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Performance: theoretical operator in Education from the Actor- Network Theory

Performance: operador teórico en el campo de la Educación desde la Teoría Actor-Red

Performance: operador teórico no campo da Educação a partir da Teoria Ator-Rede

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Abstract: This essay conceptualizes performance from the interlocution between Actor-Network Theory (ANT) references and discusses this construct as a theoretical operator in the field of Education. In addition, the essay synthesizes five researches in Education, which cover in their questions of interest different performances as unfolding of situated pedagogical interventions. The ideas built in this work suggest that the (inter)actions established in sociomaterial networks make it possible to assume performance as affectations that reverberate in states in the world in a procedural, multiple and coexisting way.

Keywords: Performance. Actor-Network Theory. Education.

Resumo: Este ensaio conceitua performance a partir da interlocução entre referenciais da Teoria Ator-Rede (TAR) e discute esse constructo como um operador teórico no campo da Educação. Complementarmente, o ensaio sintetiza cinco pesquisas em Educação, as quais abarcam em suas questões de interesse diferentes performances como desdobramentos de intervenções pedagógicas situadas. As ideias construídas neste trabalho sugerem que as (inter)ações estabelecidas em redes sociomateriais possibilitam assumir performance como afetações que reverberam em estados no mundo de maneira processual, múltipla e coexistente.

Palavras-chave: Performance. Teoria Ator-Rede. Educação.

Resumen: Este ensayo conceptualiza la performance a partir de la interlocución entre los referentes de la Teoría Actor-Red (TAR) y discute este constructo como operador teórico en el campo de la Educación. Además, el texto sintetiza cinco investigaciones en Educación que abordan en sus temáticas diferentes performances como producciones de intervenciones pedagógicas situadas. Las ideas construidas en este trabajo sugieren que las (inter)acciones que se establecen en las redes sociomateriales posibilitan asumir la performance como afectaciones que reverberan en los estados del mundo de manera procedimental, múltiple y coexistente.

Palabras clave: Performance. Teoría actor-red. Educación.

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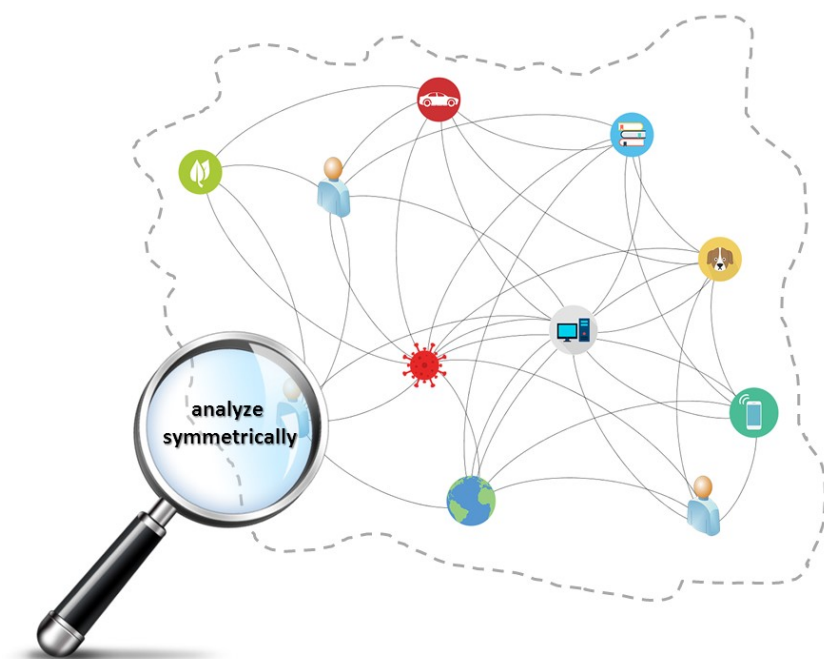
Introduction

This essay conceptualizes performance from the interlocation between Actor-Network Theory (ANT) references and discusses this construct as a theoretical operator in the field of Education. This search for the refinement of the understanding of the term is linked to its importance in research that assumes ANT's foundations in descriptions and analyzes of pedagogical scenes. Performance, despite finding centrality in the ANT discussions, seems to have its meaning diluted in different works by Bruno Latour and other collaborators of this Theory. Thus, this essay outlines the concept of performance from a chain of references and imbricates this construct to the field of Education.

