 40% of the 5,774 people questioned in 5 countries said they would resign in the next three to six months, across all sectors. Of course, just as much as the figure, the cause needs to be analyzed. In fact, the main causes are a lack of recognition from their company (54%) or their managers (52%), or the feeling that they don't belong in the workplace (51%). Similar trends can also be observed in Japan and Germany.

The term 'Purpose Economy' was coined by Aaron Hurst, CEO of the Taproot Foundation, the largest non-profit consulting firm in the USA. It's an umbrella term for different approaches to a new conception of the economy. Similarly, the Zukunftsinstitut defines the economy of meaning as follows: 'New dimensions of value creation, far removed from the logic of growth and profit maximization, are brought to the fore: social added value, sustainability, employee satisfaction, social progress.' These include concepts such as the 'Next Economy' and degrowth. The 'sharing economy', the 'smart economy' and the 'circular economy' are forms of this trend towards a responsible economy[8].

So, in a market where qualified people can choose their jobs, it's worth noting that they increasingly prefer meaningful activities and companies with a clear purpose or mission. Purpose-driven organizations – those with a clear mission – have a competitive advantage in the medium and long term. They are more productive, grow faster, innovate more, achieve greater customer satisfaction and retain their employees longer than their competitors. In France, we should also mention the mission-driven approach.

Taking into account the economy of care and the economy of meaning as we have developed there, thus implies a radical shift from unlimited growth to a sustainable way of life and economy. For companies, this means taking more than isolated measures in the fields of corporate social responsibility (CSR), diversity and inclusion, employer branding or ESG-based investments. According to this approach, companies must provide concrete solutions to social and environmental problems. In addition to this positive role for society, companies must also give meaning to their activities internally. When the company's vision and purpose are explicit, employees can identify with their company.

The point here is not to describe what tomorrow's world should look like, but to outline a possible path forward, avoiding both fatalism and a catastrophism that would be nothing more than a self-fulfilling prophecy. Once again: no one can claim to say where such a path might lead us. It's neither a return to

[8] Tronto, Joan, *Un monde vulnérable, pour une politique du care*, tr. fr. La découverte, 2009.

the past, nor a perfecting of what makes sense to us today. It's about going beyond. And this surpassing will force us to revisit what we take for granted, not just in our daily existence, but in the principles of action that make up our cultural heritage. This means that this overcoming will have to be expressed in a grand narrative and worldview that have yet to be invented. The only thing we can say is that it will no longer be a worldview based on the production of value through extraction from the earth's crust, and the 'development' of habitable space for the sole benefit of humanity, to the detriment of the rest of the living world[9].

The 'economy of care and meaning' that is thus essential needs to be thought of not as a corrective to policies that remain essentially based on the extractivist paradigm. Our entire vision of the world needs to be shaken up and renewed. Certain weak signals show that this evolution is underway: manifestations of climate disorder and the poisoning of the biosphere are multiplying, the grand narrative of happy globalization has now lost much of its credibility, the West that was the bearer of it is in crisis, many young people are rejecting the future that was proposed to them, many are militating against the established order, or even turning towards lifestyles that are more respectful of the environment.

3. Conclusion

We need to be respectful of the diversity of approaches. His message can thus be reduced to a simple precept: we need to learn or relearn how to care and give meaning to each and every one of our actions. We need to develop our ability to live together, with others, human and non-human, on a single territory that constitutes a common good for all living things. We need to develop our way of life and our activities by conceiving what is valuable in a different way. What is valuable is not, or not only, the artefacts, useful or not, that we accumulate, but also a sunset over a sea devoid of wind turbines, a smile devoid of ulterior motives, a gesture towards others, including that animal that looks at me and wonders about my intentions towards it. Quite simply, to value life.

Should we expect the future to take care of itself? To do so would be to renounce the very essence of human nature. After having been nature tamer, he must now behave like a caretaker. As we have shown, the Social Solidarity Economy (SSE) has understood this. But the SSE itself needs to reinvent itself around a social entrepreneurship that provides care and meaning.

The entire economy must now be transformed to serve this need. The economy is based on entrepreneurship. Entrepreneurship is about finding solutions to problems. But human activity, as it was conceived and is experienced, has itself become a problem. Entrepreneurship must now be the entrepreneurship

[9] Bourg, Dominique et Whiteside, Kerry, *Vers une démocratie écologiqu*e, Le Seuil, col. La République des idées, 2010.

of care and meaning. That's why we're inviting you to move **towards an economy of care and meaning**. The creation of an international transdisciplinary chair would be an invaluable step in this direction.

