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Political relations between philogenic-ontogenic metaphor and "being an adult" as school telos

Relaciones políticas entre la metáfora filogenia-ontogenia y el "ser adulto" como télos escolar

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Abstract

There are situations in which, instead of a referentially rigorous, formalized, structured and controlled language, sciences appeal to explanatory resources that do not come from the disciplinary activity itself. This phenomenon creates metaphors that eventually become part of the common scientific lexicon, as they are effective in increasing our understanding. However, if metaphors were removed altogether, many scientific explanations would not sustain, since their own meaning does not depend on other 'more literal' expressions. The phylogeny-ontogeny metaphor had a very strong influence in the way that, for example, the emerging anthropology and sociology, but also pedagogy, would think about human beings and society. Through the analysis of bibliographical sources and specialized papers, this paper seeks to carry out a modest analysis of its internal logic to examine some of the effects of this metaphor on the educational field. It does not advocate to stop using metaphors, it rather seeks to raise awareness of how they hinder divergent ways of thinking. It is especially interesting to stand out that the aforementioned metaphor has sustained the construction of a body of knowledge about childhood and education which works before the concrete realization of any educational situation. The problem is that this a priori knowledge, in the manner of epistemological obstacles, restricts the emergence of new ideas and/or solutions for the difficulties that schooling is facing today.

Keywords

Evolution, childhood, political philosophy, colonialism, teacher education, power.

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Resumen

Hay ocasiones en que, en lugar de un lenguaje referencialmente riguroso, formalizado, estructurado y controlado, las ciencias apelan a recursos explicativos que no provienen de la actividad disciplinar misma. Este fenómeno va creando metáforas que se vuelven paulatinamente parte del léxico científico corriente al ser eficaces para aumentar nuestra comprensión. Pero si se quitaran del todo las metáforas, muchas explicaciones científicas no se sostendrían, puesto que su significación propia no depende de otras expresiones 'más literales'. La metáfora filogenia-ontogenia marcó fuertemente el modo en que, por ejemplo, las incipientes antropología y sociología, pero también la pedagogía, pensarían al ser humano y a la sociedad. Mediante el análisis de fuentes bibliográficas y artículos especializados, este trabajo busca hacer un modesto análisis de su lógica interna para revisar algunos efectos de esta metáfora en el campo educativo. No aboga por dejar de usar metáforas, antes bien pretende lograr mayor conciencia de cómo obstaculizan modos de pensar divergentes. En especial interesa destacar que la mencionada metáfora ha sustentado la construcción de un cuerpo de saberes acerca de la infancia y la educación que operan antes de la concreta realización de cualquier situación educativa. El problema es que esos saberes *a priori*, al modo de obstáculos epistemológicos, restringen la emergencia de nuevas ideas y/o soluciones para las dificultades que enfrenta la escolaridad hoy.

Palabras clave

Evolución, infancia, filosofía política, colonialismo, formación de docentes, poder.

Introduction

This work will seek to analyze the assumptions that support an epistemic metaphor that has been key both in the development of modern science and in the construction of positions of power, that is, the metaphor of phylogeny-ontogeny homologation. Starting from the analysis by Fallilone (2017), it may be argued that this metaphor constitutes a landmark in the formation of the mythical story of Eurocentric Modernity, and that dismantling its scaffolding can contribute to think of a 'Trans-Modernity' from Latin America. The consequences of the development of the aforementioned metaphor range from anthropology to biology, particularly passing through the field of education; it has given rise to the construction of effective and 'scientific' knowledge about education and schooling, which in turn have concrete consequences on what happens in the classroom. This is why it will also seek to establish some political perspectives —in a broad sense— to think about educational practices. To achieve this, an analysis of historical sources and specialized bibliography will be conducted; the journey may seem somewhat erratic at times, but everything tends to a common point of confluence.

This article will begin with a historical review of some elements that were key in the construction of an imaginary scale of the evolutionary development of human beings and their culture, with a special focus on the political-colonialist decision to place a particular figure as telos

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on that scale, and not others. Then, it will be analyzed a very significant example of the marks that this metaphor can print in education. Finally, with the categories of epistemological and pedagogical obstacle, some final considerations on the subject will be articulated, pursuing to provide some elements that may eventually contribute to consolidate a field of political philosophy of education.

Epistemic metaphors and education

The use of literary resources, such as metaphors and analogies, to explain complex phenomena is not something strange or infrequent since modernity; its literary value is undeniable. It is impossible to talk about phenomena without using adjectives and descriptive images. They have generally been allowed or tolerated in scientific discourses because they would presumably help the non-specialized reader to better understand them, with the consequence that such discourses stripped of all paraphernalia are considered 'more scientific'. But the presence of these expressive resources does more than just add a literary or decorative value to the explanations; on the contrary, they enable any reader to increase his/her possibilities of understanding the world and reality. If metaphors and images were completely removed, many scientific explanations would not sustain, since they effectively provide a cognitive value, i.e., they have their own meaning that does not depend on other 'more literal' expressions. Precisely, the professor and researcher Héctor Palma (2014; 2015) has dedicated himself to examining this aspect of the use of metaphors in science, which he names as an epistemic function.