As a theoretical essay, this text finds acceptance of Meneghetti's conceptions (2011, p. 321), which indicate that, “unlike the traditional method of science, in which form is considered more important than content, the essay requires subjects, essayist and reader, capable of evaluating that the understanding of reality also occurs in other ways”. It is also worth noting that this essay is not intended to serve as an introduction to the ANT – which can be found in different publications (Latour, 2012; Lemos, 2013; Oliveira & Porto, 2016; Coutinho & Viana, 2019; Freire, 2021). Still, we provide a brief description of the basics of the ANT starting from Figure 1.

Figure 1

Representation of the basic propositions of the Actor-Network Theory



Source: prepared by the author.

Initially, it is important to highlight that the ANT assumes “that the 'social' must be defined as an association and understood in terms of a network, or actor-network, which involves a heterogeneity of human and non-human elements” (Coutinho & Viana, 2019, p. 17). In this understanding and in analytical terms, a researcher, using the foundations of this Theory, will

aim to investigate how certain entities are associated with others, constituting networks. Figure 1 illustrates the association between humans and non-humans, who are the actors of the Actor-Network expression. Although the term actor integrates the very name of the Theory, Latour (2001) explains that this term has a meaning restricted to humans, and the use of actants is preferable. Thus, an actant is understood as any entity that, in an association, has the capacity to produce a difference and, therefore, to change the network in which it is located.

The affectations produced in the associations by the actants are assumed as translations, that is: “[...] the work thanks to which the actors modify, displace and translate their various and contradictory interests” (Latour, 2001, p. 356). Analytically, it can be affirmed that the focus of a study based on the ANT is translations. When studying them, it is necessary to keep in mind that every actant has the same ontological condition (principle of symmetry). However, Lemos (2014, p. 6) warns that “[...] symmetry is not ethical (things are worth the same as humans), but analytical (things make us do things and have important implications)”. In this sense, the researcher proceeds with his study, alerting to whom, what is present in a scene of interest and how the associations and translations (transformations) that emerged from it are forged.

Figure 1 also favors the understanding of the network, which is linked to the space-time formed by the collective of actants in association, which triggers a series of translations from their interrelationships. Heterogeneous, the networks are said to be sociomaterial and can be considered as “[...] the very movement of associations that form the social” (Oliveira & Porto, 2016, p. 64). In an effort to synthesize the ANT: the interest in a network refers to the movement and translations arising from the associations between actants. In this aspect, the work established there translates the social into dynamism to be investigated.

Having presented this brief description, the objective of building a meaning for performance is resumed in sequence. With due care, throughout the argument, the effort to place the reader in some of the ANT concepts that subsidize the reasoning under construction is rescued. Here, a textual texture that stimulates reflections is valued, which favors the gathering of elements for a conceptual design of performance and its discussion as an operator in the field of Education. To this end, the work articulates perspectives of different authors who work with the ANT and who contribute to the understanding of the term. In a second moment, a brief synthesis of five researches in the field of Education is presented, which, despite not having deepened the concept of performance, operated with it to describe and analyze pedagogical realities.

Following traces of performance from the ANT and its collaborators

It may seem ambitious to try to answer what performance is. In fact, this is not a simplistic task. However, this cannot paralyze us and prevent attempts to build paths for its conceptualization. This particular part is based on a finding: the word performance, despite appearing only once in the work 'Reassembling the Social: An Introduction to the Actor-network Theory – by Bruno Latour –, assumes undeniable relevance for researchers who assume the ANT as a theoretical-

methodological construct of their investigations. After all, for them “[...] the rule is performance [...]” (Latour, 2012, p. 60). This solitary and laconic statement by Bruno Latour puts us in question and leaves open the semantic delimitation for the term, considering the presuppositions of ANT.