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A Plea for a Transdisciplinary Chair: Tradition and Innovation

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Abstract

This paper advocates for the establishment of a transdisciplinary chair, arguing that cultural transmission through dialogue, which has been present in philosophy classes since antiquity, can adopt a reflective stance across all disciplines. The central focus is on the pitfalls of philosophical discourse and the risk of dehumanizing relationships in favor of conditioned behavior. The importance of the transdisciplinary process that promotes personal development in a collective context and the necessity of dialogue to understand and apply laws, as opposed to blind obedience and exclusivism, is emphasized. Transdisciplinary training is presented as a means to stimulate dialogic thinking and create a fertile cooperation between disciplines, fostering the evolution of consciousness within educational institutions inspired by our traditional knowledge.

Keywords: *transdisciplinary chair, dialogue, philosophical discourse, education, personal development, laws, consciousness, educational institutions, dialogic thinking, tradition, innovation, gray zone.*

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1. Introduction

'*The universal is the local without the walls, it's the authentic that can be seen from every angle and that from every angle is convincing, like the truth.* **'**[1]

Spring, maybe, because cultural transmission through dialogue has been going on in philosophy classes since antiquity, and thanks to cross-disciplinary

[1] Miguel Torga, in *L'Universel c'est le local moins les murs,* translated from the Portuguese by Claire Cayron, William Blake and Co. and Barn booth, Périgueux, March 1994.

thinking, a reflective stance can be adopted in all disciplines.

2. Specific Discussions and Developments

2.1. The Impasses of Philosophical Discourse

We have a trap to avoid: that of dehumanising relationships in favour of conditioning behaviour, behaviour that we reproduce by mimesis instead of choosing freely our thoughts and our attitudes. Assuming we agree with Michel Deeley's oft-repeated assertion that 'the construction of law is the foundation of education'[2]. Nevertheless, the assertion seems a little peremptory, and in the context of the philosophical training of the transdisciplinary scientific researcher, we seem entitled to push the debate further: what law are we talking about, what is the meaning of the law, in whose service it is, and how and why was it drawn up?

Many philosophers have died 'in the name of the law', starting with the first, Socrates. In this case, the term 'law' refers the reader to an act of discourse in a democratic context, the purpose of which is to take care of human beings, to guarantee them equal opportunities, and to ensure the physical and psychological conditions that favour their dialogical development in a collective context. To encourage a dialogical development is to wish for it to be plural, joyful, intense, continuous and discontinuous, complex and, all in all, unfinished. And that's if we refer simultaneously to the two legal texts that defend this 'equality of opportunity' to which every human being, at least on paper, should be entitled: The United Nations (UN) Declaration of Human Rights and, more recently, the Declaration of the Rights of Children and Adolescents. To these texts it is important to add the recent UNESCO report, drawn up in conjunction with C.I.R.E.T. researchers, entitled 'The Transdisciplinary Evolution of the University in the World', which encourages teachers and university researchers to '*learn to be*' and which seems to be beginning to find an echo in several universities around the world.

Training that should enable people to acquire, through sometimes ancient traditional knowledge, the ability to think and live on their own and together, that to often, frequently slides into a power struggle, within a group or a society. This relationship with others, which philosophers would like to see nurtured by what E. Levinas called 'souci[3]', inspired, according to him, by the Heideggerian concept of '*sorge*', could make it possible to appropriate knowledge through open dialogue. Souci could as well be translated by interest or care. Yet very often, unwittingly, in the absence of human mediation, students and teacher, researchers, and indeed the general public, are forced by a lack of

[2] Develay, Michel. *Donne du sens à l'école*. Paris: Ed. E.S.F., 1996, p. 81.
[3] Levinas, Emmanuel, in *Entre nous ou le penser à l'autre*, Ed. Grasset 1991.

understanding into confrontation and mistrust, and even unnecessary suffering. In the face of such discomfort caused by misunderstanding or blocked communication, power relations and cultural transmissions take the form of dogmas and humiliations, leading to revolts that are characteristic of a lack of listening to others and a perverse deviation in the relationship; the weakest or the deviant must be excluded so that the group of the so called : 'best' are preserved. It's the law of natural selection applied to human training: 'The branch is rotten: cut it off,' I've heard. The paradoxes and signs of disrespect and pain pile up on both sides. In this way, our laws, instead of being learned and yet understood as emancipating, empowering, in a transparent dialogue where respect for the dignity of each person is present, which would make them acceptable because legitimised by reason, are imposed, reproduced stupidly, mechanically or rejected. This formation of the law, based on the restraint of instincts rather than on dialogue about the meaning of the law and the application of a law that is understood, leads to fanatical positions of blind obedience, based on hatred of the other seen as a competitor, or a fear of dangerous outsiders. We devote ourselves to an authority not because this means that the authority is competent and therefore legitimate, but because the authority is the authority and civil disobedience would entail a series of risks and sanctions. So, despite all the deaths for peace, people all over the world continue to fight, threaten and murder in the name of the law.

