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Contributions of post-qualitative research to the field of environmental education studies

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Abstract

This theoretical essay aims to analyze the theoretical-methodological proximity of post-qualitative research and environmental education research. Eighteen articles based on post-qualitative research were analyzed, selected from three sources: 1) The ERIC database - Education Resources Information Center, 2) a special edition of the *International Journal of Qualitative Studies in Education* and 3-) references to texts found in those articles. Based on the analysis of those studies, seven aspects, considered parallel to the reflections and concerns in the environmental education research field, were identified: materialization of the discourse, the ontological turn, overcoming of the subject-object dichotomy, ideological postures in research, flat ontology, representation of collected and analyzed data, and theoretical-methodological reflections and innovations. The article concludes that, depending on the research question, there are possibilities for the appropriation of post-qualitative research in the field of environmental education.

Keywords: Post-critical. New materialism. Post-human. Ecological epistemologies.

1

Contribuições da pesquisa pós-qualitativa para o campo de estudo da educação ambiental

Resumo

O manuscrito apresenta um ensaio teórico que objetiva analisar aproximações teórico-metodológicas entre a investigação pós-qualitativa e a educação ambiental. Foram analisados 18 artigos que tomam por base a investigação pós-qualitativa, os quais foram selecionados em três fontes: 1-) base de dados *ERIC* – *Education Resources Information Center*, 2-) special edition do periódico *International Journal of Qualitative Studies in Education* e 3-) referências de textos encontrados nesses artigos. A partir da análise desses estudos, identificaram-se sete aspectos que se configuram como paralelos às reflexões e preocupações no campo de pesquisa da educação ambiental, sendo eles: materialização do discurso, virada ontológica, superação da dicotomia sujeito~objeto, postura ideológica na pesquisa, ontologia plana, representação dos dados coletados e analisados e reflexões e inovações teórico-metodológicas. O manuscrito conclui que, dependendo da questão de pesquisa, há possibilidades de apropriação da pesquisa pós-qualitativa no campo da educação ambiental.

Palavras-chave: Pós-crítico. Novo materialismo. Pós-humano. Epistemologias ecológicas.



Contribuciones de la investigación post-cualitativa al campo de estudio de la educación ambiental

Resumen

El manuscrito presenta un ensayo teórico que objetiva investigar aproximaciones teórico-metodológicas entre la investigación post-cualitativa y la educación ambiental. Se analizaron 18 artículos que se basan en la investigación post-cualitativa, que fueron seleccionados entre fuentes: 1-) base de datos ERIC – *Education Resources Information Center*, 2-) edición especial del periódico *International Journal of Qualitative Studies in Education* 3-) referencias de textos encontrados en esos artículos. A partir del análisis de estos estudios, se identificaron siete aspectos que se configuran como paralelos a las reflexiones y preocupaciones en el campo de investigación de la educación ambiental, siendo ellos: materialización del discurso, vuelta ontológica, superación de la dicotomía sujeto, objeto ideológico en la investigación, ontología plana, representación de los datos recolectados y analizados y reflexiones e innovaciones teórico-metodológicas. El manuscrito concluye que, dependiendo de la cuestión de investigación, hay posibilidades de apropiación de la investigación post-cualitativa en el campo de la educación ambiental.

Palabras clave: Post-crítico. Nuevo materialismo. Post-humano. Epistemologías ecológicas.

2

Contextualization

In his book 'A nova ordem ecológica' (The New Ecological Order), Luc Ferry (2009) retells 16th century stories of courts in which humans and non-humans have equal rights, from the legal point of view, to make their claims before a judge, as the following excerpt exemplifies:

In 1545 an identical action had been moved against the same beetles (or at least against their ancestors). The case's outcome was a victory for the insects, defended, it is true by a lawyer who was chosen for them, as the legal process required, by the episcopal judge himself. The latter, using as an argument the fact that the animals created by God had the same right as humans to feed on plants, refused to excommunicate the beetles (FERRY, 2009, p. 10, our translation).