This inspires us to start by considering some dictionary definitions of the term performance, which does not have a correspondent in the Portuguese language. Although considered as Anglicism, performance is cataloged in the indications of the Brazilian Academy of Letters in its Orthographic Vocabulary (VOLP). The Michaelis dictionary indicates translations for performance linked to: a) the “execution, effectuation”; b) a “fulfillment, performance”; c) a “exploit, prowess”; d) an “artistic representation, spectacle”; e) a “performance” (as an artist, athlete, etc.); f) the “mechanical work capacity, income” (Michaelis, 2002, w.p.). The Portuguese dictionary Houaiss, on the other hand, presents an entry, which indicates performance as: a) “acting, performance”; b) “a spectacle in which the artist acts with complete freedom and on his own, interpreting paper or creations of his own authorship” (Houaiss, 2009, w.p.). In both cases, the term is assumed to be a feminine noun. In this way, performance is convenient for the denomination of shares.

The particularity of naming actions as a way of understanding performance is in tune with the foundations of ANT, including the one that tells us that an action is taken. This position of Latour (2012) escapes from an anthropocentric perspective, which admits action as an exclusively human attribute. Latourian propositions inspire the thought that, when we act, we never do it alone or apart from a world of things. This premise is in line with the thought of Callon (2008, pp. 307-308), which indicates that “[...] human action cannot be understood, and the constitution of collectives cannot be understood without taking into account materiality, technologies and non-humans”. This shows that an action carries with it a source of uncertainty, escaping from a direction determined by social forces; in other words: the action is always a surprise and is forged by materialities that are not exclusively human. In this conception, the agency comes to be understood in a configuration that involves an opportune circumstance and that favors a meeting between associated entities, which form heterogeneous collectives.

Actions evoke movement, circulation, transformations and, therefore, instability. All this leads to the conception that the ANT:

[...] it moves away from everything that is fixed: essences, structures, unifying systems, paradigms. Its ontology [...] is the one that defines being not by substance, but by its subsistence movement.

The ANT is definitely a ‘sociology of mobility’ [...] of the associations that make up beings, things, humans, non-humans, the social. (Lemos, 2013, p. 60)

Through this, we have evidence that, in the Actor-Network perspective, ‘existence’ is linked to the ability to act and produce transformations. In this sense, it is reiterated that the analyst needs to be attentive to the flows of actions that are established in the associations, that is, in what

causes movement and “[...] allows knowing what material the social is made of and following its dynamics” (Callon, 2008, p. 309). It is worth emphasizing that the act of acting refers to the concept of actant (Latour, 2001), in other words: humans and non-humans, who, in association, act, causing displacement and difference where they are associated.

At this point, it is significant to remind the reader that the ANT does not operate, suggest or encourage a dichotomy between two ontological entities (human versus non-human). Through another interpretation, what is evoked is the treatment of these entities in the same analytical plane, seeking to track and express what is established as a possible world of interactions.

From the moment we said that action passes through distributed collectives, we reject the opposition between humans and non-humans and all the differences appear. [...] The great advantage of this approach is that we do not have to choose between two categories of (human or instrumental) agency, but simply observe the take-off of a multitude of different agencies that are linked to the fact that there are numerous possible assemblages that act differently. (Callon, 2008, p. 312)

Bearing this in mind, it is interesting to rescue the “[...] plurality of what makes us act [...], since all movements depend on the nature of the bonds and the recognized ability to do [...]” (Latour, 2015, p. 131). It is with this care that our attention is directed to the translations that emerge from everything that 'making-do' and that typifies a plurality of agencies:

Action is not what people do, but *fait-faire*, the making-do, carried out together with others in an event, with the specific opportunities provided by the circumstances. These others [...] are non-human entities [...] that have their own logical specifications [...]. (Latour, 2001, p. 341)

Bruno Latour warned us, with his 'making-do' binomial, that action carries with it a hybrid meaning. Therefore, it is the result of a “[...] simultaneous construction of men and objects in which materiality and sociality are mixed, resulting in our condition of humanity” (Melo, 2008, p. 258). Latour also tells us that this making-do is symmetrical and develops its arguments by rescuing a comic strip of the character Mafalda, involving her father and the act of smoking, illustrated by Quino (1986).