That said, from the path of dialogue, the discovery of the law could be experienced as the expression of a concern to care, protect, nourish and support one another, a concern that emancipates rather than limits. Moreover, in the classroom and at university, happy dialogues and good training for researchers, transdisciplinary training that enables them to think for themselves about the meaning of their praxis also all ready exists. And supposing that the best happens and that mankind is trained to think by themselves, to work in dialogue and democracy, have we just trained someone who will always be on the fringe, even if it *is the fringe that keeps the page?*

How will our Candide survive in companies where the directors are emulators of Machiavelli, in societies where the way up the ladder is through 'good' relationships and rather murky compromises, when his principles have been hard won in academic debate? Candide will be all the more confused because the rhetoric will always be democratic, and the practice despotic, because democracy pleases, but it is much more complex and slower to put in place than terror. Of course, anyone who has studied the revolution knows that without the period of terror imposed by the Montagne, without Danton and Robespierre[4], the Fifth Republic would never have seen the light of day. How difficult all this is! In any apprenticeship there is a period of discipline and rigour, of justice, which we impose on ourselves or which life and others will teach us with pain and tears. It's true: but justice it's about working on ourselves for the sake of others, not

[4] Albert Soboul, *La Révolution française*, Gallimard, France,1984.

with brutality. Philosophical discourse reaches a dead end when it serves a power that has been obtained through fear of social sanctions, exclusion and rejection, and not through the meaning it proposes, the sovereign good, the justice, it aspires to represent. Extremely competitive organisations have a 'code of professional ethics' which aims above all to protect organisations protecting professional secrecy. This is the ethic of a fighter who has already lost because he started the fight. But in today's world, is it possible to live and do otherwise?

2.2. Dance or Combat?

Research in the field of philosopher training has shown that the unintentional and involuntary attitudes that emerge during a human relationship are sometimes experienced as problematic, because they reveal a contradiction between the desires or subjectivity of both parties and the very complex problems encountered during a training course, which can cause the relationship to fail or go off course. As Basarab Nicolescu has written[5], if we do not opt today for an authentic dialogue, capable of crossing the various disciplinary fields and re-establishing a flow between the consciousness that elaborates meaning and the knowledge that is elaborated, '*Tomorrow it will be too late*'. Indeed, for some, isn't it already too late? In fact, the increasingly mechanical, impersonal, pragmatic and fragmented way in which scientific knowledge is produced and retransmitted, the lack of space for the development of individual subjectivity in contemporary societies, the impoverishment of meaning due to the reductive levelling of cultural content transmitted without ever being questioned, the lack of problematization that is often found in highly standardising and moralising scientific projects, and the lack of dreams and vision that give life to real projects for profound and unfinished human evolution, mean that, for many people, living means carrying out routine, utilitarian and compulsory tasks, increasingly devoid of meaning and pleasure, just to survive. Nevertheless, despite the current rather tense context, the verses of the Portuguese writer Fernando Sabino encourage us to continue: *'Of life, three impressions remain tonight: the certainty that I am still at the beginning, the certainty that I absolutely must continue, and the certainty that I will be interrupted before I have finished. Will I be able to turn this interruption into a path, I fall into a dance step, the inescapable fear into a ladder, my dreams into a passage, the quest into your encounter? '*[6]

Paraphrasing the poet, the method of intervention in the field of philosophical training has very often avoided the a priori use of methodological devices that claim to anticipate with precision the stages of human development, choosing instead the least bad method based on the opportunities offered to philosophers. I think I was unconsciously inspired by the theatrical methods I learnt

[5] Nicolescu, Basarab. *Manifesto of Transdisciplinaridade*. São Paulo Ed. Trion, 1999.
[6] Fernando Sabino, *O Encontro Marcado*, Ed. Record, Brasil, 2023.

