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**Transdisciplinarity and the Curriculum: Reading UNESCO's
"Reimagining Our Futures Together" with Transdisciplinarity in
Mind**

**Transdisciplinarité et curriculum : le rapport de l'UNESCO
Réimaginer nos avenir ensemble dans l'esprit de la
transdisciplinarité**

**La transdisciplinariedad y el curriculum: leer Reimaginar juntos
nuestros futuros de la UNESCO teniendo en cuenta la
transdisciplinariedad**

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Article abstract

This paper delves into the concept of transdisciplinarity and its potential application in education by conducting a critical analysis of UNESCO's report titled "Reimagining Our Futures Together: A New Social Contract for Education." The report emphasizes the pressing need to address existential risks and climate change, thereby advocating for transformative educational practices. The paper explores the historical development of transdisciplinarity, encompassing structuralist-systems, holistic, and postmodern approaches. Using a transdisciplinary lens, the study examines crucial themes from the UNESCO report, including ecological, intercultural, and interdisciplinary learning integration, the concept of the Knowledge Commons, and the proposition for a new social contract between individuals and governments. This examination serves as an exemplar of how to interpret and question educational texts through a transdisciplinary perspective.

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Transdisciplinarity and the Curriculum: Reading UNESCO's *Reimagining Our Futures Together* with Transdisciplinarity in Mind

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Abstract

This paper delves into the concept of transdisciplinarity and its potential application in education by conducting a critical analysis of UNESCO's report titled *Reimagining Our Futures Together: A New Social Contract for Education*. The report emphasizes the pressing need to address existential risks and climate change, thereby advocating for transformative educational practices. The paper explores the historical development of transdisciplinarity, encompassing structuralist-systems, holistic, and postmodern approaches. Using a transdisciplinary lens, the study examines crucial themes from the UNESCO report, including ecological, intercultural, and interdisciplinary learning integration, the concept of the Knowledge Commons, and the proposition for a new social contract between individuals and governments. This examination serves as an exemplar of how to interpret and question educational texts through a transdisciplinary perspective.

Keywords: transdisciplinarity, transdisciplinary education, UNESCO reports, educational policy

La transdisciplinariedad y el curriculum: leer *Reimaginar juntos nuestros futuros* de la UNESCO teniendo en cuenta la transdisciplinariedad

Resumen

Este artículo profundiza en el concepto de transdisciplinariedad y su potencial aplicación en la educación mediante la realización de un análisis crítico del informe de la UNESCO titulado *Reimaginar juntos nuestros futuros: un nuevo contrato social para la educación*. El informe enfatiza la necesidad apremiante de abordar los riesgos existenciales y el cambio climático, abogando así por prácticas educativas transformadoras. El artículo explora el desarrollo histórico de la transdisciplinariedad, abarcando sistemas estructuralistas, enfoques holísticos y posmodernos. Utilizando una lente transdisciplinaria, el estudio examina temas cruciales del informe de la UNESCO, incluida la integración del aprendizaje ecológico, intercultural e interdisciplinario, el concepto de conocimiento común y la propuesta de un nuevo contrato social entre individuos y gobiernos. Este examen sirve como ejemplo de cómo interpretar y cuestionar textos educativos a través de una perspectiva transdisciplinar.

Palabras clave: transdisciplinariedad, educación transdisciplinaria, informes de la UNESCO, política educativa

Transdisciplinarité et curriculum : le rapport de l'UNESCO *Réimaginer nos avenir ensemble* dans l'esprit de la transdisciplinarité

Résumé

Cet article examine la notion de la transdisciplinarité et son application potentielle dans l'éducation au moyen d'une analyse critique du rapport de l'UNESCO intitulé *Réimaginer nos avenir ensemble : un nouveau contrat social pour l'éducation*. Ce rapport souligne l'urgente nécessité de confronter les risques existentiels et le changement climatique tout en préconisant des pratiques éducatives transformatrices. Nous explorons le développement historique de la transdisciplinarité, englobant les systèmes structuralistes ainsi que les approches holistiques et postmodernes. Dans une perspective transdisciplinaire, nous examinons les thèmes cruciaux du rapport de l'UNESCO, notamment l'intégration de l'apprentissage écologique, interculturel et interdisciplinaire, le concept des « Knowledge Commons » (savoirs communs), et la proposition d'un nouveau contrat social entre les individus et les gouvernements. Notre

examen sert d'exemple sur la façon d'interpréter et de remettre en question les textes pédagogiques dans une perspective transdisciplinaire.

