

Training networks: mainstay for learning and intertwined reflections

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ABSTRACT. This reflection aims to understand the existence of epistemological implications, in human symbiosis and technoscience, which call into question reason and hierarchies of power with nods to the existence of vital niches filled with deep interdependence from the beginning of the evolutionary process. This is a qualitative study of the bibliographic type, whose main result means to affirm that human evolution emerges in a very complex uterus, which shares nature, technologies and languages. It is unimaginable to scale the complexity of interactions, both collaborative and conflictive, of the ingredients of these interactive coevolutions - human and technosciences. Therefore, a profound transformation in the dynamics of learning, made possible by digital networks is present. It is concluded that the training networks are an effective exercise of resistance and desecration of the instructional mechanisms originating from political-pragmatic convictions that ignore or pretend to ignore the potential of the networks, such as collaborative networks, interdependence networks and interactive presences. Formative networks may enable other positions and other connections in the face of the technobureaucratization of the State, thirsty for quantitative and productivist diagnoses, carried out by obscure plans and goals that, gradually, threaten to empty utopias and the hopes of open and possible futures.

Keywords: education; training networks; human symbiosis/technoscience; reflections.

Redes formativas: esteio para aprendizagens e reflexões enredadas

RESUMO. Esta reflexão tem por objetivo compreender a existência de implicações epistemológicas, na simbiose humano/tecnociência, que colocam em xeque a razão e as hierarquias de poder, com acenos para a existência de nichos vitais recheados de profunda interdependência desde o início do processo evolutivo. Trata-se de um estudo, de natureza qualitativa, do tipo bibliográfico, cujo principal resultado significa afirmar que a evolução humana emerge em um útero sumamente complexo, que compartilha natureza, tecnologias e linguagens. É inimaginável dimensionar a complexidade das interações, tanto colaborativas quanto conflitivas, dos ingredientes dessas coevoluções interativas - humano e tecnociências. Tem-se, pois, presente na atualidade contemporânea, uma profunda transformação na dinâmica do aprender, possibilitado pelas redes digitais. Conclui-se que as redes formativas são um efetivo exercício de resistência e de profanação dos mecanismos instrucionais originários de convicções político-pragmáticas que desconhecem ou fingem desconhecer a potencialidade das redes, como redes colaborativas, redes de interdependência e presenças interativas. Redes formativas podem possibilitar outras posições e outras conexões diante da tecnoburocratização do Estado, sedento por diagnósticos quantitativos e produtivistas, realizados por planos e metas obscuras que, gradativamente, ameaçam esvaziar as utopias e as esperanças de futuros abertos e possíveis.

Palavras-chave: educação; redes formativas; simbiose humano/tecnociência; reflexões.

Redes de formación: pilar para aprendizajes y reflexiones enredadas

RESUMEN. Esta reflexión tiene como objetivo comprender la existencia de implicaciones epistemológicas, en la simbiosis entre humano y tecnociencia, que ponen en jaque la razón y las jerarquías de poder, con guiños a la existencia de nichos vitales llenos de profunda interdependencia desde el comienzo del proceso evolutivo. Se trata de un estudio, de naturaleza cualitativa, de tipo bibliográfico, cuyo principal resultado significa afirmar que la evolución humana emerge en un útero extremadamente complejo, que comparte naturaleza, tecnologías y lenguajes. Es inimaginable dimensionar la complejidad de las interacciones, tanto colaborativas como conflictivas, de los ingredientes de estas coevoluciones interactivas - humano y tecnociencias. Se tiene, pues, presente en la

actualidad contemporánea, una profunda transformación en la dinámica del aprender, hecha posible por las redes digitales. Se concluye que las redes de formación son un ejercicio efectivo de resistencia y de profanación de los mecanismos instruccionales originarios de convicciones político-pragmáticas que desconocen o fingen desconocer la potencialidad de las redes, como redes de colaboración, redes de interdependencia y presencias interactivas. Redes de formación pueden posibilitar otras posiciones y otras conexiones ante la tecnoburocratización del Estado, sediento de diagnósticos cuantitativos y productivistas, realizados por planes y metas oscuros que, gradualmente, amenazan con vaciar las utopías y las esperanzas de futuros abiertos y posibles.