at the A.C.T. (atelier de creativity theatre) and especially by improvisation techniques. My colleague Luisa Alonso summed it up very well when we went on a training course together in the north-east of Brazil, in the Chapada Diamantina. When we were at her house preparing the course, she said to me: 'We'll pack everything we can use (texts, slides, etc.) and we'll improvise when we get there. At first that seemed a bit frightening: we're improvising?! But I have to admit that in life, it often happened to me. Although we are obliged to study constructivism, socioconstructivism, metacognition and cognitive-behavioural theory in some depth in our teaching, very often silence and almost clinical listening to the needs of a person or a group seem to be the best allies before trying out methodological devices. In order to be able to recognise, welcome and include the unintentional attitudes that arise in dialogue, we need to let go of any kind of a priori judgement and define within ourselves and around us a serene, neutral space[7], like a blank canvas, a blank page, a gray zone, with the group. This will allow us to 'differentiate without hurting each other', in other words, to speak frankly, without attacking each other or resenting each other. However, we must systematically make a contract with the group at the outset: to avoid words or gestures that could harm the physical or psychological integrity of the subjects, thereby taking our cue from recent national and international legislation. **We must therefore try to define a minimum safe space, an empty space open to possibilities that will allow us to take real conceptual risks, to dare to calmly confront disagreements, to have the courage to freely and fully exercise our conscience in a gray zone, with an open face and in an autonomous way.** However, being aware of the philosophical problems we face is not enough to encourage mutual learning: we also need to think together about a possible way out, as we witness more violence every day at the crossroads of the labyrinth. This hierarchically and arbitrarily decreed 'neutrality', this gray zone is the equivalent of using buoys to enable a group to learn to swim in the sometimes-choppy waters of cross-disciplinary meetings, or having stabilising wheels to learn to ride a bike and keep oneself in balance; it is a 'shock absorber', **a protection against falls,** for the use of those who venture into philosophical 'disputatio' from different disciplinary backgrounds. It is not, on the other hand, a guarantee against crises or difficulties, but it is a way of preventing and anticipating these difficulties so that, if they do arise, we can remember that we are in a neutral context and that, consequently, we will have to subject ourselves to a process of reflection based on the strange, the symptom, which manifests itself. This contract, which defines the conditions that make it possible to form a group, must be based explicitly on the authority of the group mediator. Secondly, manifestations of power must be avoided at all costs and reliance placed on all members' capacity for dialogue. **This contract has a maieutic nature[8]**. Philosophy generally gets a very bad

[7] Mariana Thieriot Loisel, *Les Mutations Humaines, dialogue entre la philosophie et les technosciences*, Amalthée, 2024.

[8] Hannah Arendt, *La vie de l'esprit*, PUF, France, 2013.

press. It has to be said that if transdisciplinary dialogue is rejected and philosophy sinks to the bottom of the sea like the Titanic, sooner or later it will sink too, because learning to think, and what's more to think together, is not something that can be taken for granted. The icebergs that lie in wait are sharp and the swell frequent. From time to time, a tidal wave sweeps away the sanity of one of us forever. Virginia Woolf drowned. Edith Stein was betrayed by the nuns at her convent and gassed in Germany, Olga Benario the communist was deported from Brazil and gave birth to her son in prison, only to be gassed in the Nazi camps. Anne Frank never finished her diary, Maria Montessori went into exile in India so that she could work, Simone Weil died of anorexia… Hannah Arendt had to emigrate to the United States far from Heidegger so as not to compromise him, Camille Claudel was interned… Should we go on?

What will a society look like where we no longer understand each other, where we simply calculate? A society that has destroyed the peaceful, reflective softness of feminine neutrality? Will we have to fight men to have the right to speak? Will we have to learn to box, the illogical logic of the stock market, etc.…..? Perhaps yes, after all. Young women will tell us. Some are now learning martial arts, others are relentless scorekeepers, and oppose violence to violence, but is this the only way? Is combat inevitable? Is it an inevitable part of the path? In yoga there is a strange figure, that of the 'dancing warrior', Natarajasana, which translates as the warrior who dances or the dancer who fights? A strange figure, yet one of the positions of the wise.

2.3. Maieutic According to Socrates

The philosopher is by no means a fan of the phrase 'You have to suffer to grow', but he is fully aware of the effort that a group must make to understand itself. The Socratic maieutic is ultimately the method that has often inspired philosophers, a method that begins with emptiness, ignorance, silence, effort and questioning… How can we reconcile meaning and human desires? And what will that meaning be? How can we develop knowledge based on authentic, sincere, protected, almost naïve motivation? How can we obtain answers to the problems posed by our enigmatic presence in the world, answers that are not simplifying formulas learnt by heart, and how can we give way to the patience and singular reflection that these answers require? How can we create a crisis and show problems where there is only indifference, resentment, scepticism or the blind obedience of a generation that sometimes thinks that 'well, nothing's changing, it'll always be the same'? How can we awaken or rekindle the desire to live and learn, how can we keep each other company in the alleys of the labyrinth, fortify ourselves in this ordeal and keep fresh in our memories of the memory of a just, beautiful and happy life, the laughing walk in an open-worked, freshly flowered garden evoked by Epicurus?