Mots-clés : transdisciplinarité, éducation transdisciplinaire, rapports de l'UNESCO, politique éducative

Introduction

The unprecedented proliferation of science has resulted in a highly specialized disciplinary knowledge that is out of sync with nature and humanity. First, there exists a disharmony and imbalance between the vast amount of accumulated knowledge and individuals' ability to comprehend and apply it to their lives. This imbalance is further evident in the disparities between various groups, both in terms of skills and socio-economic conditions. A third imbalance, as Nicolescu (2002) points out, is the divide between the exponential growth of quantitative knowledge and the impoverished sense of inner identity. These imbalances lead to the alienation of humans and a lack of understanding of our own identity. Consequently, we risk becoming mere tools of technoscience, contributing to the depletion of the planet's resources (Heidegger, 1982). To address these issues, it is crucial to foster a more harmonious relationship between scientific advancement and the well-being of humanity and the natural world.

What is the role of education in a world facing crisis? Specifically, what is the significance of Science, Technology, Engineering, and Mathematics (STEM) education? The role of education cannot be reduced to merely producing technicians skilled in navigating technoscience, as this approach may exacerbate existing problems. Bob Moses, a prominent US mathematician and civil rights activist, criticizes mathematics departments for training only a select few "high priests" (graduate students) with expertise in highly specialized mathematics, instead of aiming to educate a broader base of students proficient in high-quality mathematics (Moses, 2002).

Rather than fostering specialization in only a few individuals, the purpose of STEM education (and education in general) should be to foster harmony between individuals and the knowledge they generate. A transdisciplinary approach to education is instrumental in achieving this balance, promoting an understanding that transcends disciplinary boundaries. By encouraging a more holistic perspective, a transdisciplinary approach to education can bridge the gap between individuals and their relationship with knowledge, thus contributing to a more harmonious world amidst the crisis. In this article, I will explore how a transdisciplinary approach to education can be used to understand and critique educational policy. I will focus on UNESCO's recent (2021) major report on education titled *Reimagining Our Futures Together: A New Social Contract for Education*. I will start with clarifying transdisciplinarity by tracing its history

and then will focus on defining transdisciplinary education before turning attention to the UNESCO report.

In his essay, "Technology: The Emergence of a Hazardous Concept," theorist Leo Marx explains that the concept of technology is hazardous as it leads to reification, where technology takes on the appearance of an object with its own agency (Marx, 2010). For instance, when discussing the historical effects of cotton gin, there is a risk of reifying the cotton gin itself, thereby overlooking the pivotal role of human agency in shaping its impact. The hazardous aspect of a concept also arises when the concept is underdefined and overused. I would argue that transdisciplinarity is also a potentially hazardous concept because it becomes a placeholder for various responses to disciplinarity. Consequently, it might be introduced into education without a clear goal, or with the ambitious aspiration of providing authentic and meaningful education without the means to deliver, as transdisciplinarity may not be adequately present. In some ways, transdisciplinarity has transformed into an abracadabra term, borrowing from Felix Guattari's reference to interdisciplinarity (Genosko, 2002). To overcome this hazard, it is essential to define and apply transdisciplinarity coherently and purposefully in educational contexts, ensuring that it fosters meaningful integration and knowledge exchange between disciplines.