Living alongside the more-than-human world has always been a part of our civilization. From the art of rock paintings to the present day we could say that what makes us humans are the non-humans, just as the visible makes the invisible (MERLEAU-PONTY, 1984). An international conference entitled 'The



Human-Animal Line Interdisciplinary Approaches'¹ held in Prague in the Czech Republic in February 2017, brought together researchers with different lines of work within the sphere of that topic. In all of the presentations the question of our somaesthetic² relationship with the more-than-human world was mentioned as being present in painting, in literature, in the media and in various physical spaces (zoos, aquaria, schools) and historical contexts.

So we could say that the presence of the non-humans making us humans is something that has increasingly come under discussion in the national and international literature. Related to those discussions, there is the Anthropocene and it, according to Padua (2016), has two dimensions: one restricted and one much broader. The more restricted dimension refers to the passage from the Holocene geological epoch to the Anthropocene epoch, albeit the latter has yet to be accepted by the international geological associations. The broader dimension accompanies a historical panorama of cultural, economic, political, social and environmental changes.

To gain an understanding of the complex set of environmental problems in the Anthropocene, it is worthwhile reflecting on how the relation of domination affects the human world and the more-than-human world. Anthropologists such as Abram (1996) and Ingold (2000) consider that this relationship started when we became sedentary beings. In a similar vein, Rousseau (2008) states that the appropriation/domination of space by a society began when the first fence was erected on a piece of land. That anthropocentric view has been questioned by what Steil and Carvalho (2014) call ecological epistemologies, a concept that stems from the emerging movements that problematize the human perspective as central, unique and hegemonic. Those ecological epistemologies (FOX; ALLDRED, 2018), are consistent with a flat monist ontology that rejects not only [the existence] of any differences between nature and culture, humans and non-humans but also, and perhaps more significantly, among mind, body and material.

One of those ecological epistemologies is the new materialism (COOLE; FROST, 2010) which, in the human and social sciences, has become a line of philosophical thinking that denotes a series of perspectives with the common trait of a 'shift to the material', that is, to the materiality of the world of social and natural things as opposed to the focus on human agency that marks the modern school of thought and the discourse of post-structuralism (FOX; ALLDRED, 2018). In the new materialism, that materiality encompasses the human body,



the natural and built environments, other organisms, material things, abiotic factors, space, time, places, and abstract concepts such as imagination, memory, affectivity, and feelings. In that sense, all materials have the potential or the agency to affect and can, in turn, be affected. That conception removes the privilege of centrality from human agency. In alignment with that new materialism there is post-humanism (BRAIDOTTI, 2013), a philosophical tendency that has been gaining ground in academia. Contemporary philosopher Rosi Braidotti identifies herself as a critical post-humanist. She argues that humanism is not fundamentally flawed but is merely worn out, given that "[...] humanism's restricted notion of what counts as the human is one of the keys to understand how we got to a post-human turn at all" (BRAIDOTTI, 2013, p. 16). She identifies contemporary environmentalism as a valuable source of a reconfiguration of the post-human subject insofar as it reinstates humanity in nature, seeing that one of the objectives of critical post-humanism is to foster a completely new comprehension of a subject inherently incorporated within a planet.

4 A book that Marc Bekoff (2013) organized entitled 'Ignoring Nature no more' brings together texts from a field of notable thinkers that discuss humanity's distancing of itself from nature. The chapters depart from different areas of knowledge to ponder on the relations between the human dimension and the more-than-human world thereby contributing to the confrontation of the society-environment duality insofar as they invite/instigate us to re-think who we are and the complexity of nature as a whole.

Washington, Taylor, Kopnina, Cryer and Piccolo (2017) state that certain global documents and events in the environmental sphere reinforce anthropocentrism. According to those authors, the 1972 Stockholm Conference Declaration, the Our Common Future report of 1987, the Rio + 20 in 2012 and others made the mistake of endorsing the intrinsic value of nature. To those authors such documents, including academic research, government regulations and proposals of the 'educating for sustainable development' type made by the United Nations Organization (UNO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) prioritize future human generations and human rights, failing to consider any perspective in which nature too would have rights. Lastly, the abovementioned researchers insist that eco-centrism is the fundamental pathway (if not the only one) to real sustainability.