When discussing such a strip¹, Latour (2015) provokes his reader from a question by Mafalda, which, initially, may seem naive: “– What are you doing, Dad?” (Quino, 1986, p. 22). Looking at the scene, the father's response suggests something obvious: “– I'm smoking a cigarette. Why?” (Quino, 1986, p. 22), he answers. However, this obviousness is deconstructed with wit by the child character, who, when turning his back, opens wide a disconcerting symmetry of the action of smoking: “– I thought it was the cigarette you were smoking, but disregard” (Quino, 1986, p. 22).

¹ Quino's illustration (1986, p. 22) is available on Bruno Latour's website and can be accessed at: <https://bit.ly/3gQM3T5>. The image has not been incorporated into the text to ensure copyright. The dialog that is presented in the illustration has been freely translated throughout the paragraph and appears in quotation marks.

It is evident that the cigarette makes you smoke and, at the same time, smokes/consumes the smoker. So much that Mafalda's father, in the last part of the illustration, shows himself desperately shredding his cigarette pack. This amusing and, at the same time, disturbing passage by Mafalda shows how the associations established between actants provide an opportunity for a hybrid and symmetrical making-do.

This comic strip is densely explored in Latour's (2015) arguments, but it is interesting here to explore the (inter)actions in a network to think about performance from the making-do (Latour, 2001) that is established there. But, first, it is worth noting that "[...] the network is not the structure, infrastructure or sociability, it is not the place where things pass, move or are deposited, but the place where relationships are established and transformed." (Oliveira & Porto, 2016, p. 64). In this understanding, the comprehension of the network is based on movements of associations which "refer to flows, circulations and alliances, in which the actors involved interfere and suffer constant interference" (Freire, 2006, p. 55). Thus, "the networks are woven with elements that are in complex interactions, so that most of the actants are hybrids, carrying this double facet: human and non-human [...]" (Latour, 2000, p. 377). Here, it is already possible to keep in mind that a network always translates changes, hence the interest in better semantic delimitation for the term performance according to the ANT.

In Sørensen (2009), we can also see that the sense of performance is related to a variety of entities intertwined with each other and that form a heterogeneous assembly. Starting from Giddens (1984), the Danish researcher also refutes the concept of action as an exclusive attribute of human rationality and uses Law's (2002) propositions to assume performance as a realization of sociomaterial assemblages. It is worth noting that an:

[...] agency has the virtue of designating agency and not reducing it to the human body or the instruments that prolong the human body, but designating it in the sets of configuration of arrangements in which each element clarifies the others and allows understanding because agency works in a certain way. (Callon, 2008, p. 310)

Thus, when the actants associate and form a network, they start to act in order to influence, interfere and modify each other, performing a translation work (Latour, 2012). Expanding this understanding, Lemos (2013, p. 128) adds that "mediation/translation is the ability of an actant to keep another involved, modifying and reinterpreting their interests". In this particular, a translation indicates a change in the way of acting in the network. This aspect seems to be fundamental to start thinking about an approach to the understanding of performance based on the ANT.

If an actant causes a difference in a sociomaterial relationship – an actant assumed as a mediator (Latour, 1994; 2001; 2012) – then we are facing a process of affectation, which suggests a new composition between the entities of a given (inter)action. That is, the traces of a mediation allow mapping reconfigurations for a given arrangement or intertwining of actants (Coutinho & Viana, 2019). Following these understandings, it is reinforced that an affectation in a state of the world

(Barad, 2007) allows us to glimpse another dimension of attribution of semantic contour to performance.

To help in this understanding, it is noted that Moraes and Arendt (2013) use the works of Law (2007; 2009) to signal that, in addition to the attention given to the formation of sociomaterial networks, a new interest starts to attract researchers affiliated to the ANT: the production of realities from entangled practices. This conception seems to find adherence to the ideas of Mol (2008, p. 64), who also assumes “that reality does not precede the banal practices in which we interact with it, but is shaped by these practices”. In this way, we are inspired to assume that this reality is not given a priori, but emerges from routine practices (Law, 2004).