> The use of metaphors in scientific dissemination or teaching is tolerated as a mere didactic-pedagogical resource and the standard philosophy of science, in the twentieth century, has recognized in metaphors, at most, a heuristic role without cognitive value. However, the profusion of metaphors in sciences enables us to suspect that their presence is more the rule than the exception. Just as an example: the universe is an organism, or a machine; society is an organism; social conflict is a disease [...]. It is difficult to attribute to the preceding expressions only didactic, heuristic or rhetorical functions. First, because the theoretical, practical and instrumental consequences of these metaphors are part of science and, second, these expressions do not replace any other literal expression that the scientist would have for himself/herself and his/her peers. Perhaps, then, the epistemic status and cognitive functions of these true 'epistemic metaphors' should be rethought [...] (Palma, 2014, p. 107-108).

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Sometimes, science appeals to explanatory resources that do not come from scientific activity itself[1], instead of appealing to a rigorous, formalized, guided and controlled referential language. Thus, metaphors are created that gradually become part of the current lexicon of science, as they are effective to increase the possibilities of understanding the world and reality. According to Palma (2014), it occurs with these metaphors that what begins as a discursive novelty, a resource that presents a novel and unexpected point of view, over time becomes an expression considered literal and typical of scientific discourse, and then, they come to be analyzed epistemologically rather than literarily. In this sense, Palma (2014) states:

> An important attribute of EMs [epistemic metaphors] is that they strongly restrict the field of the possible and, above all, clearly delimit the field of the impossible, of what is already discarded because it cannot be thought of in terms of the rationality of the era (p.112).

The arrival of European neighbors to the American continent contributed to the formation of one of those metaphors, one that had a great and long-lasting impact on subsequent theorizations, giving rise to the construction of a larger theoretical corpus. The objective of this work is to make a contribution to consider the effects of this metaphor and the scope it has had in a realm not always related to it, such as school education, since the metaphor and its associated corpus contribute, following the remarks of Fallilone (2017), to reduce education "to an uncritical transmission of knowledge and the adaptation to a series of rules to be promoted" (p. 234), hiding any "reference that makes us particular" (p. 234). Retracing the path of crystallized constructions using this epistemic metaphor will result in a contribution to elaborate, as proposed by Fabelo Corzo (2021), an 'epistemological resistance'.

The European view about America

In a work about the graphic representations of the 'New World' made by Europeans, Alfredo Bueno Jiménez (2015) states that the first contacts of chroniclers and conquerors, at the time of being represented by European illustrators, were assimilated to the strangest elements that European imagination admitted. Between the direct contact that European travelers had with local populations and the illustrations that were made in European lands, it took place the mediation of the narratives that the former elaborated. In this regard, Bueno Jiménez (2015) claims:

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> Due to the difficulty that existed to describe American reality, chroniclers and conquerors often cataloged the unknown as 'monstrous' or 'strange' and resorted to the imagination to turn reality into something different that artists would be in charge of illustrating. The representation of the monster was not only that which exceeded the normal with respect to the physical, but also the social and cultural habits of Western man (p. 108).

What these European men experience in the American lands is the encounter with radically other societies and cultures, and consequently they need to give sense to these differences. These initial marks of the colonial relationship, tinged with monstrosity, bestiality and mysticism, far from being refuted or questioned, will be consolidated over time. Bueno Jiménez's analysis leads to think that, in principle, the explanations had a more magical than empirical tone. In such work, Bueno Jiménez makes a very precise journey through illustrations that artists made —or that editors asked for— from the letters and travel diaries they received from the 'new' continent. Then, he examines these illustrations in the light of traditional European myths and legends or popular stories of the time, in order to show how the holes and missing in the descriptions and narratives of the travelers were filled with elements from those other stories. To mention just one example, when analyzing the illustrations made by Levinus Hulsius in 1599 to represent the inhabitants of the region they called 'the Amazon'[2], Bueno Jiménez (2015) points out how the representations of American women resemble the representations of the Greco-Roman goddesses and even of the biblical Eve. In all three cases, the naked bodies, lines and proportions, and the long and wavy hair, coincide (pp. 95-101).

Although many of these magical elements were abandoned as contact deepened and European powers consolidated their dominance over America, it should be pointed out that the marks of this first perspective at the 'New World' survived and were perpetuated in later explanations. Fabelo Corzo (2021) emphasizes on the epistemic violence implied by this, while "modern, classical, Eurocentric and colonial western thought" (p. 48) presented "its studies on the human-particular, fundamentally on what is proper and European, [...] as the knowledge of the human universal. Its particular experiences were elevated to the rank of universal knowledge" (p. 48).

Specially one idea had a strong impact, the idea that life in America represented 'primitive' life, i.e., life as it would have been in the past, stripped of 'civilization' in early human times, as infant children that would not yet have 'apprehended the culture'. There were even those who

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thought that America represented the biblical paradise[3]. However, sustained from a universalist perspective of culture, that neither gave Americans a better status, as pointed out by Adriana Puiggrós (2003):

> The Spaniards established themselves as the only ones with the right to educate, a task that they identified with evangelization. They not only considered the Hispanic a superior culture, but the only education worthy of the name. They felt that it was a duty to impose themselves on the indigenous people, as they had done with the Moors and the Jews (p. 27).