Palabras clave: educación; redes de formación; simbiosis humano/tecnociencia; reflexiones.

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Introduction

It is acceptable to say that, in the 21st century, we aspire for a different arrow-guide also for pedagogical and training actions. The expansion and implementation of digital technologies are the result of the dissemination of rhizomatic conceptions and entanglements whose large-scale understanding refers to the twentieth century. Among the human cruelties that haunted the twentieth century, also emerged the notions of open systems, strange attractors, rhizomes with multiple loose ends, collaborative networks, various entanglements, hidden variables, diversity of forms, among many others.

This different scientific framework involving the conceptions of complexity, chaos, Indeterminism, non-linear dynamics, self-organization and emergency cannot be ignored by educators, nor is it convenient to disregard the variety of formative implications that these conceptions carry. They are invitations to tension and reconfigure the scope of our relations with knowledge, with knowledge and with the experiences of living. They are possibilities that grant the creation of discontinuities, whose own thinking grants experiences of singularization and, therefore, transformations in the constitution of subjects beyond massification. Subjects, transformed people with distinct potentialities to live and experience their existential worlds, constitute their dreams and understand the order/disorder of and things. A kind of metamorphosis, expression originating from biosciences, *morphé* (form), which beckons to the dynamic, to the transit of multiple forms to converge because they are chained in unique processes.

Humanity is still immersed in evolutionary dynamics and, nowadays, the human partnership with technologies has created a different reference. A partnership that goes beyond the mere expansion of our sense organs and enters the multiverse of learning, making the instrumental, rational and transmissive logics expendable. These are unprecedented challenges and opportunities not present in other historical times. In general, we can say that technosciences were and continue to be partners of human evolution. This means that human evolution emerges in a very complex womb, which shares nature, technologies and languages. It is unimaginable to scale the complexity of interactions, both collaborative and conflictive, of the ingredients of these interactive coevolutions - human/technosciences.

However, it is this complex web of interdependence that impacts and reignites the dynamics of human learning far beyond the simplism of the mechanisms of traditional initiation rituals, methodical transmissions of information and 'knowledge' and instrumentalization, legacies of modernity. We have, therefore, present in contemporary times, a profound transformation in the dynamics of learning, made possible by digital networks. A different vision of learning hangs in these airs, a vision that conceives to be digital technologies, as well as educators, active and creative instigators of learning via investigations, replacing the traditional models of teaching, storage and return via examinations, tests and checks. "New technologies expand the cognitive potential of humans and enable complex and cooperative cognitive mixes" (Assmann, 2005, p. 18).

They are learning experiences carried out in partnerships, with human learners also interacting with this technological phenomenon co-structured and co-structuring. These partnerships mean operational coherence in our doing, in tune with preferences and desires. It is important for us to recognize that we human beings guide this partnership and not technologies. To submit to technologies, to remove oneself from the condition of subject, to deny one's desires is to become hostage, as if the way of living depended on and was determined by technologies. Thus, the desire for change in learning processes is our invitation to partnerships with digital technologies. The growth of the technological presence in the ways of living and learning cannot mean the reduction of the possibilities of choices, reduction or annulment of desires and freedom.

Hence the importance of knowing our human condition, recognizing that we are living systems, we are personas and not things to be directed and determined from the outside. For Maturana (2001), living systems are structurally determined systems, because what happens in a living system depends on its structure. Disregard for this principle of structural determination means imposition and denial of being, denial of the living system condition and its objectification.

In this scenario of human condition, a different learning possibility emerges and, in it, we understand that it is relevant to develop reflections on the theme of training networks. It is our choice to walk through this bias of reflections, without underestimating the huge range of themes and other important entries related to training networks. Thus, the problem to be developed in this article revolves around the question: What epistemological implications are present in this symbiosis learner, able to put in check the rational and hierarchical logic waving wraps and interdependence? Therefore, the objective is: to understand the existence of epistemological implications in the human symbiosis/ technoscience, that question reason and power hierarchies with nods to the existence of vital niches filled with deep interdependence from the beginning of our evolutionary process.