The Meaning of Transdisciplinarity

To grasp the concept of transdisciplinarity and its potential hazards, it is crucial to explore its historical development. This discussion will draw upon various historical accounts, including the insights of physicist Basarab Nicolescu, who has been a leading proponent of transdisciplinarity since its inception (Nicolescu, 2002). Additionally, Julie Thompson Klein's work on the clusters of transdisciplinarity, organized both chronologically and conceptually, will be referenced (Klein, 2013). By delving into its origins and evolution, we can better comprehend the implications and potential risks associated with the concept of transdisciplinarity.

Historically speaking, transdisciplinarity emerged as a response to the limitations of disciplinarity, aiming to address two distinct yet interconnected issues. The first objective was to establish a meta-theory of disciplinarity, often referred to as the discipline of disciplines or the science of sciences (Klein, 2013). This concept was heavily influenced by renowned figures such as Jean Piaget, Erich Jantsch, and Andre Lichnerowicz, who presented influential papers during the 1970 *Seminar on Interdisciplinary in Universities* at the University of Nice. The seminar, organized under the auspices of the Organization for Economic Co-operation and Development (OECD), gathered 43 delegates from 21 OECD member countries and 14 experts, including Piaget, Jantsch, and Lichnerowicz. Their primary focus was to explore and elucidate the concepts of pluridisciplinarity, interdisciplinarity, and transdisciplinarity (Duguet, 1970, p.

16). The meeting began with the presentation of the three conceptual papers,¹ setting the stage for subsequent discussions over the following days. Participants had the opportunity to share their perspectives on interdisciplinarity within their respective institutions and proposed collaborative approaches for advancing research, practice, and policy.

The three papers drew on structuralism and systems theory to outline the conceptual framework for transdisciplinarity. They accomplished this by either analyzing the logical structure of transdisciplinarity in relation to other disciplinaritys or by establishing a systems approach to understand how transdisciplinarity functions as a system. The levels of disciplinaritys were recognized, beginning with disciplinarity, which involves a strict commitment to a single discipline. The subsequent level is multidisciplinarity, where multiple disciplines independently address a problem. From a systems perspective, multidisciplinarity lacks coordination among the disciplines, as they are presented "simultaneously, but without making explicit possible relationships between them" (Jantsch, 1972, p. 106). For Jantsch, interdisciplinarity is a coordination of disciplines to serve a common purpose. Taking it further, Jantsch describes transdisciplinarity as "the coordination of all disciplines and interdisciplines in the education/innovation system on the basis of a generalized axiomatics" (p. 106). Lichnerowitz mathematically formalizes the concept of transdisciplinarity, allowing it to be studied independently of any specific field (Lichnerowitz, 1972). Piaget contributes to the discussion by suggesting that the disciplines should be organized into one total discipline without rigid boundaries between them. For Piaget, this integration is a key characteristic of transdisciplinarity.

The focus on understanding the structures of transdisciplinarity continues to be relevant in current scholarship, with numerous scholars, including myself, continuing to explore the interactions between disciplines and the underlying framework of such interactions. For example, following the structuralist traditions, I and my colleagues have introduced the concept of metadisciplinarity, which includes the awareness of the structure of disciplines and their mutual relationships (Radakovic et al., 2022). While acknowledging the value of the mathematical structure of transdisciplinarity, it is essential to recognize that this perspective may not fully encompass the complexities, values, and worldviews that are also integral to the transdisciplinary approach. Nicolescu (2008) points out that Jantsch does consider values in his model, but the primary emphasis remains on the systems. The influence of the structuralist-systems theory approach persists in current research. For instance, Fam et al. (2017) used Jantsch's hierarchical system as a conceptual framework to discuss transdisciplinarity in

¹ This is how Duguet (1972) describes the first day of the conference as related to the three papers: "It was a rough day, which may have satisfied those with a Latin, Cartesian bent of mind, but disconcerted those with a pragmatic Anglo-Saxon way of thinking. I remember one participant who disclosed to me that evening, 'With all that, I no longer know if what I'm doing is multi-, pluri-, inter-, or trans- disciplinarity!'" (p. 16)

the context of sustainability and various activities within universities, including graduate student supervision.