How did these explanations operate, years later, to continue having repercussions on the way to understand and give sense of cultural differences? Conducting this analysis is not an easy task, particularly because it crystallizes as a perspective of an era, a perspective in which theories from various disciplines converge. Addressing this point would only merit a more extensive work. This writing will limit itself to mention some fundamental aspects to understand that vision of the era, a vision that impregnated Latin American fibers, causing that, as stated by Fabelo Corzo (2021), "[e]ven the self-image of the own (ex)colonized subject, depends to a large extent on the discourse that Europe, the West, has built about him/her" (p. 46). Three issues will be especially addressed here: the spirit of indefinite progress carried by positivism it; the explanatory resource to the study of 'the wild man' for understanding the present; and the consolidation of colonial relations.

The positivist perspective with its idea of indefinite progress, flourished in the seventeenth and eighteenth centuries[4], established its own way to think about history, not only to imagine the future, but also to imagine the past. Although at that time it prevailed the interest of picturing the future, it was the same logic that simultaneously projected future events and gave meaning to past events. Hence, if predictions and speculations about the future could be made, it was because it was known that humanity had followed a path of continuous improvement, i.e., it had progressed. In other words, the current state of humanity was explained by the orderly concatenation of causes in the past, causes that had not been random but teleological, and whose effect implied an improvement with respect to the previous state of affairs, leading to the learned, industrial and European republican man. Now, which would be the previous state of affairs?

Man was thought of as tied, like all things, to the 'laws of nature', laws of perfect and synchronized operation, like a clock mechanism. The certainty about natural laws and their causality was what enabled to reconstruct the imagined previous state of affairs. There was talk, then, of

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'the wild man', and analyses and descriptions of how life had been and how humanity had been in those now forgotten times were provided to explain —and clearly justify— the way of being and living of contemporary man —read, the European man. Examples of this are stories such as the *Discourse about the origin and foundations of inequality among men*, or the descriptions made by Hobbes or Locke among their political reflections. These reconstructions were of vital importance because they enabled providing naturality to the social and productive changes that were taking place, while simultaneously enabling highlighting some particular feature such as a defect or virtue. If a feature had enabled and favored the 'advancement' of culture in that teleological causal concatenation, then that feature was considered essential, and had to be protected and safeguarded. On the other hand, if a feature had been abandoned on 'the path of progress', then it would have to be considered undesirable, atavistic, primitive, uncivilized, and therefore should be 'surpassed' or 'corrected' if it is found in the present. The 'New World' confronted Europe with modes of social organization quite different from those known by them until then. And every different feature was captured with that look of progress.

Thus, thus created the figure of the 'other', these stories about an original past of humanity offered a justification for the superiority of some cultures over others, depending on whether they possessed these 'advanced' features. In the argumentative trick, it was necessary to have this 'other' to consolidate productive domination. But it should not be forgotten that it is, after all, an artifice.

The theoretical constructions seemed to find their support on reality, in contact with these 'new evidences', and the consolidation of colonial relations ended up ordering the world with this criterion, shaping a meticulous hierarchy of peoples. All this eventually translated into an 'international division of labor', an assignment of tasks and functions, of permissions and prohibitions, of possibilities and limitations to each population and each geographical region according to their way of life in relation to those original stories[5], consolidating, as stated by Fallilone (2017), the story of the 'modern myth'.

In the eyes of Europeans from that time, these ways of thinking presented no major drawbacks, and the stories derived from them were considered perfectly scientific. However, as can be easily seen, these stories do not even meet their own scientificist criterion, since there is really no evidence that life has ever been as it is described, for example, by the contractualist myth. All these explanations are based on elements with a high epistemic-metaphorical and literary load, not recognized as such, of course.

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This way of thinking about culture could seem very foreign to our times, however, there is still one more issue to be pointed out that contributed to the unification of this perspective, which gave it solidity and strength to such an extent that even today, even though they have been questioned and widely discussed, we find policies and public opinions based on the same assumptions. A certain interpretation of the theory of evolution was added to the three issues mentioned. It is necessary to clarify that when we speak here about 'evolutionism' or 'evolutionary theory' we will not be referring to the work by Charles Darwin, but following the anthropologists Boivin, Rosato and Arribas (1989), to the anthropological interpretation opened by E. Tylor and H. Morgan[6].

Boivin et al. (1989) indicates that it was at the end of the nineteenth century when these interpretations began to spread, which, through explanations that made use of criteria and mechanisms taken from biological evolution, they intended to make sense of the differences observed between the different human groupings of which there was a record. Within the framework of these perspectives, and unlike what was proposed by Darwin, evolution was loaded with a strong teleological weight. The hypothesis was that certain individuals among the great apes were creating a differentiation through a process of evolution, genetic variation, and natural selection that ultimately made humanity to emerge as a species well differentiated from the great apes. In this way, following the analysis of the authors, it could be affirmed that the human species constituted a uniform unit in its growth and biological aspects.