Perhaps philosophers will always be condemned to solitude and the margins, perhaps the dice are irrevocably loaded for part of our World, but for nearly three thousand years there has been a rigorous method of questioning and searching for possible outcomes in a neutral space; a gray zone. I prefer tenderness to irony, but I've never stopped asking, in an almost conservative way, every class, every school year: 'Who are we after all? What do we want? Where do we come from and where are we going? And, between the dogmas of absolute scepticism and the prophetic answers, I have tried with all my might to awaken in everyone the desire to find their true answers, to patiently and plastically give them shape, through study thanks to the courage to face, sometimes, painful 'deconstructions', losses, comings and goings in the labyrinth, to end up saying, one day, like Fernando Pessoa: '(…) even if you judge that I am nothing, I remain, in spite of everything, a man'[9] and to see on the horizon a way out. And if the dice are loaded, we can answer like Stéphane Mallarmé: **'A throw of the dice will never abolish chance.'**[10]

Indeed, developing the art of posing enigmas, of circumscribing mystery, of 'eroticizing knowledge' according to Philippe Meirieu bold attempt[11], during these courses at the I.S.P.E.F., to put together fantastic scenarios, with all the skill and seduction of the storyteller, over and above the actor's performance, can sometimes give a student the desire not only to listen to us, but, over and above the master's skilful discourse, **to find the strength within themselves to write their own discourse,** in a movement as the author of their own composition, as the protagonist of their own story, thanks to the mediation of the objects of knowledge, **the floating objects that circulate between us.**

Our constitutive plasticity means that we can learn to deal with our unintentional and involuntary attitudes.[12] The unintentional attitudes aroused by subjectivity or by the unconscious can, thanks to the dialogue that will signal our know-how with subjectivity, allow the interaction of the desire that is expressed with the intention and the explicit and objectified project of elaborating knowledge. This is tantamount to considering these non-intentional attitudes as 'objective obstacles' to the relationship and presenting this interaction as a possible entry point into the light. During a training course, our emotions can come into conflict with the intention of learning to live, and to live together. It is necessary to perceive these emotions and identify the nature of the conflict in order to resolve it. The production of knowledge in the position of the subject awakens all sorts of emotions that we must learn to manage, a situation that is much more

[9] Pessoa Fernando, „Poema a tabaccaria" In *Revista Presença* 1933, https://www.culturagenial.com/poema-tabacaria-alvaro-de-campos-fernando-pessoa-analisado/.

[10] Stéphane Mallarmé, *Un coup de dés n'abolira jamais le hasard*, Gallimard (1897 Armand Collin), https://fr.wikipedia.org/wiki/Un_coup_de_d%C3%A9s_jamais_n%27abolira_le_hasard.

[11] Meirieu, Philippe. *Leçon de Philosophie de l'éducation. Grand Anphi*: University Lyon II Lumière, 1991.

[12] Thieriot Loisel, *op. cit. (Les mutations humaines...).*

complex than the passive position of obedience and repression. In the labyrinth a door opens and the warm air caresses a face. In fact, we can foresee that it will not be easy to learn to live together in dialogue and that we will probably make many mistakes, that we will risk the incestuous paths of seduction. However, thanks to countless crises and questioning, we will be able to adopt attitudes that are more complete, more dignified, closer to what seems right and good, and slowly sketch out our face as a human group reconstituted after so many wars, based on our objects of scientific knowledge which are, we must wager, inexhaustible in time and resolutely changing.

The meaning of this maieutic process by which one person, thanks to the questions asked by another, attempts to 'give birth to himself', exercising his judgement through the intermediary of an object of scientific knowledge, is the joy of mutual composition. Maieutic also makes it possible to engage in dialogue with our unintentional attitudes, which can sometimes make the process of cultural transmission difficult and complex, because they bring out what is not easy to manage: the desire to bring to the surface of consciousness what is latent, unconscious or 'semi-conscious'[13]. The desire at the source of all discovery has a complex place in philosophy because its expression is aimed at others, almost before it is aimed at oneself. By becoming aware of the value and dignity of the human desire to understand each other and learn to be together, it is possible to give it ethical meaning, using the resources of language, art and science that knowledge makes available.