On the other hand there are documents such as the Treaty on Environmental Education for Sustainable Societies and Global Responsibility,



elaborated during the Eco-92, which establishes 16 principles with the 16th one being “education must help develop an ethical awareness of all forms of life with which humans share this planet, respect all life cycles and impose limits on humans’ exploitation of other forms of life” (RIO DE JANEIRO, 1992, s.p.).

Another document that also began to be elaborated during the Eco-92 was The Earth Charter which was only actually published in 1999. In a fashion analogous to the Human Rights declaration it set out that vision in the first of its statements of principles:

- a. Recognize that all beings are interdependent, and every form of life has value regardless of its worth to human beings.
 - b. Affirm faith in the inherent dignity of all human beings and in the intellectual, artistic, ethical, and spiritual potential of humanity.
- (BOSELMAN; ENGEL, 2010, s.p.).

In environmental education research, some authors have indeed been emphatically calling attention to the human~more-than-human relationship (BARRET, 2011; FLOWERS; LIPSETT, BARRET, 2014; IARED; OLIVEIRA; PAYNE, 2016). As an example, in his investigation Russel (2016) states that experiences of the death of pets in the household environment are important for ecological learning. Other research has identified the social, health and educational benefits to children that stem from having pets in the home and how they may be associated to the child’s acquiring more ethical attitudes towards other animals such as wild animals and animals that are not charismatic (MYERS, 2007; PROKOP; TUNNICLIFFE, 2009).

Considering that such a posture is assumed in environmental education, the question that faces us is: how can methodologies consistent with an ecocentric philosophical approach be legitimated? What are the possibilities/techniques/pathways for problematizing the representation of people’s emotions and feelings and their relations with the more-than-human world? Would it be possible to insert the perspective of the more-than-human world into research? If so, what are the possibilities/techniques/pathways for achieving that proposal?

Insofar as it assumes the new materialism, post-humanism and flat or monist ontology, traditional qualitative research comes under questioning because it favors methods and data-collecting focused on human voices and actions (FOX; ALLDRED, 2018). Lather and St. Pierre (2013) are among the pioneering authors in what has been deemed the post-qualitative perspective:

If we cease to privilege knowing over being; if we refuse positivist and phenomenological assumptions about the nature of lived experience and the world; if we give up representational and binary logics; if we see language, the human, and the material not as separate entities mixed together but as completely imbricated “on the surface” – if we do all that and the “more” it will open up – will qualitative inquiry as we know it be possible? Perhaps not (LATHER, St. PIERRE, 2013, p. 629-630).

That is the context in which post-qualitative research (LATHER; St. PIERRE, 2013) emerges given that scholars argue in favor of the revitalization of qualitative investigation within the various ‘post’ movements (FOX; ALLDRED, 2018; LATHER; St. PIERRE, 2013) or the ecological epistemologies (STEIL; CARVALHO, 2014). A special edition of the *International Journal of Qualitative Studies in Education* was entirely dedicated to presenting and debating post-qualitative research. In the introduction to that special edition, Lather and St. Pierre (2013) were emphatic in acknowledging how many challenges that kind of approach still had to face because tradition is deeply rooted in our own mind-body-material.

6 With the intention of understanding and enhancing the profundity of that post-qualitative research approach this study set out to conduct a bibliographic survey on this theme and identify possible contributions to the field of research into environmental education that base themselves on a less anthropocentric perspective. It did so in the belief that an analysis of publications in this field of study will facilitate an understanding of the abovementioned perspectives and their incorporation as theoretical-methodological references in environmental education.

Methodological procedures

The database of the Education Resources Information Center (ERIC) was chosen for survey purposes because it is considered to be one of the most popular and most frequently accessed by scholars researching education. It is possible to access innumerable periodicals, documents, conference annals and other materials on the ERIC database which has configured itself as a reliable resource, indispensable for educational literature research and especially for bibliographic reviews in this particular scientific field.