We see this as an open epistemology, in which the indeterminate, the emergence, the conversation, the recursion and the retroaction, as well as the self-organization of the subject, so neglected by modern science. An epistemology that does not lose sight of the reality of phenomena, nor persists in the disjunctive creation between subjectivity and objectivity and does not exclude human sensitivity, the subject, culture and society, as emphasized by Morin (2010).

We understand, however, that training networks are an effective exercise of resistance and desecration of the logic of the homogeneous official curriculum. Formative networks can enable other positions and other connections in the face of technobureaucratization of the State thirsty for quantitative and productive diagnoses, carried out by plans and obscure goals that, gradually threaten to empty utopias and hopes of open and possible futures.

It is opportune to remember that reflection is a movement by which the subject gives himself the right to question the truth concerning the effects of power and to question the power referring to the discourses of power. Reflection is an art, the art of voluntary insubmission, of indócil profanation.

In the cadence of the traditional

It is tumultuous the way of living human in contemporary times, which has in individualism and productivism fundamental supports for capturing the subjectivity of the human being. We are surrounded by biopolitical devices that subject human beings to the anguish of insecurity, fear, obedience and absolutization of the self. A monstrous gap persists that preserves the condition of rich and poor, naturalizing inequality, which implants the reign of evil and cruelty, fueled by injustice, oppression and indifference.

If modernity recognized the Cartesian paradigm as a contribution to the formation of a simplifying logic, it also created the conception of reductionist reality, fed by methodologies that, by separating in parts the phenomena to better know caused impoverishment, masked by the specialty, which can not understand the phenomenon as a whole. Moreover, it does not result in excellence of a specialized and unique knowledge, regardless of time/ space, given the ineffectiveness of practical activities 'specialized' in contemporary times.

Modernity assumes itself as a rational domain, based on basic premises accepted a priori. The priority use of reason, in addition to inducing our emotional dimension into oblivion, has made us prisoners of the belief that any conflict or divergence in the daily life of human life is within the rational and needs reason to be solved. We hold that emotions not only obscure rational logic, but are also sources of arbitrariness and disorder in human life. However, the misconceptions of this rational prioritization, forcing the demeaning of the emotional dimension and the emptying of all affectivity, are evidenced in the most diverse domains of human existence.

More than a rational being, the human being is a being of feelings and passions, an irreducible being to rationality. This is an open discussion in the numerous debates about the crisis of modern rationality, about the violence of the institution of instrumental rationalism, which enshrines effectiveness and economic income as sovereign and absolute. It was a promise of the age of lights that generated the principle of universality of rationalism, to promote homogenization, which still threatens by the concealment of cultural and individual differences, diversities and singularities. It is rationalism that sows the belief of

contempt for the different, considered inferior, contrary and abnormal. This rationalist logic also enters the school environments replacing training by instruction, aiming at the instrumentalization of the student. This instrumentalization, in the context of toyotist/neoliberal rationality, aims to capture the most intimate dimensions of human life, to produce on a large scale utilitarian techniques of manufacturing desires, devices for controlling normalization of behaviors and regulation of subjectivation processes.

We formalize a biopolitics that generates a political economy, whose goal is to govern the freedom of others, manage their wills, directing them to previously established goals, such as silence in obedience. Obedience of a being/individual business, whose goal is to be realized in the satisfaction of doing, while retracting the potential for reflection, because it is something expendable. The consequences of this retraction reinforce the sense of inner emptiness, a void that weakens and can even nullify the horizon of hope by extending the inability to profound choices of meaning. However, this good new salvationist, offered in double dose, economic progress and self-management, also finds resistance.

It is on the basis of this resistance that the challenge of signaling a different sensitivity is anchored, requiring overcoming the norms of universalization and the power that watches, controls and punishes, to make room for the exception, possibilities to understand the diversity of life and realities, now plural.

Once again, we understand that an alternative formation becomes gradually desired, because if classical positivism recognized as an assumption that truth is something external to the subject, other theories, with non-objectivist perspectives, relativize the directional modes of truth and learning, considering as assumptions the existence of interactive processes. From this stems a shift from the universalist perspective to the recognition of partialities and pluralities - open and plural reasons hand in hand with a hazy logic - a *fuzzy logic*¹ -, instead of the universal Aristotelian and binary reason of the excluded middle.