If we look closely at the Maieutic process of 'knowing' knowledge, we can identify two moments that alternate or sometimes overlap over time: doubt and birth. Socratic irony consists in asserting, as Socrates himself pointed out in his own defence, that the only thing we really know is that we know nothing, and also in raising doubts and confusing his opponents with embarrassing questions. One of the purposes of this irony was to encourage the humility and expertise necessary for learning, which requires questions and problems to be formulated in a way similar to that indicated by UNESCO – the United Nations Educational, Scientific and Cultural Organisation – for the 21st century: 'learning to be'. How can we talk to someone who already knows everything, or who thinks that any model for learning philosophy is useless or even harmful? How do you engage with the sceptics and dogmatists of the Academy? How do you explain to them the merits of maieutic?

Hannah Arendt has given two metaphorical explanations for Socratic irony: it has a paralysing role similar to that of the electric ray and an irritating role similar to that of the fly. 'According to Plato, [Socrates] was called an electric ray, a fish that paralyses and puts to sleep on contact. Socrates accepted the metaphor insofar as his listeners recognised that the electric ray only paralyses

[13] Galvani Pascal, „La dimension spirituelle de l'auto-éco-formation face à la crise écologique" dans *Présences: revue transdisciplinaire d'étude des pratiques psychosociales*: vol.11, 2018, p. 53-70.

others in order to be paralysed by itself. 'It is not that I leave others perplexed because I already know the answers, it is that I leave them to my own perplexity.' In this way, Socrates created a space between action and reaction, which interrupted human existence, its persistence, its insistence, in a given direction, provoking a situation of crisis, astonishment and mystery.

She also used the example of the fly buzzing in the interlocutor's ear until it wearies and disarms him. Socrates called himself a gadfly, a large fly. The gadfly seems to have a function of maintaining vigilance, not only stinging but also irritating[14]. Thinking is a difficult freedom, requiring concentration and persistence. However, there are countless reasons to avoid thinking, to act as usual, to simplify, to cut things short, to solve a problem immediately, to use common sense so as not to 'look for the little beast', as the saying goes; to operate in semiconscious mode, by switching to the automatic pilot. But then the fly comes, annoys, torments, asks a new list of questions, repeating its refrain: 'in the end, who are we, where are we going, what are we looking for? If need be, the fly stings! The sting swells, itches, and leaves us in no peace: we must return to the problem, return to study, return to life.

The first, ironic, critical stage of the maieutic is one of immobility. 'What are we looking for,' What are we doing? Whatever tactic is used, the person has to stop and listen, think, step back, distance themselves, get out of context, measure the extent of their own ignorance and think.

Of course, we will soon be looking back on three thousand years of the perplexity of the Western world confronted with its errors; we need to go beyond this, move on to the second stage of maieutic, the labour of birth: after having immobilised him, Socrates, like the wind that rises, mobilises and challenges his interlocutor: "The wind of thought has now roused you from your sleep and brought you fully awake and to life", Socrates commented, indicating the nature of his own action: to awaken, **to pass from sleep to life, in other words, to give birth to ourselves.** Socrates thus helps his interlocutor to distinguish authentic thought, "in vivo", epistemic discovery, from doctrine, preconceived opinion, or knowledge "in vitro", dead letter, fallen into disuse, imitation, mimesis. Socrates, close to his interlocutor, faced with the death penalty, took the risk of questioning knowledge, at the risk of his own life.

Hannah Arendt compares the metaphor of the wind to thought, a capacity that enables us to "prevent catastrophes, at least for ourselves"[15], with the power to discern evil from good, justice from injustice, truth from error. What mobilises us, or ceases to mobilise us, is a question of value, the value of knowledge, the value of the other, the value we attribute to our consciousness, the consciousness that is from the outset at the origin of thoughts and actions intended for exchange and sharing. Jacques Derrida, in his Pharmacie de Platon (Plato's Pharmacy),

[14] Hannah Arendt, *op.cit*, p. 130-132.
[15] Ibid, p. 145.

notes how tenuous and difficult truth is to discern: one person's good is another's evil, what is right here is unjust in other circumstances; the precise boundary is, in his words, "more than subtle, very difficult to discern, as fine as a butterfly's wing"[16]. However, there is a compass to be built and a route to be followed, a map to be drawn to situate oneself in the territory as one learns to listen to one's heart and to recognise oneself in one's human dignity as Thomas De Koninck[17] describes it throughout his work.