But the physiological animal aspects were not enough to define the specificity of man, and, according to Boivin et al. (1989), Tylor proposed that what differentiates men from the great apes is the ability to generate culture. This, besides including man among the generality of animals, removing any special or divine dignity, linked the natural being of man with his spiritual being, attempting to explain cultural development as a branch of the natural sciences. Hence, man would be more properly human, and less animal, the more flourished his capacity to generate culture. According to this perspective, it is imagined that the evolution process that humanity would have followed would go from the great apes without behaviors or creations beyond survival instincts, to the current human, creator of science and the arts. And as the great multiplicity of individuals make up a single species, with the same nature, human evolution is one, unified and unique, both physiologically and culturally. Therefore, evolution follows a single path that all humanity will eventually follow, as an unfolding, development of the human specificity itself.

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Consequently, we could know the level of evolution of human groups according to the cultural development present in them. Measuring in some way, the 'amount' of culture generated, the different human groups could be easily placed on an 'evolutionary scale', depending on whether they were closer to the merely animal or closer to the specifically human.

Boivin et al. (1989) point out three criteria with which human groups are classified within this evolutionary scale (p. 29), according to a growing complexity of the 'levels of culture', that is, an increase or multiplication of cultural products and greater specialization and differentiation. The first criterion is the degree of accumulation of culture, according to which a greater number and complexity of cultural productions denote a 'more advanced' culture. The second criterion is of a certain causal action in that supposed path of cultural evolution. That is, the 'simple' and 'primitive' cultural forms are the cause of the next and immediately higher degree. The 'new' cultural productions of a human group, and their consequent accumulation, produce a sort of qualitative leap towards greater and later degrees of culture. The third classification criterion is the temporal relationship, which places this causality in the framework of successive chronological time. Thus, the 'primitive' human groups would be the antecedent and past of the 'advanced' ones. It in turn implies that all human groups that have 'advanced' features today, at some point were necessarily 'primitive'. In the colonial world of the nineteenth century, authors maintain, "the contemporary 'other', distant in space, represents the footprints of the past in the present (notion of survival). Spatial and cultural distance lively describes temporal distance" (Boivin et al., 1989, p. 29). In other words, these theories make Europeans think that in America —or rather in other colonies— they come face to face with the primitive past of themselves and of humanity.

From these reflections, it is possible to locate three key points in this supposed evolutionary scale. At one extreme, the zero degree would be the origin of humanity, the most primitive, apelike, or animalistic. Somewhere nearer the opposite end of the scale would be the man of today. Between those two points would be located qualified, hierarchical, and ordered all American societies and other colonies. Ancient Greek and Roman cultures are also assigned a place on the scale, at a point well beyond the 'New World' societies. Since this is a teleological approach, the third key point on the scale, the opposite end of zero, represents the ideal of humanity, or ideal model of human fulfillment. Indeed, this way of conceiving the differences between human groups only makes sense when placing a model at the end of that scale, to which the entire scale is

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supposed to tend. That ideal extreme may or may not coincide with the colonizing European man, but what is certain is that European culture is the one that is more advanced in the scale.

This enables to highlight how the selection of whoever or whatever occupies the final position, may modify the interpretation and the sense of the scale. For example, it would not be the same to put a Guaraní of the fifteenth century instead of an Englishman of the nineteenth century as a final-ideal model; the scale would be totally resignified. And the choice of terms is not accidental. We say 'ideal model of human fulfillment' and 'final-ideal' because explanations of this type have marked Aristotelian resonances. 'Fulfillment' goes hand in hand with the idea that each thing has an *ousía* or essential form that must unfold in its entire being. In this case, the essential thing that must unfold to be fully human is culture, and in particular erudite culture. We will return to this issue a little further below.

While this explanatory scheme, to put it in Aristotelian terms, makes the formal cause coincide with the final cause, it is not enough to speak of 'ideal' or 'final' separately, and the expression 'ideal-final' makes sense. In other words, this ideal is conceived as the full or finished expression of human essence (formal cause). But at the same time, making a phylogenetic reading, that ideal is placed as the most evolved version of the species, as the objective to which evolution would tend (final cause). In this way, it would be justified the 'natural disposition' of all human groups to ever be like such ideal, in the evolutionary path of fully displaying or realizing the essential features of humanity.

Then, although the 'primal' or 'primitive' groups have not yet realized or achieved that ideal, i.e., they were not yet fully human, it could be said that they would possess within themselves that ideal of potential humanity. And that formal- final cause is what moves these most 'primitive' groups along the path of becoming that ideal. Just as an oak seed is a potential oak, so a 'primitive' human grouping is a fully human society in potential. At this point it becomes clear how the chain of development is resignified depending on how that final-ideal of humanity is thought of in one way or another, like the Guarani of the fifteenth century or the English of the nineteenth century. Well then, due to historical and power factors —which exceed the scope of this work—, the position of ideal humanity was occupied by the Western European Judeo-Christian culture, of the Industrial Revolutions, the French Revolution, and the Copernican Turn, and within it, by the male, Caucasian and learned human.

But there is still another aspect of this matter which is certainly well known, but sometimes forgotten. It is about a characteristic that

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sneaks into the description of that ideal of humanity along with that of being erudite. To become erudite implies for individuals to reach the legal age. And along with this assessment of illustration and the legal age, an implicit assessment of adulthood is played to the detriment of childhood or infancy. Some of the political consequences of this implicit assessment have not yet been fully worked out. It will take a little detour to address this issue.