To situate the production of realities, Annemarie Mol resorts to the field of social studies of science and recovers the work carried out in laboratories, assuming it as a sociomaterial practice capable of evidencing transformations in the composition of a state of the world, producing new configurations:

These forms are exported from the laboratory, not so much as 'theory', but rather, or at least to the same extent, as vaccines, microprocessors, valves, combustion engines, telephones, genetically modified mice and other objects – objects that carry with them new realities [...]. (Mol, 2008, p. 64)

Visibly, the stable and determined character of reality assumes a status that, according to Mol (2008), is linked to materiality and its multiple, historical and cultural combinations. So, with the author, it is possible to understand that realities are multifaceted and that they coexist in the present in different versions. To expand this conception, the researcher also tells us that this multiplicity of reality depends on a set of metaphors that evoke intervention – which would be linked to its production – and performance, which emerges from the manipulation of reality “[...] through various instruments, in the course of a series of different practices” (Mol, 2008, p. 66).

In her production, Annemarie Mol resorts to the question “[...] what is anemia?” (Mol, 2008, p. 66) and proposes a referral by indicating the inexistence of a single and stabilized answer. Apprehending anemia would be related to different performances. In this sense, in a clinical consultation when a doctor uses the examination of a patient's eyelids, we would be facing the clinical performance of anemia. When thinking about a clinical analysis to determine blood hemoglobin levels and anemia performance, it would be the laboratory or statistical analysis (which considers patterns to determine if a patient is anemic). Finally, from a method that standardizes the ideal level of hemoglobin to efficiently transport oxygen through the human body, it is possible to verify the pathophysiological performance of anemia (Mol, 2008).

A definition for performance according to the ANT and its lexical variation

After the considerations and articulations presented, it is necessary to keep in mind that the understanding of performance according to the fundamentals of the ANT needs to take into account:

- 1) that an actant assures its existence through its ability to act and produce transformations (translations) from its associations in networks;
- 2) that actions are sources of uncertainty forged by materialities that are not exclusively human, assuming a hybrid and symmetrical meaning (making-do); and
- 3) that a certain state of the world is established by entities that associate to form sociomaterial networks.

Thus, considering the contributions of Latour (2000; 2001; 2012; 2015), Law (2002; 2004; 2007; 2009), Callon (2008), Mol (2008) and Sørensen (2009), it is possible to assume performance as what which, procedurally, is established from sociomaterial assemblages and affects a state of the world, producing multifaceted realities, which coexist in the present in different versions.

By forwarding this understanding of the term performance from the ANT and bringing this meaning to the universe of the Portuguese language, other questions immediately gain a condition of existence, making it possible to ask: but, after all, how to understand performativity, performative, perform and performed?

It can be seen, therefore, that, once a performance has been delineated from the ANT, variations that generate neologisms come to mind. In Schweitzer (2016). Note that suffixes are added to adjectives to form nouns. The suffix *-ity* can express an idea of state, situation or quantity (Wikipedia, 2022). Thereby, considering all that has been discussed throughout this essay, it appears that performativity has to do with a specific state of (inter)action in a network, which signals that an actant has assumed the status of a promoter of sensitive differences in its associations. Therefore, it is a mediating actant (Latour, 2012). The suffix *-ive* indicates capacity, possibility, utility or relationship (Priberam, 2022). Consequently, when mediating an actant, it becomes performative, producing transformations in its network. Likewise, if an actant is defined by its acting (Lemos, 2013), it gains its condition of existence when performing. Finally, with the suffix *-ed* – used to form the past participle of the verb to perform –, it is assumed that something performed is a reality that was produced by actants in a network.

Performance as production of sociomaterial pedagogical realities

The approximation of the theoretical-methodological constructs of ANT to the field of Education, although challenging, favors thinking about socio-formative processes from a different perspective. Teachers, students, managers and all material diversity, which integrate

and condition a pedagogical scene, are now considered in the perspective of a performative sociomaterial assembly. So:

Observing, recording, describing and analyzing are aimed at identifying actors (not only humans), mapping associations, tracking the formation and breaking of bonds, the work established in the network and, above all that, to the establishment of realities. (Ribeiro & Lima, forthcoming)

As a result of this theoretical-methodological construct, the interest in emerging performances of the (inter)actions between the actants of the educational daily life unfolds. Based on this, below, a brief synthesis of five researches guided by ANT is presented, which encompassed, in their issues of interest (Latour, 2012), performances emerging from interventions in the field of Education. The selection of these productions involved: 1) the fact that the SciELO database and the Capes Periodical Portal did not retrieve records² considering the theme of this essay, which required manual screening; 2) our participation in discussions with members of different research groups³, whose academic productions work with performance from the perspective of Actor-Network Theory in the field of Education; and 3) our recurring indication of the need for a conceptual delimitation for the term performance in different participations in boards of postgraduate works in Education.