Another significant perspective on transdisciplinarity is the holistic approach advocated by Nicolescu, which resulted in the Manifesto of Transdisciplinarity and the Charter of Transdisciplinarity. Basarab Nicolescu is a Romanian-born French physicist who has been highly influenced by the quantum revolution in physics and its philosophical implications. The Charter was formulated during the First Congress of Transdisciplinarity in 1994 and authored by the editorial committee comprising Lima de Freitas, Edgar Morin, and Nicolescu. Nicolescu builds upon the 1970 transdisciplinary program, acknowledging that the structuralist-systems paradigm recognizes transdisciplinarity as the movement "across" and "between" disciplines, but he introduces a novel aspect, perceiving transdisciplinarity as "beyond" the disciplines as well. In this research program, the response to disciplinarity is inherently axiological. Nicolescu argues that viewing transdisciplinarity as the "meta-science" or the "science of sciences" should be abandoned (Nicolescu, 2008, p. 149). Disciplinarity, in his perspective, poses a threat to humanity as the emphasis on individual disciplines leads to an expansion of knowledge but also creates an imbalance and disharmony within individuals and society.

Nicolescu juxtaposes disciplinarity and transdisciplinarity not merely in terms of structural differences or hierarchical systems, but rather conceptually and metaphorically, defining disciplinary knowledge as "in vitro" and transdisciplinary knowledge as "in vivo." For instance, in vitro knowledge rigidly separates the external world (object) from the subject, while in vivo knowledge encompasses the interconnectedness between the external world and the subject (Nicolescu, 2008). This approach to transdisciplinarity enables embracing the diverse cultural, historical, religious, and political backgrounds of different peoples worldwide (Nicolescu, 2002, p. 3).

Nicolescu and the scholars around this program have suggested that there are three defining elements of transdisciplinarity including: the levels of reality, the logic of the included middle, and complexity. The first principle implies that there are different levels of reality in nature and correspondingly also different levels of perception. Nicolescu, being a physicist, derives this feature from the fact that there is a quantum and macro level of reality with its own corresponding versions of causality. This is the part of Nicolescu's program that deviates from structuralist and systems theory approaches because it allows relativism and multiple perspectives. The question that lingers is whether it is necessary to draw a parallel to physics to make a relativist claim about reality and perceptions.

The second principle of transdisciplinarity, according to Nicolescu, is the logic of the included middle. Contrasted with the logical principle of the excluded middle ("A or not A"), transdisciplinarity allows for the inclusion of fact and its negation. Davis and Renert

(2013) illustrate this by stating that teachers may be seen as experts and students as novices (if you exclude the possibility of being both), whereas the logic of the included middle allows this possibility because there may be multiple levels of reality and perceptions in the classroom. For example, there is a reality of the teacher being an expert in specialized subject knowledge and students being novices, but there is a reality in which students may be the experts and the teacher a novice.

The third principle is the principle of complexity, which does not necessarily refer to complexity theory (although it can have some features of it), but instead refers to many facets of reality, both physical and social. For Nicolescu (2008), “The structure of the totality of levels of Reality or perception is a complex structure: every level is what it is because all the levels exist at the same time” (p. 10).

By including the concept of different levels of reality and pluralism of thought, a holistic approach to transdisciplinarity is open to including worldviews outside the technoscientific realm. The Charter of Transdisciplinarity includes the provision that “no single culture is privileged over any other culture. The transdisciplinary approach is inherently transcultural” (Nicolescu, 2002, p. 150). Consequently, transdisciplinary education is consistent with recent efforts to open education up to Indigenous education and culturally responsive pedagogy (Wiseman & Lunney-Borden, 2018). Since the goal of transdisciplinarity is to create knowledge that will enable us to respond to the existential crisis that we face as humanity, it is necessary to transform existing education and curricula. The Charter of Transdisciplinarity states that “the transdisciplinary vision is resolutely open insofar as it goes beyond the field of the exact sciences and demands their dialogue and their reconciliation with the humanities and the social sciences as well as with art, literature, poetry and spiritual experience.” (Nicolescu, 2002, p. 150).