A well-known version of what is being discussed here is found in Auguste Comte's work called *Course in positive philosophy*. In such course, Comte resorts to the so-called 'analogy between phylogeny and ontogeny'. In other words, the origin and evolutionary development of the human species (phylogeny) is placed in parallel with the origin and evolutionary development of the individual (ontogeny). Take a single fragment as an example:

> This general revolution of the human spirit can be widely verified, in a sensible but indirect way, when considering the development of individual intelligence. The starting point, being necessarily the same in the education of the individual and of the species, implies that the various main phases of the first must represent the fundamental epochs of the second. Thus, each one of us, when examining his/her own history, does not remember having successively been, with respect to his/her most important notions, a theologian in his/her infancy, a metaphysician in his/her youth, and a physicist in his/her maturity? This verification will be easy for all those spirits who feel in unison with the level of their century (Comte, [1830-42] 2004, p. 24).

According to this, the various phases of the individual's intelligence represent the fundamental epochs of the species, while the human spirit is one in all its manifestations. The evolutionist look that Comte holds believed that there would be a 'childhood' of humanity, a 'youth' and a 'maturity'. Later in the chapter mentioned, the author goes into more detail about all this. A human being is born a baby, knows little, is dependent, has no autonomy or ability to make his/her own decisions. All these attributes are incorporated as he/she grows. He/She incorporates language, the ability to reason correctly, poetic understanding. But being still young, he/she cannot control his passions and he/she is impulsive. Neither he/she can, according to this view, differentiate fantasy from reality, i.e., the mythical or religious explanations from the scientific ones. Being able to differentiate and appreciate the latter is one of the fundamental attributes of the individual's rational maturity. Political participation, the development of science, the cultivation of arts, are other

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attributes typical of adulthood. From this point of view, the origin and evolutionary development of children is to be born to become adults, and in the same way, according to this analogy, humanity as a whole was born to be scientific, republican and mercantilist —just as the most booming European countries are. Following this teleological evolutionary reasoning, adulthood and European culture occupy the same hierarchy, so they are made to coincide and credited with the same attributes. Thus, European, Caucasian, scientific, erudite men are the best and most faithful expression of the ideal of humanity; they are more fully human because they have more fully developed those features thought to be essential to humanity.

At the level of phylogeny, this would be: human groups begin to produce culture 'childishly', to eventually become human groups with 'mature' or 'adult' culture. The side effect of the analogy between ontogeny and phylogeny is that the characteristics of childhood begin to be considered as undesirable because they are associated with 'simple', 'coarse', 'magical', 'barbaric' and 'involuted' forms of culture. And at the same time, the attributes of adulthood come to be valued as an ideal model of humanity, because they are the ones attributed to 'complex', 'fine', 'scientific', 'civilized' and 'evolved' cultures.

To understand the consequences of this analogy, it should not be forgotten another evaluating movement that produces, that is to accompany the 'lack of evolution' with an attribute of inferiority. At this point it is worth returning to the words of the Indian researcher Ashis Nandy (1985), who analyzes the relationships between childhood metaphors and colonial imperialism:

> To the extent adulthood itself is valued as a symbol of completeness and as an end-product of growth or development, childhood is seen as an imperfect transitional state on the way to adulthood, normality, full socialization and humanness. [...] The result is the frequent use of childhood as a design of cultural and political immaturity or, it comes to the same thing, inferiority" (Nandy, 1985, p. 360).

The aforementioned evaluating movement places childhood on a par with the 'primitive' stages of the evolutionary scale. Thus, whether between human groups or between ages, the difference is perceived as inferiority, and as a natural inferiority, while the inequalities between human groups would be a consequence of a 'natural order of things'. In the end, being a child is something as little worthy of esteem as being 'indigenous'.

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Nandy (1985) also refers to the Scottish philosopher James Mill (1773-1836), who was part of the English East India Company, as the best example to show how British imperialist intervention in India is legitimated. A curiosity that Nandy highlights is that, although Mill provides an intellectual framework to indirectly justify and defend British imperialism, he does not do so with a special feeling of xenophobia. Rather, Nandy argues that Mill was positioned in a patriarchal perspective. According to it, just as parents have authority and responsibility in directing the lives of their children, in the same way the 'more mature' societies have authority and responsibility in directing the lives of 'younger' and immature nations. With this, it is not necessary to explain too much the legitimation of the colonial system that this perspective produces. Suffice it to add that the intervention is carried out in the name of humanity, in the name of culture and progress, but not with feelings of hatred or contempt, but with the superiority and benevolence of a father who knows what is best for his son. Of course, nothing else is expected from the child other than to gladly accept the paternalistic gesture.

A little further ahead, Nandy adds a consideration regarding the metaphor of childhood in post-medieval Europe. Nandy (1985) considers that Calvinism and the Protestant spirit also played a very important role in this configuration of childhood. On one hand, they spread the vision of "the adult male as the ultimate in God's creation and as the this-worldly end-state for everyone" (Nandy, 1985, p. 361). This is, as seen before, the evolutionary and teleological view. And, on the other hand, Nandy states, Calvinism and the Protestant spirit consolidated the idea that the physical weakness or fragility of children goes hand in hand with moral and emotional weakness. This again legitimizes imperialist-colonialist intervention, since such significant weaknesses must be 'corrected' and 'straightened out' with the help of 'more mature' people. In the words of Nandy (1985), "without this correction, the child was seen to stand midway between the 'lower' animals and humanity" (Nandy, 1985, p. 361).