For Socrates, human philosophical birth is a way of distinguishing between what is worth more and what is worth less, between what is essential and what is unnecessary, between what is only for oneself and what includes others. For him, meaning comes first and then material comfort. Exactly the opposite of our contemporary societies: on the contrary. As he explains in his last words, it's a question of honour, of dignity. Consciousness birth itself is the unforeseen moment when the word begins to move, to breathe, to take on a life of its own, when the black ink of the pen is no longer ink: it becomes blood and spills out. Socrates, appropriating motherhood and the function of giving birth, encourages the discourse that unites the whole and the parts. He says in Phaedrus (264 BC):

"**Every discourse must be constituted as a living being**, have a body that is its own, so that it lacks neither head nor feet, but has the middle and the extremities, so as to associate the self with the whole (…)".

Commenting on this passage, Jacques Derrida associated discourse with a living body. An animal that is born, grows, belongs to the physics. Socrates is someone who helps others to invent rather than reproduce discourse, to inhabit his text. Unlike Plato, he did not construct a "theory of ideas"; rather, he died for them. So resisting the tyranny of meaning imposed unilaterally in a given society, or an emphatic – politically correct – but meaningless proposition, seems like a good tactic to use in higher education, but a dangerous and complicated choice as soon as you leave the walls of school, because **it's no longer a question of being a person machine, among so many others, fighting for their survival, but of people aware of their value who stand up for each other**. It's a gamble on transforming organisations in the medium and long term.

In his study of the Socratic method, Plato contrasts it with sophistry. According to J. Derrida, Plato's criticism of sophistry is not to resort to memory, but to replace living memory by auxiliary memory, the organ by the prosthesis; we must avoid this perversion which consists in substituting a thing for a limb (…) by favouring rote knowledge, mind-numbing reproduction, rather than the reactivation of knowledge, its return to the present moment for a precise reason. Derrida points out that the boundary between inside and outside, the living and the non-living, separates not only discourse from writing, but also memory as an

[16] Aristotle. *Metaphysics*. In Derrida Jacques. *A farmacia de Platon*. Sao Paulo: Illuminuras, 1991, pp. 1003-1021.
[17] Thomas De Koninck, *De la Dignité Humaine*, PUF, France, 2002.

unveiling, reproducing presence and memory as repetition, as the nowadays access to AI. Derrida pushes the comparison so far as to oppose true to its symbol, being to model, and mentions the **risk of a simulation of "essence" that can occur in what he defines as "bad writing"**. In fact, the way our societies are organised can lead human beings to reproduce not only the form but also the essence of a discourse, its substance. Sometimes young people, intimidated or ill prepared to take the risk of having their own thoughts, don't dare or don't know how to find a foundation in themselves; as a result, they don't get used to their own discourse which, although correct, seems to them to sound risky and they prefer to keep quiet and make way for authority. At the other end of the chain, the subject who is supposed to know does not dare to question the knowledge inherited from tradition… One speaks, another thinks in secret, another act as if everything is fine and the conscience hibernates, anaesthetised or intimidated by the volume of information. Pseudo-experts, artificial intelligence information's and the media dictate the course of action. Some political speeches seem to be simulacra of thought, full of ready-made formulas, which only serve to reinforce the rise of extremism and inequality by fuelling competition.

2.4. The place of philosophy in the transdisciplinary group

"I have united myself with the courage of a few people, I have lived my mystery in their midst violently, without growing old, I have shuddered at the existence of all the others, like an floatting boat above the confined depths."[18]

The hour of birth is that moment when, sometimes, after long years of study, exercise and preparation, a person recognises that, thanks to his or her plasticity, he or she is capable of conceiving something of his or her own, which turns out to be an original contribution to all that has already been said and written, and of experiencing in turn his or her quality as an author, thus finding his or her freedom of expression and the fair position that seems appropriate to him or her in a human group. The discovery emerges and reveals itself after a slow gestation period that doesn't always follow the timetable, and the expression of new knowledge comes like a tornado of risk that calls for courage and integrity to support this new, nascent discourse. The human being discovers a face and bursts out laughing in the alleys of the labyrinth: there he is, unexpectedly, at the exit: *There are no longer a treasure people, but, from one to the next,* ***the infinite savoir-vivre of lightning,*** *for the survivors of that people*'[19].