So far, I have discussed two main programs of transdisciplinarity: a structuralist-systems approach and a holistic approach. Klein (2013) divides the discourse on transdisciplinarity into five clusters. In addition to a structuralist-systems approach and a holistic approach, the next two clusters of transdisciplinarity are transdisciplinarity for the common good and transdisciplinarity that is transcultural, transformational, and goes beyond Western knowledge. I would argue that The Charter of Transdisciplinarity covers these two additional clusters. The fifth cluster, according to Klein, takes a postmodern turn and includes “creating new participatory modes of knowledge, discourse, and institutional frameworks across all sectors of academic, private, and public life” (p. 197). A significant contributor to the fifth cluster is Félix Guattari, who embraced transdisciplinarity in the 1980s and 1990s but in a way that differs from structuralist and holistic perspectives.

Guattari recognizes the inadequacy of disciplinary thought to solve pressing problems, such as ecological issues. He talks about the necessity of various disciplines, individuals, and communities getting together not for the purpose of studying an issue

but to transform society and the human condition. Unlike Jantsch, who used mathematical and hierarchical structure to explain how various agents are organized, Guatarri uses the concept of transversality that comes from his earlier work in psychoanalysis. Transversality is a measure of how much communication exists within and between different levels within an organization. Transversality is increased when an organization become more open overcoming the impasses of both vertical and horizontal organizations, by means of creative organizational innovations” (Genosko, p.200). For Guatarri (2015), transdisciplinarity becomes transversality between science, individuals, society, aesthetics, and politics.

Education Through the Transdisciplinary Lens

In the following text, I propose a method for reading educational policy and other educational documents through a transdisciplinary lens. This approach does not involve a document analysis but rather serves as an exemplar of how one can read and question text with transdisciplinary thinking. So far, I have outlined three distinct forms of disciplinarity, namely, structuralist-systems, holistic, and postmodern. However, I have deliberately chosen not to favor any specific form but instead, I aim to pose questions and offer suggestions with all of them in mind. I will begin by providing a brief contextualization of transdisciplinarity within the field of education. Subsequently, I will use a portion of UNESCO's latest report as an exemplar to demonstrate how we can read a text with transdisciplinarity in mind.

Interdisciplinarity and various other juxtapositions and combinations of disciplines have been a regular theme in education (Williams et al., 2016) as evidenced by the recent popularity of STEM and STEAM (Science, Technology, Engineering, Art, and Math) education. The movement towards interdisciplinarity and integration within STEM classrooms is happening for a variety of reasons, from making lessons more in line with the complex nature of today's jobs to creating activities that are more engaging, authentic, and equitable (Jao and Radakovic, 2018). A tension does exist about the nature of integrating, combining, and juxtaposing sciences with other disciplines, contexts, and subjects. For example, in the context of math education, Song et al. (2018) warn that inclusion of other subjects (e.g. music, dance, and art) may be on a superficial level where the non-mathematical part of the lesson becomes nothing more than the “cover story” for the mathematical concept (e.g. a song about multiplication table). The challenge then is to create educational opportunities to enable students to learn about authentic context that will be enable them to understand and address the complex problems. Prior to these educational opportunities, there is a need for well-developed and sound policy decisions.

A Short Overview of the UNESCO Reports on Education

UNESCO is an international organization founded in 1946 consisting of all 194 members countries of the United Nations and 12 associate members. In terms of education, it provides a unified vision to be actualized by member countries and other entities. In 1973, 1996, and 2021, UNESCO published three major reports on education. Within the field of international education, the reports are the major events and serve as a *vade mecum* for educators, researchers, and policymakers. These are not the only reports on education, however, there are many smaller and bigger reports on education coming from different meetings and working groups throughout the years. The reports are comprehensive and include many stakeholders; their priorities reflect the political and social climate that existed at the time of their creation.