The survey for this study took place in February 2018 and made use of the search phrase “post-qualitative research” which was required to be identified in the title, abstract or key words of the respective works. The inverted commas were included to make sure the selected materials contained the specific term, and the further option “Peer reviewed only” was used as a filter to ensure that only materials that had undergone a rigorous evaluation would be selected. The search was narrowed down even further by filtering the selections for those accompanied by the phrase “Full text available on ERIC” so that the selected texts could be integrally studied and analyzed. With that system of filtration, 17 articles were found but only four of them were actually classifiable as post-qualitative research.

In addition to the ERIC database, articles published in 2013 in the special edition of the International Journal of Qualitative Studies in Education dedicated to Post-qualitative research and other texts found in the references of those articles were obtained. Altogether 18 texts were compiled for the purposes of this study. Chart 1 presents all the texts obtained, their citation, titles and how they were accessed (ERIC database, journal special edition or references in other texts).

Chart 1 – Texts analyzed

Citation	Title	Place of access
BOULTON-FUNKE (2014)	Narrative Form and Yam Lau's Room	ERIC
DAVIES; SCHAUWER; CLAES; MUNCK; PUTTE and VERSTICHELE (2013)	Recognition and difference: a collective biography	special edition
GILDERSLEEVE (2017)	Making and becoming in the undocumented student policy regime	ERIC
GREENE (2013)	On rhizomes, lines of flight, mangles, and other assemblages	special edition
LATHER (2013)	Methodology-21: what do we do in the afterward?	special edition
LATHER (2014)	To Give Good Science	ERIC
LATHER and ST. PIERRE (2013)	Post-qualitative research	special edition
MacLURE (2013)	Researching without representation? Language and materiality in post-qualitative methodology	special edition
MARTIN, KAMBERELIS (2013)	Mapping not tracing: qualitative educational research with political teeth	special edition
MAZZEI (2013)	A voice without organs: interviewing in post-humanist research	special edition



Chart 1 – Texts analyzed (Continuation)

Citation	Title	Place of access
PEDERSEN (2013)	Follow the Judas sheep: materializing post-qualitative methodology in zoo-ethnographic space	special edition
ROSIEK (2013)	Pragmatism and post-qualitative futures	special edition
ST. PIERRE (2013)	The posts continue: becoming	special edition
ST. PIERRE (2014)	A Brief and Personal History of Post Qualitative Research: Toward "Post Inquiry"	references in other texts
ST. PIERRE (2011)	Post qualitative research: The critique and the coming after	references in other texts
ST. PIERRE (2017)	Writing Post Qualitative Inquiry	references in other texts
TAGUCHI (2013)	Images of thinking in feminist materialisms: ontological divergences and the production of researcher subjectivities	special edition
TAKAYAMA; AMAZAN; JONES (2017)	Thinking with/through the contradictions of social justice in teacher education	ERIC

The analysis of the articles centered on their theoretical viewpoint and their methodology (data collection and data analysis). Based on that, seven aspects were selected and discussed that could possibly make contributions to the field of environmental education research, namely: materialization of the discourse, ontological turn, overcoming the subject-object dichotomy, ideological postures in research, flat ontology, representation of collected and analyzed data, and theoretical-methodological reflections and innovations.

Those seven aspects are not independent of one another and so the decision was made not to dismember the topics into sub-topics. As the reader will see one topic leads into another so that all of them are sewn together. In the course of presenting the selected aspects, a dialogue is maintained between the articles presented in Chart 1 and environmental education studies in order to trace a parallel and reinforce the argument of a possible contribution to environmental education on the part of post-qualitative investigation.

Intersections and connections

There was no publication found of any investigation specifically addressing environmental education based on post-qualitative methodology. However there are important, valid questionings and propositions for the field of environmental education research to be found. Under this section heading those seven approaches, highlighted in *italics*, will be addressed in order to delineate methodological possibilities for environmental education.