If truth is no longer unique and is no longer held as intrinsic to the given reality, objective and independent, to be known as it is, perspectives of recognition and understanding of the existence of diversity as well as the importance of interdependence are opened, essential to the dynamics of legitimation of learning and knowledge. This turn, a resistance, implies thinking in another way the conceptions of curriculum, the teaching methods, the learning processes, the evaluation processes and the innumerable tasks imbricated there. The interactive possibility ends up revealing the existence of inexplicable phenomena in the most diverse scopes and, particularly, in relation to the student human being, to his ways of living and learning. In this scenario, resistance is an invitation to transform the relations of understanding and valuation prevailing today. By crossing these limits, it is invited to transpose the specific limits of its specialty, aiming at deeper, global and comprehensive knowledge in relation to other areas of knowledge.

This resistance insists on preserving the human condition, sharing, distribution, collaboration, emerging in and the beginnings of humanization. It is, as a form of resistance, that Maturana (2001) claims not to be progress and individualism constituted of values in themselves, as if they were absolute and objective. For Maturana (2001, p. 173), more than progress and individualistic agency "[...] the question we human beings must face is about what we want to happen to us [...] is about our desires and whether we want to be responsible for our desires".

The extent of the universe of desires is certainly unspeakable. However, we have the desire to leave the tyrannical dimension of wage labor, the desire to get out of the tyranny of labor precariousness, oppression by the biopolitical devices of power and desubjectivation to, in a non-competitive language, find dimensions of gratuitousness, balance, human courtesy. Unfortunately, the place of desire, of those who are exploited, of those who live in a precarious situation is more for despair, for depression and for moral impotence. Therefore, for Maturana (2001), it is so relevant to question what we want, because it is also the problem: what can we still do?

We understand that Maturana's challenge questions 'what is the human being?' or 'who is the human being?' for a re-elaboration: 'What are we going to do with the human being?', 'What can the human being expect? '. And again: 'What are we going to do with the formative action? '; 'Pedagogical action? '. The toyotist/neoliberal logic sediments a culture that transforms the human being, the human condition in favor of an individualistic, consumerist and competitive human identity. However, it cannot do it definitively, because, in the transbackground of our existence, we are reflective beings and, as such, we can become

¹ Boolean logic, from George Boole, or binary logic, has only two truth values, either one or the other: on/off; truth or false; Yes No. Fuzzy logic, or fuzzy logic, was developed by Lofti A. Zadeh, an engineer and systems scientist, in 1965. Unlike Boolean logic, fuzzy logic makes it possible to deal with concepts of partial truths, ranging from completely true to completely false. In the classical theory, based on the Aristotelian principle of the excluded middle, the element belongs or does not belong to a class, in a fuzzy set it contemplates the gradual and not absolute membership of an element of a class. Examples: Walk more 'a few meters' or, even, if you lose 'a few' kilos you will feel 'better' - the expressions in quotes are 'fuzzy' (Abar, 2004).

aware of the mistaken and inhumane way of living this way. In this conscious feeling, "[...] we can choose the course that our living follows according to our aesthetic preferences" (Maturana, 2001, p. 181).

Human being and formative experiences through creative and constructive engagements

Technosciences, in general, can contribute to enhance the development of knowledge, in order to make experiences more dynamic. The dynamics of this knowledge makes it possible to reconfigure our conceptions and explanations about life, living and realities. However, according to Maturana (2001), this does not mean change in our human nature, because, as structurally determined systems open to interdependence, any disturbance will happen in respect "[...] the structural coherences of the domain in which it occurs" (Maturana, 2001, p. 191). In the words of the author:

Biological evolution is not entering a new phase with the growth of technology and science, but the evolution of human beings is following a course increasingly defined by what we choose to face the pleasures and fears that we live in our like or dislike what we produce through science and technology. That is why the question we want is the central question (Maturana, 2001, p. 190).