Phylogeny and ontogeny in education

Some aspects of the possible relationships between the phylogeny-ontogeny analogy and education have already been studied by important researchers. A brief review will be provided below to bring other elements to the analysis conducted here.

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Following the research conducted some years before by Adriana Puiggrós (1990) and Pablo Pineau (1997)[7], Marcelo Caruso and Inés Dussel (1999) show the great influences that 'normalizing' pedagogues and positivist positions have had on the Argentine educational system. Among the referents of the normalizers, it is worth mentioning Herbert Spencer, who in his *Essays on pedagogy* of 1861 exposed the following pedagogical principles:

> 1) go from the simple to the compound;
> 2) from the undefined to the defined;
> 3) from the concrete to the abstract;
> 4) the education of the child must agree, in its mode and order, with the progress of humanity. The assumption is that ontogenesis (development of an individual) repeats phylogenesis (global development of the species), and that, to advance in the child, science follows the same steps as in social history;
> 5) go from the empirical to the rational;
> 6) stimulate the spontaneous development of the child, saying as little as possible and forcing him/her to find out as much as possible, trusting in the discipline of Nature;
> 7) be guided by the interests and arousals of the child: if a knowledge is pleasant for him, it is the surest indication that we are on the right track. If this does not emerge spontaneously, his/her interest should be promoted, motivating him/her for the experience (Spencer, 1983, in Caruso and Dussel, 1999, p. 153).

In point 4 there are some first consequences of the phylogeny-ontogeny analogy in schooling, since it exposes very clearly how should it be the ordering principle of education. Juxtaposed to point 6, it is worth asking ourselves what is intended to be called as "spontaneous" in this context, since the development of childhood would be tied to universal laws of history and nature. Then, what is really what would be left to spontaneous decisions? Point 7 indirectly tells the reader that, if a child does not like knowledge on its own and 'spontaneously', if it encounters difficulties or fells repudiation, then it is a more than sure indication that we are going the wrong way and, consequently, the teacher must encourage and motivate the child to be interested. And not only that he/she should encourage and motivate the child to be interested, but he/she should encourage him to experiment empirically and by himself/herself. It is believed that contact with the world and with nature will lead the child along the path of the evolution of the spirit, 'spontaneously'. This implies that there would be things that would interest the child 'naturally',

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and if any individual did not find this 'spontaneous' interest in himself, then such individual would be in disarray with nature and his/her deviation would admit the application of correctives. Raised in this way, it seems that spontaneity is limited to following and assuming as its own —or on the contrary not doing so— the path of the spirit and of science, the path of the maturity of humanity that are represented by the teacher and the curriculum in the classroom.

It is also interesting to highlight another issue. In the quoted passage, Spencer openly points out that the assumption he works with is "that ontogenesis repeats phylogenesis" (point 4). However, it may be found that there is a prior assumption operating behind that statement. That assumption is the path of progress mentioned earlier in this paper. In other words, to sustain that assumption, it is necessary to assume beforehand that a certain causality links different human stages, so that the consequent states are 'overcomer' of the antecedent states and therefore 'better'. This assumption of causality is essential to explain why those who are in consequent states would be authorized to guide, evaluate and normalize those who are in antecedent states. This explanation, placed in the chronological framework of human existence, leads to the conclusion that Nandy (1985) invites to think about: that, without adult and erudite intervention, children would stay halfway between animality and humanity.

Among the normalizing pedagogues, Caruso and Dussel also highlight Rodolfo Senet (in Caruso & Dussel, 1999), who knew how to introduce some variations on the global classroom method:

> [...] a very strong emphasis appeared on the need to adapt pedagogy to the psychology of the learner, not only in terms of his/her interest, as Herbart said, but of more sophisticated measurements about what is the attention threshold of a child (20 minutes, between 7 and 10 years old, and 25 minutes, between 10 and 14 years old, Senet said), what memories can be exercised, what images should be stimulated (p. 151).

This clarification by the authors is interesting because it highlights how scientific resources —the aforementioned 'more sophisticated measurements'— come to collaborate in the construction of a body of knowledge about children, which exists a priori of any contact that a teacher might have. Psychology is focused from the positivist spirit with the same imprint that we saw in Spencer, i.e., with the idea that universal laws govern the 'correct' order of interests and learning. Psychology overlaps pedagogy to such an extent that Senet indicates to order and

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organize school contents and activities according to the attention threshold corresponding to each age, assuming that these thresholds express the natural evolution of the spirit if they have been measured with sophisticated scientific tools. Consequently, school logic is made with a whole body of knowledge about children, validated and guaranteed by their scientific imprint, even before any flesh and blood subject enters their premises. Before meeting any group of children, the teacher thus trained already knows what to expect from them, what and how much they can learn and at what speed.