10 An initial, superficial analysis reveals not only the small number of articles but the current situation of this perspective in the area of education. The oldest study found in this survey (St. PIERRE, 2011) and the most recent one (St. PIERRE, 2017) were both written by researcher Elizabeth Adams St. Pierre who coined the term 'post-qualitative research' herself and has been dedicating her efforts to its construction. In both articles the author recapitulates the history of the qualitative method and situates the various 'post' movements then goes on to oppose conventional, humanist, qualitative research methodologies. In her view, qualitative research first emerged as an endeavor to oppose traditional scientific methods but its quest for methodological rigor rendered it Cartesian and positivist and that is due to the fact that knowledge continues to be at the center and in the vanguard of the human and social sciences and the fact that their ontology has remained intact (St. PIERRE, 2013; 2014).

All the texts emphatically characterize post-qualitative research as being a rupture with, or a deconstruction of traditional scientificity. In that sense, Lather (2014), in her theoretical essay, states that in post-qualitative research the functioning of the discourse is not the focus of analysis as it is in the post-modern paradigm. That authoress considers that the focus, instead, is on studying the *materialization of the discourse*. For environmental education, that



kind of analysis could be suitable not only for investigating as to how subjectivity materializes in the ethical or political stances of a group of people but also for gaining an understanding of the emergence of: myths and slogans (DEBONI, 2006; BLAUTH; LEME; SUDAN, 2006), media discourses (HENNING; GARRE; HENNING, 2010) or public policies (McKENZIE, 2017).

Following the same line of argument, Gildesleeve (2017) states that there has been a change of perspective from the epistemological to the ontological, an *ontological turn*. According to that author, the ontological [turn] requires the acknowledgement of the engagement of things by means of discourse and their affective consequences while post-qualitative research focuses on the materialization or reification of the postures of the subject who/that commands whatever practice is transformed in the discourse. In other words, the subjectivities may materialize through discourses which, in the case of the article in question, constitute the policy regime of undocumented students in higher education in the United States.

A practical example of how this type of research could be constituted was given by Pederson (2013) in Sweden when she developed an ethnographic narrative of a technical visit made with veterinary medicine undergraduates to a farm where there were sheep, birds, cattle and pigs. The visit included theoretical lectures on the techniques for raising, transporting and slaughtering specific species. The author analyzes how the experience and the discourse in the abattoirs materialize in the form of an epistemology of violence, that is, the violence becomes incorporated to everyday life by means of a subtle orchestration of various materialities that affect and are affected in those spaces. The interweaving of human~non-human threads in that kind of study raises questions about post-qualitative investigation, ontological and epistemological conceptions in research and the orientations for bio-policy and bioethics.

There are indeed some authors in the field of environmental education who have been calling attention to the *ontological turn* and the post-critical paradigm in research (HART, 2005; 2013; PAYNE, 2016, for example.). The emergence of those ecological epistemologies (STEIL; CARVALHO, 2014) and of the *turn* movements – the corporeal turn (SHEETS-JOHNSTONE, 1999) and the affective turn (CLOUGH; HALLEY, 2007) – propitiated the surfacing of less anthropocentric philosophical thinking and consequently led to a revision of concepts, investigative processes, methodologies and analytical operations that differ from and expand the traditional theories and the critical theories that preceded them.

In their study, Takayama, Amazan and Jones (2017) aimed to achieve a self-reflection by means of an experience narrated on the basis of the researchers' actual immersions/ experience in a bid to overcome the *subject~object dichotomy*. In consonance with that example of questioning the researcher~researched experience, Boulton-Funke (2014) opposes the idea of representativeness when she argues that the encounter is a dynamic experience and not a linear one and she focusses on the duration rather than on the moment. In the duration there is a process of destruction of the conception of the 'I' as a fixed, cognitive object because the encounter of persons~beings~thing s~thoughts~experiences provokes a rupture with the perceptions. Research and pedagogy should provoke an affective shock in the thinking in order to interrupt rather than repeat those perceptions.

The proposal that the affective shock is potentially capable of propitiating new sensitivities fits in well with what Payne (2014) and Rodrigues (2015) propose as phenomenological deconstruction and reconstruction in environmental education; that is to say, an experience lived in an uneasy situation and, at the same time, a reflection on socially naturalized elements. Those authors state that such experiences create possibilities for revising aesthetic and ethical stances and overcoming dualities such as the nature~culture, society~environment and human~non-human dualities. Indeed, St. Pierre (2011) bases herself on the deconstruction that Derrida proposed and declares that she has broken off with the proposal of linear phenomena and that she decenters binary oppositions like subject~object, identity~difference and others.