The first report was created by the team of seven writers led by Edgar Faure, the former Prime Minister of France, and was titled *Learning To Be: The World of Education Today and Tomorrow* (1973). The report proposed “lifelong education as the master concept for educational policies in the years to come for both developed and developing countries” (UNESCO, 1973). It set out a humanist vision of education and learning as a continuously renewed and evolving process throughout life. The words “transdisciplinary” and “interdisciplinary” and their derivations do not appear in the document, which does not mean that their elements are not compatible with the vision.

The second report titled, *Learning: The Treasure Within* came out of the team of 15 writers led by Jacques Delors, a former French politician and the resident of the European Commission (the executive branch of the European Union). The central foci of the report are the four pillars of learning: learning to live together, learning to know, learning to do, and learning to be (UNESCO, 1996). Transdisciplinarity is mentioned once in a footnote in relation to another report describing a transdisciplinary activity in Portugal. Nicolescu (2002) elucidates that each of these visions is in harmony with transdisciplinarity: learning to live together by integrating various cultural approaches, learning to know by establishing bridges between disciplines, and learning to be by applying the concept of “permanent apprenticeship,” in which both teachers and students play dual roles as novices and experts.

UNESCO’s Vision of Curricula in the 2021 Report

The third report, titled *Reimagining Our Futures Together: A New Social Contract for Education*, was created by a team of 18 led by Sahle-Work Zewde, the president of Ethiopia. The report, in stark contrast to its two major predecessors, highlights the imminent danger facing humanity in terms of climate change and other existential risks to the planet. While the first two reports only hinted at the deepening crisis like distant whispers, the third report proclaims the crisis in resounding voices that can no longer be ignored. In this article, I will concentrate on Chapter 4 of this report, titled “Curricula and

the Evolving Knowledge Commons.” The chapter describes curriculum principles for the planet and humanity in crisis. It is based on these principles:

1. Enhancing Knowledge Commons: Curricula should focus on enabling learners to access and contribute to the collective knowledge commons of humanity. Students should engage with knowledge critically and creatively, ensuring the knowledge commons reflects diverse perspectives and remains open.
2. Addressing the Ecological Crisis: Prioritizing climate change education across the curriculum, teaching students to live respectfully and responsibly on a planet damaged by human activity.
3. Countering Misinformation: Emphasizing scientific, digital, and humanistic literacies to distinguish between rigorous research and falsehoods. Empowering learners with digital skills and the ability to act on science and technology.
4. Promoting Human Rights and Democratic Participation: Prioritizing human rights education to foster learners' agency and support a moral universe committed to recognition and thriving for all. Addressing gender equality and confronting racism and discrimination.

By following these principles, a new social contract for education can be realized, transforming educational practice for better futures.

A Transdisciplinary Reading of the UNESCO 2021 Report

I have identified key statements and concepts that appear to be related to transdisciplinarity. Initially, I categorized them based on whether they have transdisciplinary potential or pose a potential threat to transdisciplinarity. However, I soon came to realize, following Nicolescu's logic of included middle, that many of these concepts can embody both aspects simultaneously. Subsequently, I developed three overarching themes and examined them through a transdisciplinary lens to gain a comprehensive understanding. The following are the descriptions of these three themes.

Theme 1: Interdisciplinarity or Transdisciplinarity?