Thus, the numerous problems charged to technologies are not, in fact, in technologies, they are not in themselves responsible, but responsible are our choices of uses effected in the context of various human actions. Again, technologies are not able to modify structurally determined systems, and we are structurally determined systems. Thus, the dangers and their consequences, observed and experienced in contemporary times, are in the relations instrumentalized with technology, which discard or offer little space for reflections on the assumptions that support the production and use of technologies.

It is therefore opportune to delegitimize the pedagogical authoritarianism that still and often reigns untouchable in most schools and classrooms. More than obeying, it is important to know what happens every time we obey. How and what is necessary to activate obedience? What is at stake when the game reiterates obedience? These pedagogical violence can be deactivated through participatory and investigative reflection, in order to transform the relationships established in a perspective of power to, then, produce other open, fluid, heterogeneous less arborescent and more rhizomatic. It is time for a new arrow-guide that, according to Foucault (1996 apud Carvalho, 2016, p. 16), requires "[...] not to accept as truth what an authority tells us is true". In a pedagogical perspective, anchored in assumptions of involvement and networks of interconnections, educators and students put themselves in question and do so because they understand that the questioning is a movement by which each persona gives himself the right to question the truth, power and discourses of power. In this pedagogical dynamic, questioning implies the art of voluntary insubmission, of indoctrination, desecration and the exercise of impotence (Agamben, 2007, 2013). If, in traditional pedagogy, one was aware that obeying meant desertifying the garden of creativity, in a pedagogy of involvement the students' questions are deeper and forceful, are provocative and investigative, embrace diversity and desire participation.

Resisting obedience and the freezing of investigative creativity invites a different feeling and becoming an educator, as highlighted by Guerrini (2010, p. 7),

[...] if there is no enthusiasm for the new and an openness to new ways of obtaining knowledge by society, especially through the internet; if there is no interest in knowing better this new generation that no longer accepts the impositions, the controls and excesses of past times; if there is no integrative view of nature that allows, effectively, a walk that is sustained with a new plural and cosmic ethics in defense of [...] next generations, accepting the playful dimensions, spiritual and transcendental in education; if there is no opening to the subtle and to the perception of it in everyday life, understanding the functioning of a butterfly effect in open systems; if there is no flexibility in concepts to allow the other to be no longer seen as an object, but to participate with his peculiar knowledge, also acting as a subject in the formation of new knowledge; if there is no willingness to create alternative spaces, physical or not, so that the knowledge of nature can emerge in an integrative way, there is definitely no way to be an educator and a good teacher in these new and challenging times of the 21st century.

This is a search for school environments in which monologue, prepotency, standardization, domination by fear, passivity and all forms of physical and emotional violence are condemned, capable of affecting learning experiences and formative experiences.

They are challenges of disengagement and reconfigurations in the way of feeling people, in the way of relating to others, in the way of feeling, deciding to learn far beyond the specific of a degree or specialty. A

metamorphosis to become sensitive, to feel incorporated into its specific skin of knowledge and unique experiences, the desire to become familiar with *Fuzzy Logic*, with the multiverse of uncertainties, flexibility and humility to recognize the relevance of life experiences and knowledge built by children, adolescents and young people - students. It is also important to be prepared to give up the traditional anthropological and epistemological assumptions, as a form of resistance to the logic of technical and instrumentalizing training, not aiming at an exclusive professional training, but, above all, a human formation, a human capable of reflection, capable of putting himself at stake and participating.

In this different training and learning aspect, the scientific universe is no longer enough with its exclusive and unambiguous vision and understanding of reality given a *priori*. Insufficient vision for being reductionist and sustaining itself, epistemologically, in assumptions of simplistic and exclusionary logic. By producing unique models of explanation, not only for natural reality but also for social and human reality, singularities, differences, diversities and creativities are denied. By demanding homogenization and massification, individuality will be denied by the logic of rational argumentation that common well-being overlaps individual well-being. This logic justifies the model pedagogy, the model class, the model textbook, the model student, the uniform aptitude of all students in a class to be prepared to take a test on a given day and time. Finally, they justify the predetermined curriculum because it is a fallacy that reaffirms the objectivism of modernity, conceived by the positivist and reductionist philosophies.