Firstly, Allain and Coutinho (2018) discussed the teaching professional identity articulated with ANT concepts. They presented data produced with two focus groups formed by undergraduate⁴ students in Biological Sciences from a Brazilian public university: one composed of scholarship holders from the Institutional Scholarship Program for Teaching Initiation and the other by non-scholarship undergraduates' students.

The study identified, in both studied groups, performative identities: a) the nature-identity, that would be linked to the conception that "[...] teachers are born with the gift of teaching, with vocation, a natural talent" (Allain & Coutinho, 2018, p. 370); b) the identity-institution, related to the specific academic training "[...] offered by recognized institutions, which will authorize them to teach" (Allain & Coutinho, 2018, p. 370); c) the discourse-identity, which evokes "[...] individual traits, which are supposedly recognized as necessary for teachers: being communicative, enjoying dealing with people, explaining [...]" (Allain & Coutinho, 2018, p. 370). As a differential of

² The search carried out in the repositories was performed on 03/01/2022 from the search string '(performance) AND (education) AND (actor-network)' with filters for publications in the format of peer-reviewed articles, from the last five years and in Portuguese. The choice of these databases considered the academic credibility and the expressive number of registered records.

³ They are: Link@ - Study and Research Group on Digital Culture, Media and Education <http://dgp.cnpq.br/dgp/espelhogrupo/524658>; Cogitamus - Education and Scientific Humanities <http://dgp.cnpq.br/dgp/espelhogrupo/769782> and Gehbio - Study and Research Group in Biological Humanities <https://gehbio.com>

⁴ In Brazil there are two forms of graduation, bachelor and '*licenciatura*'. The second is when the student is training to be a teacher. In the text the term used refers to this second meaning.

the group formed by scholarship students, identity-affinity was also identified, which was defined by the authors based on the work of Gee (2000). For this last group:

[...] actors such as the school, program funding, work projects, study meetings, the university professor and the school supervising professor are associated in a network, forming an articulated body that adds positive experiences in relation to teacher training. (Allain & Coutinho, 2018, p. 376)

In addition, Allain and Coutinho (2018) highlighted that the training course of those undergraduate students had an identity, which also exerted strength in the researched network. With a critical eye, the researchers emphasized the responsibility of institutions and professors forming teachers as actants, which affected the process of constitution of those performed identities, demanding attention. In short, the authors' work evidenced performances of teacher identity as multiple, complementary and constructed paths in action. Notably, this finding adheres to the definition, which was built for performance in this essay.

While in Coutinho et al. (2017), there is a research that contributed to the understanding of the interrelationships between academic knowledge and the knowledge and experiences of students of an Undergraduate Degree in Rural Education at a Brazilian public university. The study analyzed discussions from two classes in the Life and Nature Sciences class with a focus on controversies. Based on elements of ANT, the authors highlighted that “[...] the undergraduate students mobilize knowledge, practices and experiences that make them initiate controversies in a formative situation and in the face of knowledge authorized by the university” (Coutinho et al., 2017, p. 222).

In methodological terms, the production of data from the research by Coutinho et al. (2017, p. 225) comprised “[...] non-participant observation, by means of video recording, audio and notes in a field notebook”. From this corpus, the researchers created a mapping of actants and identified elements, which made up the realities produced by the students and by a monitor, who conducted a technical visit to the class.

In relation to performance, the researchers signaled the production of realities – assumed as ontologies in the text –, “which emerge in the establishment of a controversy between the students of an undergraduate degree in the field and the monitor of an activity on the mineral diversity of Brazil” (Coutinho et al., 2017, p. 224). This performative configuration took place during a technical visit to a university space with samples of different rocks and minerals and, later, in class, considering the discursive interactions between professor and undergraduate students.