In his theoretical essay, Rosiek (2013, p. 694) calls attention to a collapse of the "[...] subject~object and knowledge~value distinctions into a single, albeit complex, ontological category of experience". He suggests that research reports should begin with a description of whatever it was that motivated the investigation and of the decisions made by the researcher when formulating the research question. That presentation made by the investigation's author is recurrent in environmental education theses and dissertations given the fact that we are environmentalists and activists who defend a struggle that is ideological and the question of research and the choice of theoretical-methodological references in environmental education studies springs from our ideological postures in research or as Paynes (2014) puts it, our *aesthetic~ethical~political stance*. Parallel to that, Rosiek (2013) also insists that our experiences of life will also have implications for the methodological choices made in post-qualitative



research. That leads us to the fifth of the seven aspects identified, namely *flat ontology* or the entanglement of researcher~research context.

Among the causes for uneasiness of the authors whose works were read in this study are the data collection techniques such as interviewing, observation, transcription and categorization. In the post-humanist position the 'collected data' are not direct or linear representations of the respective reality given that there are forces imbricated with the search engines such as who the participants are, for example, the criteria for selecting them, the data collection location and technique, the identity of the researcher or researchers, the voices that are represented and the research questions.

If the interview is also to be thought as an assemblage, there can no longer be a division between a field of reality (what we ask, what our participants tell us, and the places we inhabit), a field of representation (research narratives constructed after the interview), and a field of subjectivity (participants and researchers). Instead, these are to be thought as acting on one another simultaneously (MAZZEI, 2013, p. 735).

MacLure (2013) declares that data cannot be treated as if they were inert, merely awaiting an analytical treatment. In her opinion, the data also become intelligible to us when something in them appears to be interesting for us to analyze: part of a transcription, a particular event, an unusual observation. In her study, MacLure (2013) defends her argument using the example of fragments of the meetings of a team of four researchers that were analyzing the video recordings and field notes of a research project. Her study is centered on an analysis of the researchers' responses and affective intensities (joy, euphoria, speed of conversation, a gleam in the eye) that accompany the encounter with the data which generate sensations and resonate in each researcher's mind~body. When the author defends the non-distancing among researcher and researcher context and collection and analysis, she is showing that the data invite us to be analyzed ourselves.

In that sense, conventional processes involving the analysis of parts of interview transcriptions or diaries of field notes or direct observations and their respective categorizations are all suspended in post-qualitative investigation (LATHER, 2013; MAZZEI, 2013; St. PIERRE, 2011; TAGUCHI, 2013). By assuming that there is no dissociation between subject~object and researcher~research

context, Lather and St. Pierre (2013) are querying how we determine our study object, disconnecting ourselves from the *assemblage* as if we were able to separate ourselves just long enough for us to study it. Many of the texts analyzed in this article argue in favor of an analysis process linked to the data collection which in turn arises from a research question that makes us uneasy precisely because we ourselves are immersed in the *assemblage*. In the view of Taguchi (2013), that is the *meaning making*³ of the research process already addressed by Maclure (2013) in her study.

Particularly in Brazil, action-research or participatory and critical communicative methodology have been appropriated in the field of environmental education with some important intersections with the aforementioned proposal for dissolving the subject~object separation (CARVALHO; GRÜN; AVANZI, 2012; TOZONI-REIS, 2008; VALENTI; OLIVEIRA; LOGAREZZI, 2015, for example). Those investigations also stem from a social and cultural context of ideological struggle on the part of the researcher and the research participants or collaborators who engage in various stages of the study. Critical communicative methodology prescribes a rigorous collaborative analysis of the data in which all those involved effectively contribute to the categorization process.