The perspective is the predisposition to understand and accept an epistemological conjugation with concepts such as complexity, uncertainty, diversity, participation and other emerging potential support to amplify reflections with openings to different sensitivities and to better understand the diversity of life and human life, no longer its massification always linked to insecurity, fear and blind obedience. This is a strong invitation from Stengers (2015, p. 126) to write that

[...] people can become able to (re)take a taste for thought. That is, to discover that what caused them aversion, what they felt incapable of, was not thought, inseparable from a concrete practical experience, but exercise, as an effect, of a theoretical abstraction that requires that what is known and what is lived becomes an anecdote.

This is why one can no longer persist in the excluding logic that many experiences with thinking continue to be ignored. All and, in their uniqueness, are extremely relevant to demarcate the dimension of these experiences, as different formative experiences. To distance itself from the reproductive, conservative and simplistic character, hostage to the instrumental mechanics of power, which is satisfied with the mechanism of describing, dimensioning and timing, it is up to reflection to expand both the spaces of relations and the spaces of transgressions, in order to resume the experience of thinking attentive to the intimate qualities of life, of living and of phenomena of any nature.

In these spaces, the other is taken into account, the other becomes important and recognized. Then, it is agreed with the educator profile drawn by Severino (2002, p. 83):

We need educators who teach the student to think. More than that, that awaken the taste of thinking, that awaken the taste of learning and that awaken the irreplaceable experience of dialogue, in which each one can recognize himself as a subject of ideas, subject of words, as a person who has what to say, and who can say, and who will be heard.

The traditional pedagogical model, demanding of an expert and superior of homogeneous knowledge, continues to be filled with unique truths and continues to submit students to activities and subjects unfathomable, to classic and demotivating classes, to fruitless tests, named evaluation. This is arborescent epistemology faithful to the Newtonian and Cartesian paradigm of hierarchization. According to Deleuze and Guattari (1995, p. 26):

Arborescent systems are hierarchical systems that contain centers of significance and subjectivity, central automata as organized memories. It turns out that the corresponding models are such that an element only receives its information from a higher unit and a subjective assignment of pre-established links.

The arborescent and hierarchical systems contain the perverse germ that destroys the 'curious' condition of the child, which feeds the pulsating and youthful flow that accepts and coexists with disorder, insubordination and creativity. By homogenizing and massifying, it becomes an impediment to living what is most sublime in the human condition, the natural right to dream, to hope and to create utopias.

Differently, in a pedagogical dynamic that dares to resume the pleasure of reflection and participatory research, the activation of living occurs. This activation is done as they did and continue to do the systems that escape the static, the normalized and, therefore, could emerge life and all its dynamics. Far from order,

far from the 'everything is already proven', far from the knowledge given and ready, but surrounded by disorder, imbalance and effervescence that creativity expands its flights. On the border of uncertainty and unbalance, Instability is inviting rather than threatening, it enables participatory play while yearning for more creation. This different pedagogical and formative environment extends and expands as a rhizome, a network, a 'web of life' and living together.

A rhizomatic epistemology finds sustenance in networks and entanglements, it is pleased with the parting of hierarchies, the ultimate and absolute ends, as well as binary logics. For Deleuze and Guattari (1995, p. 37, emphasis added).

A rhizome does not begin or conclude, it is always in the middle, between things, inter-being, Intermezzo. The tree is sonship, but the rhizome is covenant, only covenant. The tree imposes the verb to be, but the rhizome has as its fabric the conjunction 'e... e... e...'. There is in this conjunction enough force to shake and uproot the verb to be. Where are you going? Where do you come from? Where do you want to get? Are useless questions. Make tabula shallow, from zero, to seek a beginning, or a foundation, imply a false conception of travel and movement (methodical, pedagogical, initiatic, symbolic...). [...] have another way of traveling and also of moving, from the middle, through the middle, get in and out, don't start or finish.