The study made it possible to identify components that integrate the material reality described by the monitor, debated/problematised by the undergraduate students along with the teacher responsible for the classes. The research results illustrate two “ontological topographies” with disproportionate variations, which made the authors conclude that “the monitor and the students of the Undergraduate Degree in Rural Education, it can be said, inhabit different

worlds” (Coutinho et al., 2017, p. 233). When considering the performative dimension in their study, the authors approached the definition constructed in this essay by translating multifaceted and coexisting realities.

The third research highlighted in this essay also worked with teachers in training in Rural Education at a public university in the area of Life and Nature Sciences (LNS). The focus of the study involved the description of the “performance of a space for reflection on knowledge systems” (Freitas & Coutinho, 2018, p. 285) among undergraduate students, considering the mobilization of different actants.

In the methodological path adopted by Freitas and Coutinho (2018), the ANT was considered in the analysis of discursive interactions based on sociomaterial relationships and emergence in networks. Empirical data were built during the monitoring of disciplines and activities involving the LNS area in January 2016, through observations, video and audio recordings, records in a field notebook and the holding of a discussion group with seven students from the team.

When considering performance in their approach, the researchers assumed that one of the effects produced in the sociomaterial assembly investigated was knowledge itself and that the knowledge systems addressed – scientific and traditional knowledge – “[...] are different ways of systematizing practices, which arise through the interaction between humans and non-humans” (Freitas & Coutinho, 2018, p. 286). In the analytical passages of the interactions described in the study, it was possible to identify guided arguments:

[...] both common-sense conceptions of science (such as the idea that scientific knowledge is proven knowledge, science is objective, scientific theories are rigorously derived through observations and experiments, etc.) as well as traditional knowledge disseminated in their communities (such as the moon's influence in determining the sex of babies). (Freitas & Coutinho, 2018, p. 283)

The researchers also highlighted that the practice undertaken between teacher and students made explicit a network of relationships between actants, which established a space for reflection “on the importance of dialogue between knowledge that must emerge in a classroom [...]” (Freitas & Coutinho, 2018, p. 283).

On another research front, Venancio et al. (2020) undertook a research, which studied performances in a curricular unit of Science Teaching Practice with undergraduate students in Biological Sciences from a Brazilian public university. Methodologically, the research data were produced through participant observation with records in a field notebook, in audio and video.

The study recorded performance as “assemblies between human and non-human actors and the resulting movements, which allow reaching a certain end” (Venancio et al., 2020, p. 1). This definition adheres to what is proposed in this essay, but the definition assumed in the work is lacking in the aspects of the production of multiple and coexisting realities, which were identified and explored in the research.

In their results, Venancio et al. (2002) indicated performances of teaching practices inspired by planning, in which elements such as time and human and non-human materialities produced a school, which limited the actions of those teachers in training. From this, the authors forwarded that:

[...] in the planning of classes of undergraduate students in Biological Sciences, hypothetical-imagined contexts arise and offer them different possibilities of action. This school is imagined and makes future teachers have to plan classes for a context they do not know. In addition, [...] the imagination] also proved to be contingent, as it had to deal with different possibilities that can be found in the workplace. [...] In this sense] free imagination generates a certain 'anguish' on the part of these undergraduate students, since the planning still needs to deal with the possibility of something happening or not. It seems, therefore, that undergraduate students are walking in two directions, either preparing for the different realities, or not really knowing what lies ahead. (Venancio et al., 2020, p. 13)

The authors also indicated that, with the ANT, it was possible to notice that the undergraduate students produced realities from their planning in a way that involved a sociomaterial arrangement that grouped: students, training spaces such as the classroom, formal education institutions, teachers and curriculum content. These actants, in their associations, constituted performances of teaching practice.

In a fifth work that involved performance in the field of Education, Lima and Nascimento (2021) researched about the incorporation of digital games in the initial training of Physics teachers during a curricular component of supervised internship at a Brazilian public university. The objective was to track the pedagogical affectations produced considering the interrelationships established in the sociomaterial network studied, a goal contemplated by the concept of performance of this essay.