This a priori knowledge ends up functioning as epistemological obstacles in the teaching view. As stated by Bachelard ([1948] 2013), "it is to fall into a vain optimism when someone thinks that *knowledge* automatically serves to know" (p. 17). In other words, that knowledge that seems immediate and spontaneous, on some occasions may hide more than illuminate. It appears accurate in itself due to the ease with which it emerges before our senses or our consciences but hides the fact that it was once the hypothesis to solve a problem, the answer to a question. At the moment that such question-knowledge relationship blurs, is scattered, it dissolves into 'obvious' statements and the problem that initially gave it meaning is lost, then that knowledge begins to function more as an obstacle than as an incentive for future research. It is that "between observation and experimentation there is no continuity, but rupture" (Bachelard, [1948] 2013, p. 22). And in the place of that discontinuity is where the obstacles are installed, which can be both knowledge of science and knowledge of everyday life, generating an apparent sense of continuity.

When Bachelard ([1948] 2013) speaks about the pedagogical obstacle as a type of epistemological obstacle, he analyzes the case of science teaching. And he affirms that one of the main errors on the part of science teachers is to believe, when designing their classes, that the work starts 'from scratch', that is, with students who do not have any knowledge about what is going to be taught. like *tabula rasas*. But this is not the case, students have knowledge based on everyday life and oral transmissions, and science teaching encounters similar difficulties every time. Bachelard ([1948] 2013) explains it as follows:

They have not reflected on the fact that the adolescent arrives at the Physics course with empirical knowledge already established; it is not about, then, acquiring an experimental culture, but changing an experimental culture, of breaking down the obstacles piled up by everyday life (p. 20).

This makes it necessary to think about teacher training, where teaching can too easily focus on solving the vicissitudes of practical work

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to the detriment of the analysis of the assumptions that each teacher assumes to face their task. Focusing only on developing the planned activities and fulfilling the curricular contents, postponing again and again the questions about all those ideas that are the basis for pedagogical decisions in the classroom, it carries the risk of believing that some things are being transformed, which are really being surreptitiously affirmed and reified being the supposed sustainers.

It can be affirmed that something very similar to what Bachelard describes happens at the moment when a young adult is being prepared to be a teacher. It is forgotten that these young people already have some ideas about education, elaborated from their extracurricular experiences, but also —and very especially— from their school experiences as primary and secondary students. Starting from the consideration that the evolutionary and positivist anthropological and epistemological assumptions, addressed above, are part not only of the foundations that structure the school division into years, levels and cycles, but are also part of popular knowledge and opinions about education, it should be taken into account that this is the starting point for teacher training and not a kind of inaugural ignorance. The idea of 'training adults' —an idea that inspires the title of this work— is strongly impregnated by the revised theories and ideas. And since "in the face of the mystery of the real, the soul cannot, by decree, become naïve" (Bachelard, [1948] 2013, p. 16), it is necessary to begin the work knocking down, or at least questioning, the obstacles acquired by students in previous years. It is necessary that future teachers at least know that these ideas are conditioning the view, so that they can acquire 'the sense of the problem' to which Bachelard refers.

Conclusions

It might seem that the argument elaborated here intends to delegitimize or tear down the educational structure as it is today, but that is not the intention. The many questionings that are made to the way in which the school teaches today are well known; and yet, despite everything, it continues functioning. The school institution lasts through time and is maintained, fueled by social hopes and even being affected by academic, union and financing problems —because there is something that it can still do. It is necessary to insist that the aim here is not to discredit current schooling nor to knock it down with a radical critic. Rather, it seeks to point out some issues that block a deeper reflection about what is unders-

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tood by education and about the conditions of existence of the school institution. Through a slightly broader examination of school logic, it has been sought here to contribute to identify some of the deep assumptions that constitute it.

Evolutionary theory grew out from the study of nature, providing a fruitful framework for explaining changes in species and their variety. And at the same time, it engendered concepts perceived as natural, objectives and independent of the subjectivities of those who investigated precisely because they originated in the study of nature. When the logic or rationality of this theory was extrapolated to the social and cultural fields, it produced important consequences. In particular, it was key in the formation of one of the epistemic metaphors that conditions the contemporary view of childhood, the phylogeny-ontogeny metaphor. In its historical origins, it emerged to give meaning to the cultural differences that America posed to Europe, linking cultural changes with the changes that any living being experiences when growing up. According to this metaphor or analogy, what happens inevitably for a puppy (growing up to become an adult), would inevitably happen for culture as well. This supposes that in some way the adult-being is already contained in the cub-being, at least in a latent form as a final cause. In the case of physiological development, it is difficult to discuss and/or refute growth development, but in the case of cultures there are many questions that emerge from this perspective. Is there something equivalent to adult-being in cultures? If so, what would guarantee that such adult-being adopts a single characterization, unequivocal and universal, as an expression of an essence?

In animal physiology, humans cannot voluntarily choose or decide which adult-being occupies the end of a growth process. In other words, the specific mechanisms by which a tadpole turns into a frog, a chick into an eagle, or a human baby into an adult human are—at least for now—neither under human control nor under human power. However, although the physiological source of the metaphor does not support it, in cultural terms the researchers made a contrived decision when conceiving who or what was placed at each end of the puppy-adult development chain. It was such an action that later gave meaning and legitimacy to the power relations that were being built. The consequence of all this was that cultural differences were invested with a strong moral and political value, which not only had consequences in the theoretical field, but also in economic and commercial, social, and even educational decisions. Placed in the chronological framework of human existence, it leads to the conclusion that Nandy (1985) invites to think about, which is that, without

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adult and erudite intervention, childhood would remain halfway between animality and humanity. The greatest problem with this perspective is that it takes off political subjectivity from anyone who is either not in school or is underage. Perhaps more than taking off political subjectivity, it enables only one possible.