Following in the footsteps of Socrates, who died to preserve for us the right to philosophise, we must wager that dialectics constitutes an 'antidote'[20] against those who seek to reify and harden the human being, to turn him into a docile and uninhabited mechanism, a toy, a statue or a person machine, and to

[18] René Char, "Faction de muet" Extract from *Le nu perdu.* Gallimard, Cher, 1978, p. 26.
[19] René Char, *Fureur et Mystère*, Gallimard 2004, p. 86.
[20] Derrida Jacques, *op. cit.,* p. 46, 101, 68, 69.

make him function within institutions that delight in destroying or stifling all the best that human culture has bequeathed to us: our conscience, which grounds our dignity and allows our lives to have meaning and to meet around this shared meaning. According to Derrida, dialectic is the best exorcism that can be used to counter the terror of the child threatened by ogres. Derrida carefully analyses the moment when Socrates asks Alcibiades, by way of remedy, to 'submit to a mutual search, to seek to know himself through the diversions of the language of the other'. This other at the customs of knowledge, who opens the door of a frontier towards the unknown freedom of composing one's own work, allowing you to pass through and find yourself…

'Pass,
The sidereal spade,
In the past, this was the place to be.
Tonight, is a village of birds
Very high, exult and pass.'[21]

On this arduous path, we should consider observing the metamorphoses of the objects of knowledge, the floating objects, that we create as a possible and concrete way forward. The object of knowledge carries within it the vestiges, the threads of discovery and the forms that dialogue has engendered. Depending on how the object of knowledge has been conceived, it can take on an ethical role, allow our plasticity to come into play, encourage the expression of subjects and be the support for the dialogue that enables us all to transform and evolve. Instead of dividing ourselves by confrontation, exclusion or censorship, we can develop meaning in the intervals between one crisis and another, by circulating books, letters, articles, essays, e-mails, etc., in short, by circulating knowledge and the problems it poses, by giving ourselves time to listen, and by letting life work its magic on us. Our attempts at dialogue are numerous, the deadlocks continue and multiply, **but we must not give up on meaning.** For if today's societies, for political, economic and social reasons, refuse to make room for the philosophical question of the place of consciousness within their institutions, there are nonetheless passages that make the advent of consciousness within the organisation possible. We must do as the oriental poet did…

Revisiting desire
I've been looking for spring all day,
To no avail.
Leaning on my cane,
I walked for a long time,
Crossing distant mountains.
Back home,
I touched a plum branch.
I found it here.

[21] René Char in *Fureur et Mystère*, Gallimard, 2004, p. 55.

At the end of this branch, spring blossomed[22].

The way out of the labyrinth opens up for us when we agree to look squarely at the problem that haunts us: 'the denial of the consciousness of the individual in order to maintain the survival of arbitrary power in a group that thrives on competition', and when we courageously decide to get together to think about ways of solving it. Philosophers are no longer at home in the cities; they have become strangers, hermits, the fringe. They present a face to others that the latter do not recognise or confuse with others… This face that thinks freely is not, however, a threat; it is a promise kept; that of the recognition by others of their humanity. '**Every thought is a throw of the dice**.'[23]

3. Conclusion

Transdisciplinary dialogue is essential for promoting deep and reflective understanding across various disciplines. Such dialogue can contribute to the development of a more inclusive and collaborative academic environment. Education should avoid the pitfalls of dehumanizing relationships and conditioning behavior, focusing instead on personal development through the promotion of dialogue and mutual understanding.

Ideally, education should be understood and applied through dialogue, rather than blind obedience. This approach ensures an educational environment based on respect and dignity. Transdisciplinary education empowers researchers and students to think together and critically about the meaning of their practices, leading to an evolution of consciousness and a deeper understanding of the connections between different fields of knowledge.

Education should encourage continuous, complex, and uninterrupted personal development, supported by creating favorable conditions that foster individual growth within a collective context. Furthermore, cultural transmission through dialogue is vital for improving human relationships and avoiding conflicts and misunderstandings. An educational environment grounded in dialogue can prevent fanaticism and exclusivism, promoting instead constructive collaboration.

An academic environment that promotes dialogue and reflection can facilitate the development of laws and educational practices that are legitimate and acceptable, thereby enhancing the quality of education and interpersonal relationships.

Therefore, implementing a transdisciplinary chair would not only improve the quality of education but also stimulate the development of critical and reflective consciousness among students and researchers.

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[22] Dai Eiki - Chinese poet of the Sung period (960-1279), quoted by Shundo Ayoma Roshi in *Para uma pessoa bonita, Contos de Uma master zen,* Ed. Palas Athena Sao Paulo: 2002, p. 82.

[23] Stéphane Mallarmé in *Un coup de dés n'abolira jamais le hasard,* Poème, Gallimard, 2006.

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