Following methodological procedures of an Action Research, the empirical data were generated from the record of observations of the mapped experience and from reports prepared by the undergraduate students. This corpus was systematized in an open coding in the ATLAS.ti software, which formed the basis for the formation of two analytical categories: “[...] initial meaning and translated meaning of/by the undergraduate students about digital games and their incorporation into a teaching proposal” (Lima & Nascimento, 2021, p. 7). Based on the ANT, the analytical discussion of the categories formed described a performance “[...] of the transition of pedagogical meanings of the undergraduates related to digital games and their association with the teaching of Physics” (Lima & Nascimento, 2021, p. 9).

The researchers indicate that, in addition to working with theoretical frameworks of digital games, the curricular unit culminated in the production of a game by the undergraduate students. This movement provided an opportunity for a series of (inter)actions, which revealed a dense process of pedagogical affectations among teachers in training:

The positions of the undergraduate students were destabilized as readings, activities, debates and, especially, the production of the digital game in the CU [curricular unit] took place. When circulating on the network, these experiences were shared by the actants, which set in motion a reconfiguration process, which favored the establishment of new pedagogical meanings, provided a break with previous representations and gave rise to a new *modus vivendi*. (Lima & Nascimento, 2021, p. 14)

The results of the study highlighted that the affectations mapped started from a place of skepticism, incipience, distrust or even the impossibility of approaching game-pedagogical practice, to a new reality, which included: 1) game as a cultural product; 2) game design as a complex process that involves time, creativity, theoretical frameworks, intermediations, etc.; 3) development of a digital game as a form of collective and collaborative work; 4) digital game as a way of including digital culture in the school space; and 5) digital games as a space for teaching and promoting learning and skills (Lima & Nascimento, 2021).

Some final words

In tracking elements that favor the understanding of the term 'performance' from the Actor-Network Theory, it is important to reaffirm that the translations produced in a network of actants are what assign a place of understanding to the word. This network assumes existence in the form of a hybrid and (inter)active collective from which flows of translations emerge. Without the making-do established by the actants, there is no performance and, consequently, there is no production of realities. The social, therefore, is produced by this collective in its (dis)association movements, revealing a space-time, where humans and non-humans are constituted and act mutually, engendering performances.

By situating performance as a conceptual operator of Education, it is possible to think about affectations, which can translate: diversification of ways of teaching curriculum content, production of intelligibility from the recognition of non-human agencies in a pedagogical scene (no longer as supporting actors, but as co-producers of this network), reconfigurations in training practices, new ways of being in the world and, therefore, of teaching and learning.

Considering the field of research in Education and its multiple methodologies, performance – as a theoretical operator linked to the ANT – stands out in the analysis of empirical incursions, especially those involving intervention strategies (an Action Research, for example). It is understood that this perspective is viable for the fact it is common to some methodological procedures to integrate a researcher into a network to study it. In this movement, the researcher can observe, affect and be affected, track and describe performativities that shape a situated reality. It is understood, therefore, that this construct favors the perception of intermediations and the capture of nuances of a pedagogical experience collectively constructed and under investigation.

Even so, it is necessary to keep in mind that the ANT was not conceived in the field of Education and its approach to this area requires openness, methodological shifts and new analytical forms: all this is challenging! We share Sørensen's (2009) perception that research in Education is marked by anthropocentric approaches, which ends up making invisible the extent to which socio-formative processes are affected by non-human materiality. The study of the ANT makes us more sensitive to this perception, since it is not possible to produce education without non-humans. When assuming the conceptual operator performance in an investigation in Education, the researcher is encouraged to review his position, recognizing that teaching, learning, practices, wisdom and knowledge are affectations forged in sociomaterial assemblies, which produce realities to be mapped and discussed.

Finally, it is noteworthy that this work also evokes a network, which seeks in the word performance a way of expressing the academic making-do, attributing conditions of existence to it. The definition of performance, constructed here, enlists allies to mature the theme, improving and substantiating it. This text, as a product of the performance of an essayist researcher, also outlines a reality, which is now shared with other actants. Thus, the emergence of new socio-educational translations is expected. By using the ANT as a platform for debate, this production begins to circulate in the academic sphere as an actor-network, always being subject to the instabilities and impermanences of the associations where it is present and promoting affectations.

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