The being-citizen is considered one of the attributes of the complete adult, so it could not be said about children —or those who do not attend school— that they are citizens, and it is worth thinking about what are the consequences produced by this situation. The question at stake is what place children have in the *polis*. If it is not desired to assign childhood a mere passive place of gladly accepting paternalistic gestures, the alternative that first comes up is that children make their own decisions. But it does not seem that this is a real or valid alternative, since, in general, as Dussel and Quevedo (2010) state, given the withdrawal of nearby adult figures, whoever occupies the place of reference is not a supposed 'pure nature of children', but the reason of the market, the logic of consumption, the marketing and the cultural industries through screens and electronic devices. And then, children are considered 'immature' to discuss certain topics, to think, ask questions and have ideas about certain issues, but they are carelessly exposed to stimuli of high political and symbolic significance (such as commercial advertisements, moral judgments of the great audiovisual production companies for children subtly mixed in colorful and cheerful stories, or the historical-cultural insights mixed in video games[8], to name just a few). Ultimately, the question about the political place of childhood is a question about identity, about the degree of involvement that children can have in the cultural game of their own culture.

From another point of view, it can be said that the phylogeny-ontogeny metaphor functions by giving a retroactive sense to training/education. Considering the current state of human societies and what is the 'most evolved state' that they should achieve, it would be possible to know with a simple and quick review what things each one needs to change, add, or remove for not blocking 'the natural development'. The same is raised in relation to morality; it is intended to find the causes of adult discomfort in the training received as children, and how the connection between these states is conceived in a linear manner, the development of the childhood begins to be an explanatory factor of the present. First, this explanation is elaborated from the present to the past, arguing that today's adults are such and such because as children they were such and such, and then the direction of the discourse is reversed from the

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past to the present, considering that if we get children to be in a certain way then we will get or it will result in adults that way. Thus, childhood becomes almost the only target of moral social policies and judgments.

Precisely what was sought to be done here is to question all that is believed to be known with certainty about children, all that knowledge that is presented as immediate and that does not enable other questions to be asked and other necessary debates to be thought of today. The problem with this a priori knowledge is that it is so naturalized, so incorporated into the supposedly intuitive knowledge of a teacher, that it is forgotten that they are cultural, historical, theoretical, political, situated and complex constructions, but constructions at last. It is worth saying that they are not a problem in themselves and by themselves, and it would even be worth the audacity to say that these types of statements are inevitable in the political-social life of institutions, which are constituted based on various assumptions without which they could not exist. But pedagogically and philosophically, it is pertinent to take the time to put them into perspective and think about and analyze the symbolic game they produce, what they enable to name and what remains hidden. It is not relevant, but also necessary. Because when this knowledge takes on the character of epistemological obstacles, it has the effect of blocking certain questions about schooling and childhood, about 'erudite' and adulthood, and therefore about limiting any ability to really think about other alternatives, pedagogical or institutional, to the problems that current schooling carries.

At the time in which the making of these positions is no longer perceived as making, the complex web of senses, practices and meanings that sustain the state of things stays involved and forgotten. In this sense, Collado Ruano (2017) states:

> The repercussion of the formal education system cannot be considered neutral, since all these elements of power and knowledge harbor the capacity to epistemically colonize individuals in order to sustain the purposes of economic fundamentalism [...] (p. 77).

Following Palma (2014), it should be highlighted that while literary metaphors do not completely lose their expressive sense over time, epistemic metaphors are successful and are installed in a given context, at a given time. Therefore, due to the objections that have been raised so far, it can be said that the time has come to review and rethink this evolutionary metaphor, not so much to make it work in a renewed context, but to seek new ways of thinking about the relationships with childhood,

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growth and education. Dismantling the metaphor and all its implications requires a long and arduous task. A task that certainly does not end here, but which, hopefully, will be enriched by this work.

Notes

1 We say 'scientific activity itself' in reference to the specific technical activities of research in science, since this same exposition accompanies the question of Palma, and other researchers along the same line, about whether we can really say that there is something 'scientific' ' that does not appeal to extra-technical explanations, or if science would exist without the use of literary and imaginative resources.
2 It received this name precisely because of the similarities that European eyes found with the Greek legend of the Amazon female warriors.
3 See Todorov (2007); also, Puiggrós (2003).
4 See 'Positivism or the principle of the Baron Von Münchhausen' in Löwy (1986). And also 'Saint Simon and the administration of the industrialists' in Cappelletti (1968).
5 In the debates prior to the May Revolution, and even afterwards, we may find references to these discussions. The writings by J. B. Alberdi and D. F. Sarmiento are two clear examples.
6 For a brief review of this difference, see Palma (2014, pp. 113-115). There the author stops to point out the differences between the principles followed by H. Spencer and those followed by C. Darwin.
7 Caruso and Dussel refer to: Puiggrós (1990), and Pineau (1997).
8 The references are essays such as Dorfman and Mattelart (1972), or videogames such as Counter Strike or Medal of Honor, to cite two examples.

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