The contradictory becomes complementary and has different principles, which also conceive interconnections, heterogeneity and interdependence. The rhizome calls for ruptures and, like the Moebius Band, tends to infinity, indefinite and indescribable; it stretches, vibrates in variability, produces the tortuous, takes turns in multiple and collaborative experiences because they are always close. A pedagogical network in rhizomatic organization invites to transnavigate in the contexts of complexity, a tissue no longer prisoner of the conjunction 'or', of 'true' or 'false', which lose their domain to the conjunction 'and', to participation for the 'you can help', for 'at the same time'. In the words of Deleuze (1992, p. 60):

The E, 'e... e... e...'. is exactly the creative stuttering, the foreign use of language, as opposed to its conforming and dominant use founded on the verb to be. Certainly, E is diversity, multiplicity, the destruction of identities. [...] multiplicity is precisely in E, which does not have the same nature as the elements or sets.

The concept of rhizome and complexity offer another panorama, another world view, another theoretical perspective, a different conceptual fabric that helps in the reconfiguration of the process of knowledge construction and formative experiences.

In a formative proposal based on principles of folding, the logic of exclusion will be deprived of its 'authority', giving rise to the 'Third Included', the 'e' that combines collaboration and complementarity. We can speak of Collective Intelligence, a precious dimension of non-hierarchical coordination, precisely because it synergizes singular intelligences, exchanging and navigating knowledge in constant dynamics of renewal.

Lévy (1997 apud Strieder, 2004, p. 69):

And here comes the central role of collective intelligence [...], the creation of a synergy between skills, resources and projects, the constitution and dynamic maintenance of common memories, the activation of agile and transversal modes of cooperation, the coordinated distribution of decision-making centres, all of which are factors that oppose the watertight separation of activities, the compartmentalization, the opacity of social organisation. The more collective intelligence processes develop - which evidently presupposes a new questioning of numerous powers so much more widely that technical changes will be absorbed by individuals and groups and so much less will be the segregating or destructive effects of the techno-social movement. Now, the cybernetic space, a device of interactive and community communication, presents itself precisely as one of the privileged instruments of collective intelligence.

Simple this transformation of the hierarchical pedagogical space in pedagogical space of involvement and participation making emerge the 'Collective Intelligence', dreamed by Lévy? Certainly not, because there are, despite the optimism, conflicting issues, since there is still no consensus established for individual intelligences to be activated and combined. Many of them continue to be nullified by the reductionist and homogenizing persistence, common denominator. The alternative pedagogical spaces and their proposition of alternative learning will have to distance themselves from marginality before an instrumentalizing education that insists on centralization and standardization.

Effective formative experiences and collaborative learning requires that the educator develop transdisciplinary attitudes, universalizing the natural right of participation and appreciation of knowledge, memories and individual stories, experiences of each and every one of the students, while considering their limitations. In this way,

Children should be taken seriously in view of their expressions, hopes and desires, individual introspections and fears. They develop their individual personalities in the environment in which they live, and at the same time they continually change the environment beyond what is thought, according to the consistent and well-inspired ideas they bring (Papst, 2005, p. 16).

It is this formative scope that enables spaces and ambiances in which students experience with intensity the discoveries and experiences that the relationship with the other provides. An invitation to “[...] make all knowledge accessible to everyone and everywhere” (Follmann, 2005, p. 14).

It is in the dream of overcoming this cold logic, detached from life and pleasure satisfaction, that Papst (2005, p. 16) credits his hope:

The effect of transdisciplinary educational practices could serve so that children and students are not paralyzed in their individual development, and based on this aspect, the effect is that they will not be educated as deformations of human beings, with all kinds of mental and psychic damage. The advantage of transdisciplinary educational practices is that children, students and humans are taken seriously and treated respectfully.

From this relationship of respect, acceptance and openness to the pleasure of discovery, we can reactivate the rebirth of utopias and dreams, as a harbinger that, again, it is time to build and rebuild worlds, ways of life and make education a granary of lives in fulfillment. As Stengers writes (2015, p. 152):

Joy, wrote Spinoza, is what translates an increase in the power to act, that is, also to think and to imagine, and it has something to do with a knowledge, but a knowledge that is not theoretical, because it does not designate at first an object, but the very way of life of the one who becomes able to feel joy. Joy, we could say, is the signature of the event par excellence, the production-discovery of a new degree of freedom, giving life a complementary dimension, thus modifying the relationships between the dimensions already inhabited.