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The *assemblage* concept is a crucial point in post-qualitative research. According to Greene (2013), in that epistemological and ontological orientation, the world we live in does not exclusively establish itself in social or human terms in which language is fundamental to the process of elaborating meanings and understandings. Other forms of human~non-human interaction such as thoughts, feelings, emotions, discourse and non-human materialities are participants in this and therefore are defined as *assemblage* in post-qualitative writing and considered to be just as important as language. In a *flat ontology* there is no privileged position for either language or the human being and the latter includes the researcher or the 'I' of the more conventional qualitative research, insofar as the 'I' is merely part of the *assemblage*.

In alignment with that concern, Davies; Schauwer; Claes; Munck; Putte and Verstichele (2013) describe collective biography not as a method to be followed, but rather as an alternative, so that perceptions, histories and memories can be recalled and accessed by means of intra-active encounters⁴ between humans~more-than-human world. In their study, the participants wrote down their memories and read them out loud to the group. As the stories were being narrated in a non-linear manner, the participants questioned one another



and affective and perceptive details were incorporated. That led to some tearful moments and tremulous voices and hands. Thus the stories were intensified, propitiating a diffractive encounter in which it was possible to recognize oneself and distinguish oneself from others, that is to say, in the view of those authors, each one visibly affected and was affected by the other.

Bound up with that is the idea of representation of data collected and analyzed. Martin and Kamberelis (2013) and Rosiek (2013) state that conventional representations of research discoveries (numbers, texts, graphs) treat reality as if it were one of direct linear relations of cause and effect and ignore the other forces in action (the aforementioned assemblage). Questioning that representational image of thought constitutes a great ontological change (TAGUCHI, 2013). Similarly, Maclure (2013) rejects the static, categorical and hierarchical logic of the representations. In her view, the proposal of an interpretation of the subject apart from and outside of the 'data' for the purpose of identifying meanings, patterns, themes or categories of a superior order can also be framed as being conventional representational thinking. St Pierre (2013), holds that in post-qualitative research the divisions separating a field of reality (which would be the world), a field of representation (which would be the book or the text) and a field of subjectivity (the 'I') are undone and all those fields come to be perceived as interlaced with one another.

That concern with data representation within a *flat ontology* and a less anthropocentric approach is shared by the field of environmental education. The search for methodological alternatives for accessing, witnessing or bringing to light non-human agency is a source of discussion, questioning and efforts to face it on the part of many environmental educators (IARED; OLIVEIRA; REID, 2017; PAYNE, 2016). Payne (2016) considers that we need new intellectual resources, vocabularies and grammars capable of informing, correlating and legitimizing de-colonialized and de-territorialized notions of interactions, agencies, relations, arrangements and structures among humans~non-humans~more-than-human world. The same author refers to Paul Hart (2005, 2013) who argues in favor of the idea of post-critical environmental education and recommends *theoretical-methodological reflections and innovations* insofar as, in his view, the existing ones are insufficient to respond to the present-day 'post' movements (post-modernism, post-humanism, post-phenomenology, post-structuralism, etc.).

That seventh parallel is one of the driving forces that have led many thinkers to migrate to the so-called post-qualitative research. In her paper, Lather

(2013) calls on us to re-conceptualize the disciplining of qualitative investigations and she reports on some post-qualitative studies. One of them presents a research project undertaken with 10 doctoral students who conducted a collaborative analysis based on intra-action (BARAD, 2007). In that study, the materialization of dominant discourses was identified. The data were re-lived from different positions of the subject and instead of a reflexive effect, the analysis produced a diffractive one, that is, an encounter/connection that fostered many effects and at the same time produced a new event (BARAD, 2007). In the same way Martin and Kamberelis (2013) dedicate their efforts to finding other methodological alternatives and propose mapping as a possible way of revealing articulations of the phenomenon instead of reproducing some previous organization of it. To that end they cite the work of Handsfield (2007), who used mapping to investigate and interrogate students' learning experiences with linguistic diversity. The researcher created a representation of a classroom – a map – with articulation lines and escape line to express the various forces (*assemblage*) involved in that context.