The term “transdisciplinarity” and its related forms are not explicitly used in this report. Instead, the report employs the word “interdisciplinary.” For instance, it suggests that curricula should emphasize ecological, intercultural, and interdisciplinary learning, fostering students' access to knowledge production, critical thinking, and practical application. However, from the perspective of all three transdisciplinary paradigms, interdisciplinary approaches are considered insufficient, lacking both integrated

scientific understanding and the potential to transcend disciplinary boundaries, societal engagement, and cultural perspectives found in the holistic and postmodern paradigms. Despite the usage of the term “interdisciplinary,” the way the chapter describes learning and curricula aligns with the principles of transdisciplinarity. For example, the section titled “Curricula for the Damaged Planet” presents a vision of ecological learning that emphasizes collaboration, social justice, and integration of diverse worldviews. These aspects resonate with the holistic paradigm and the principles outlined in the Charter of Transdisciplinarity:

Curricula must enable re-learning how we are interconnected with a living, damaged planet and unlearning the human arrogance that has resulted in massive biodiversity loss, the destruction of entire ecosystems, and irreversible climate change. We can consider ‘rewilding’ curricula by developing deep connectivity with the natural world and embracing the biosphere as an educational space. We can reimagine curricula to include intergenerational conversations around knowledge practices that are relevant for living with the planet, such as those taking place in numerous youth-led and community-led movements. (UNESCO, 2021, p. 68)

Additional evidence of the potential for transdisciplinarity is evident in the report's incorporation of feelings and intuitions as significant components of the curricula. This notion aligns with Nicolescu's concept of the affectivity of knowledge, which offers an alternative to mere effectivity (Nicolescu, 2002). Moreover, the report's recognition of various forms of knowledge and the inclusion of both global and community-based perspectives further corroborate the principles outlined in the Charter of Transdisciplinarity, which emphasizes the “revaluation of intuition, imagination, sensibility, and the body in the transmission of knowledge” (p. 150).

Theme 2: The Knowledge Commons

The writers of the report depart from traditional disciplinary knowledge by introducing the concept of the Knowledge Commons, which represents the collective knowledge of the world. Although this knowledge is not inherently transdisciplinary, the report advocates for moving beyond disciplinary boundaries and embracing complexity, which aligns with the principles of transdisciplinarity:

One part of designing curricula that are open and common is to resist the pressures that construct disciplinary and subject boundaries as fixed or essential limits. Instead, energies are better spent thinking about the complexity of the world and the historical quality of knowledge systems. Bringing this perspective on multiplicity and transversality into educational curricula helps us build on sturdy knowledge foundations in new and productive directions. (UNESCO, 2021, p. 67)

The inclusion of the concept of transversality in the report suggests that the authors (or some of them) might have considered transdisciplinarity while writing it. However, a question arises as to why they ultimately chose to use the term "interdisciplinarity." One possible explanation could be that transdisciplinarity, unlike interdisciplinarity, is not confined to a rigid definition and encompasses various forms and paradigms. Transdisciplinarity's flexibility might have been perceived as less suitable for the context or objectives of the report. Alternatively, the decision to use "interdisciplinarity" could be a reflection of the current academic or policy-making climate, where the term might be more widely recognized and accepted (bringing to mind the earlier footnote).

Theme 3: Social Contract with Whom?

In the report, a new social contract is proposed between individuals and governments, aiming to shape different educational futures with the shared goal of creating a better planet and better societies. The use of the term 'social contract' in this context is intriguing. For instance, the report references Rousseau's definition of the social contract as a relationship between individuals and authority, where certain freedoms are relinquished for government benefits. However, the context suggests a different interpretation, one that entails a transdisciplinary web of connections between individuals and institutions. This could resemble something akin to Jantsch's organization of universities but on a more intricate level. Guattari's concept of transversality, which measures the connectedness between politics, society, and science (Guattari, 2015), might also apply here. Guattari advocated for community-led research in collaboration with local governments. If the social contract is envisioned as transversality, the idea becomes compatible with transdisciplinarity.

Conclusion

Transdisciplinarity is a multifaceted concept, and its meaning is not fixed. To prevent it from becoming a hazardous concept in Leo Marx's sense, it is crucial to understand its complexity and how it applies to other fields, including education. Transdisciplinarity offers a promising approach to bridging the gaps arising from the rapid growth of knowledge and fostering a harmonious coexistence between humanity and technoscience. By embracing diverse viewpoints and acknowledging the interconnectedness of knowledge, education can play a crucial role in addressing the challenges facing our species and paving the way towards a more equitable and sustainable future.