Formative joy as a dimension of complexity, as a complementary dimension of the interconnection between different people, between different life experiences, humbly recognizes being and existing knowledge open forever. Formative joy, in its pedagogical sense, contemplates poetry, affection, ethics and aesthetics, depth and comprehensiveness. Let Baitello Junior (2018, p. 41) illustrate:

The gradual loss of daylight brings with it the gain of another light, undoubtedly more complex, which is the twilight light, the light that is not seen with the eyes, but that is noticeable only to the other senses of man, (such as) hearing, touch, smell, taste and proprioception. And the total loss of daylight brings with it, for example, the infinite gain of attentive listening and careful and warm touch.

It is important not to want to hide behind power structures that oppress people. It is important to feel willing to resist problematizing the ultimate truths, resist and create lines of escape before the comfort of dogmatic convictions assured by rational strategies.

Feeling open and challenged to gestate different modes of existence attuned to uncertainty, inaction, incompleteness as assumptions for knowledge that dialogue with the unknown, whether the human being or nature. In this complex tessitura and in the interstices of the presence of the other as legitimate another (Maturana, 2001), the intersubjective, unfinished conversation happens, because it also considers the numerous life experiences filled with meaning, as autopoietic processes that happen because they happen.

Final considerations

The proposed objective for the reflection wanted to understand the existence of epistemological implications, in the human symbiosis/technoscience, capable of putting in check the instrumental reason and the hierarchies of power, And then we can wave the possibility of the existence of ways of living based on interdependence. We will summarize the reflection highlighting three aspects developed that infer in the tension of these implications.

First, we highlight the importance of human and technical partnership/symbiosis dating back to the beginnings of the humanizing process. More specifically, at the present time, it takes on a peak of ambivalence, meaning more barbarity, power to control and hierarchy, as well as revitalizing our human condition. To amplify the barbarities, by persisting not only in its use as a weapon of mass destruction, but also when considered as a supreme source of strategies to strengthen instrumentalization, technical competence, subjectivation and the gradual reduction of academic reflection.

In another dimension, more horizontalized, the human symbiosis/ technoscience potentiates advances in the areas of production, here in a broad and generalized way, in gains in health, life time and, above all, makes us

closer, more interconnected and enables the rhizomatic and entangled plot, a true metamorphosis in the learning process. However, for this turn, it is necessary to reinvigorate the awareness that human problems will not be solved by technique, because it does not build our sensitivity and we can not leave at your disposal the gestation of our desires, choices and decisions. Thus, in the human symbiosis/technoscience and, above all, in the pedagogical context, the challenge of not adapting to rational control strategies, but rather a dynamic that activates, in the person, the ability to transform.

As a second highlight, in view of the supremacy of idealized conceptions, conceptions of order, disciplinary fragmentation, the objectivity of knowledge, and arborescent epistemology, we defend the insertion, in the pedagogical and educational aspects, of complex thought, of indetermination, disorder, among other indispensable sources of disaffection, of questioning reflections to foster research, creativity and creation in place of repetitive and ritualized sameness. This challenge invites us to dive into diversity instead of homogenization, singularity instead of massification, the desire to walk on the banks, desiring other positions, other connections and feeling the action of knowing as an unreachable challenge instead of resigning before the proven, the scientific said and therefore true and ally of the good.

As a third entry, we indicate a defense for reflection. A reflection that means the beginning of the collapse of the closed school movement that requires preparing people with technical and functional skills, as a way to adapt and conform to the expectations of the toyotist/ neoliberal logic. We show that the deformation of the reflective spirit implies a gradual destruction of the dimension and the human condition, by condemning to death its emotional and desiring dimension, subjective and as persona/person. Around the human symbiosis/ technoscience, combined with the emergence of concepts of complexity, autopoiesis, disorder and creative chaos, we will realize the importance of the statement of Adorno (1995, p. 141) on the existing violence in the mechanisms of “[...] modeling of people, because we do not have the right to model people from outside”.

Human beings, technology and science can establish partnerships to prioritize the human sense of pedagogical and educational action, both to make singularity and diversity indispensable.

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