16 An initial reflection to be made is on how difficult it is to burst the academic bonds of restraint on the writing, structuring, delineation and language of scientific works. All that *assemblage* we are immersed in makes us liable to fall into the trap of the dichotomies and representations. The ontological turn and the proposition of less anthropocentric thinking and a less anthropocentric society require a revision of the infinity of details that compose our everyday lives and one of those is environmental education. To question, oppose and propose possibilities for rupture are merely the first move in what promises to be a long trajectory. As mentioned above, in his publications Paulo Hart (2005, 2013) suggests that the contributions of other fields of knowledge such as anthropology, philosophy and psychology could help to achieve a conceptual and methodological overcoming of the various silences and absences and to legitimate non-anthropocentric versions of pedagogy, curricula, public policy formulations, research and evaluation in environmental education.



Final Discussion

Getting back to the questions raised at the beginning of the paper, the post-human discussion and the flat ontology proposal are by no means new to environmental education. For decades now, authors in the national and international literature have underscored the importance of an environmental ethics (GRÜN, 2012, for example). One of the pioneers in terms of defending ethics that go beyond the human sphere is Aldo Leopoldo (1949) with his famous posthumous opera 'A Sand County Almanac' which advocates in favor of an ethic of the earth. Rachel Carson's book 'Silent Spring' published in 1962 and re-edited innumerable times addressed the issue, albeit it is not the main focus of that work. Luc Ferry (2009), the philosopher we quote at the beginning of this paper, reminds us that the post-human cannot be considered so very 'post' as it is made out to be given that other civilizations both remote and contemporary have held those concepts and maintained those relations with the more-than-human world.

However, the discussion here is about method and as Lather (2013) declares, method is political. Well, if one of environmental education's tasks is to propitiate a new (less objectivist, predatory and utilitarianist) view of other living beings as postulated in the Treaty on Environmental Education for Sustainable Societies and Global Responsibility (RIO DE JANEIRO, 1992) and the Earth Charter (BOFF, 2004), would it not therefore be coherent to propose an investigation in which that would be explicit? A post-qualitative investigation does not ignore the ontological issues of re-thinking and reconstructing aesthetic, ethical, political relations (FAY, 1987; PAYNE, 2014; St. PIERRE, 2013). It is urgent and necessary to intentionally bring in to environmental education affection, emotion, other living beings and to assume that those encounters go beyond interaction and reflection - enabling intra-action (BARAD, 2007) and other forms of representation - is necessary and urgent in environmental education.

The environmental education field of research is dedicated to understanding the educational processes referring to the individual~society~nature relationship and that relationship needs to be understood in all its complexity. According to Dussel (2000) and Freire (1987), we stand beside the victim or the oppressed who, in the proposal associated to this research perspective, are the other non-human beings which historically have been unconsidered in the logic of western culture. Incorporating or, at the very least, considering the perspective of the non-human during data collection and analysis as part of the inquiry for

less anthropocentric research seems to be coherent with the principles of environmental education and the post-qualitative research can contribute to that task.

The questions raised by the authors who work in a post-qualitative perspective are close to those put by researcher in the field of environmental education. Thus the appropriation of that research paradigm could well be valid for some research contexts. The present study configures itself as a first attempt to draw closer to that theoretical methodological perspective. Thus, more profound theoretical bases are suggested and will continue to be elaborated in order to understand data collection and analysis alternatives and support the delineation of research projects orientated by that reference framework.

Notes

- 1 For further information on the program of the event access: <http://www.cefres.cz/en/agenda/event/the-human-animal-line-interdisciplinary-approaches-2>
- 2 The term somaesthetics, coined by Richard Shusterman (2008) is taken to be a field of interdisciplinary study that investigates the mind incarnated in a world in which there is no dissociation of body-mind-world nor is there a spatial-temporal rupture for meaning-making; that is to say, we are in an aesthetic experience feeling and attributing meaning.
- 3 The term refers to the process whereby people construct, comprehend or attribute meaning to the events of life, to relationships and to their own selves.
- 4 Edith Barad creates the term 'intra-action' which unlike 'interaction', does not assume "individual agencies that precede their interaction". Quite the contrary, "[...] intra-action recognizes that different agencies do not precede but emerge through their internal action" (BARAD, 2007, p. 33).

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