In this paper, I explored various forms of transdisciplinarity, drawing from structuralism, holism, and transversality, to interpret the UNESCO 2021 report on education. My aim was not to provide an exhaustive analysis but rather to demonstrate how educational policy could be examined and questioned using transdisciplinary

perspectives. Transdisciplinarity, when applied in its various senses and with an embrace of its complexity, offers a thoughtful and systemic approach to observing the world, recognizing the problems we face, and creating opportunities to solve these problems collaboratively with various communities in mind. Reading the UNESCO's report through a transdisciplinary lens enables us to start questioning and interacting with this document in a way that can offer solutions for education and also position education as a solution.

References

- Davis, B., & Renert, M. (2013). *The math teachers know*. Routledge.
- Duguet, P. (1972). Approach to the problems. In L. Apostel, G. Berger, A. Briggs, & G. Michaud (Eds.). *Interdisciplinarity: problems of teaching and research in universities* (pp. 11-19). Paris: Organization for Economic Cooperation and Development.
- Genosko, G. (2002). *Felix Guatarri: An aberrant introduction*. Continuum.
- Guatarri, F. (2015). Transdisciplinarity must become transversality. *Theory, culture, and society*, 32(5-6), 131-137.
- Heidegger, M. (1982). *The question concerning technology and other essays*. Harper Perennial.
- Jantsch, E. (1972). Towards interdisciplinarity and transdisciplinarity in education and innovation. In L. Apostel, G. Berger, A. Briggs, & G. Michaud (Eds.). *Interdisciplinarity: Problems of teaching and research in universities* (pp. 97-121). Paris: Organization for Economic Cooperation and Development.
- Jao, L., & Radakovic, N. (Eds.) (2018). *Transdisciplinarity in mathematics education: Blurring disciplinary boundaries*. Cham, Switzerland: Springer.
- Klein, J. T. (2013). The transdisciplinary moment(um). *Integral Review*, 9(2), 189–199.
- Lichnerowicz, A. (1972). Mathematic and transdisciplinarity. In L. Apostel, G. Berger, Briggs, & G. Michaud (Eds.) *Interdisciplinarity: Problems of teaching and research in universities* (pp.121–127). Paris: Organization for Economic Cooperation and Development.
- Marx, L. (2010). Technology: The emergence of a hazardous concept. *Technology and Culture*, 51(3), 561–577.
- Moses, B. (2002). *Radical equations*. Beacon Press.
- Nicolescu, B. (2002). *Manifesto of transdisciplinarity*. SUNY Press.
- Nicolescu, B. (2008). *Transdisciplinarity: Theory and practice*. Hampton Press.
- Piaget, J. (1972). The epistemology of interdisciplinary relationships. In L. Apostel, G. Berger, A. Briggs, & G. Michaud (Eds.) *Interdisciplinarity: Problems of teaching and research in universities* (pp.127–139). Paris: Organization for Economic Cooperation and Development.
- Radakovic, N., O'Byrne, W. I., Negreiros, M., Hunter-Doniger, T., Pears, E., & Littlejohn, T. C. (2022). Towards transdisciplinarity: Constructing meaning where disciplines intersect, combine, and transcend. *Literacy Research: Theory, Method, and Practice*, 71(1), 398-417.

UNESCO. (1972). *Learning to be: The world of education today and tomorrow*.

<https://unesdoc.unesco.org/ark:/48223/pf0000223222>

UNESCO. (1996). Learning: The treasure within. <https://unesdoc.unesco.org/ark:/48223/pf0000109590>

UNESCO (2021). Reimagining our futures together: A new social contract for education.

<https://unesdoc.unesco.org/ark:/48223/pf0000379707.locale=en>