

Three views on narrative analysis in mathematics education research¹

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ABSTRACT

In this text, we present methodological discussions about working with narratives in different investigative movements in mathematics education history. For this reflection, we present the experience using a methodology common to three works. Oral history (HO) is the theoretical and methodological contribution that sets us in motion and makes us reflect on its potential. In this way, we treat - more specifically for this text - the way we proceed with the analyses, explaining to the reader how the research progresses and the scientific maturity of the researcher fostered discussions and allowed the constitution of the analytical works. The three different analytical perspectives presented here emphasise the power of subjectivity in research, since the theoretical choices are intrinsically linked to the research and to the researcher himself.

KEYWORDS: Formation of mathematics teachers. Research methodology. Analyse. Scientific maturity.

Três olhares sobre a análise de narrativas na pesquisa em educação matemática

RESUMO

Este texto discute narrativas em diferentes movimentos investigativos na História da Educação Matemática. Para essa reflexão, apresenta-se a

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experiência a partir de uma metodologia comum a três trabalhos. Assim, a História Oral (HO) é o aporte teórico-metodológico que coloca em movimento e faz refletir do seu potencial. Desta forma, tratamos – mais especificamente para esse texto – do modo como procedemos com as análises, explicitando para o leitor como o caminhar da pesquisa e o amadurecimento científico do pesquisador fomentaram discussões e permitiram a constituição dos trabalhos analíticos. Os três diferentes olhares analíticos aqui apresentados enfatizam a potência da subjetividade na pesquisa, já que as escolhas teóricas estão intrinsecamente ligadas a trajetória da pesquisa e do pesquisador.

PALAVRAS-CHAVE: Formação de Professores de Matemática. Metodologia de Pesquisa. Análise. Amadurecimento científico.

Tres miradas sobre el análisis narrativo en la investigación en educación matemática

RESUMEN

En este texto presentamos discusiones metodológicas sobre el trabajo con narrativas en diferentes movimientos de investigación en la Historia de la Educación Matemática. Para esta reflexión, presentamos la experiencia utilizando una metodología común a tres trabajos. Así, la Historia Oral (HO) es la contribución teórico-metodológica que nos pone en movimiento y nos hace reflexionar sobre su potencial. De esta manera, tratamos, más específicamente para este texto, la forma en que procedemos con los análisis, explicando al lector cómo el progreso de la investigación y la madurez científica del investigador fomentaron las discusiones y permitieron la constitución de los trabajos analíticos. Las tres perspectivas analíticas diferentes presentadas aquí enfatizan el poder de la subjetividad en la investigación, ya que las elecciones teóricas están intrínsecamente vinculadas al investigación y el investigador mismo.

PALABRAS CLAVE: Formación de profesores de matemática. Metodología de investigación. Analizar. Madurez científica.

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É a pele que fica, uma coisa vira outra, como a lagarta vira borboleta. A casca fica. Metamorfoseou-se. Cai a casca. É assim, essa história.⁵
Betty Mindlin

Introduction

According to Goldenberg (2003, p.45), “simply choosing an object already means a judgment of value to the extent that it is privileged as the most significant among so many other subjects to research.” The author also warns that for a good answer, it is necessary a good question, and it is essential to develop a specific problem that can be investigated by scientific processes. For this, she emphasises that it is essential to clarify and actualise the object of study by delving systematically into the subject, in a gradual process that permeates the entire research development.

We do not intend that the paths described here be taken by other researchers as “the” way forward, but rather as examples of the several possible approaches. Moreover, we have the purpose, as Garnica (2001) points out, not to share the idea of “normalising” but to emphasise the need for “regulation” for any qualitative research. Thus, we start from the premise that: “Research is a fluid, vibrant, living environment, therefore, impossible to be contained by fixed parameters such as laws, standards, formally pre-fixed actions” (GARNICA, 2001, p. 42). Regulating, then, is to develop arguments that support the ways of acting for the research to happen. What makes us expand our actions and leads us to understandings is our own experience in the world, since it enables our concerns and discontent with our daily lives to surface. As this very cycle is unlimited and constant, so must be our actions - not predetermined, pre-fixed, or restricted –, so they will be flexible to provide other views and aspects, and, according to Garnica (2001), several interpretations.

⁵ It is the skin that stays, one thing becomes another thing, like a caterpillar becomes a butterfly. The shell stays. It has metamorphosed. The shell falls off. It is like this, this story.

With this in mind, through oral history – which allows us to create versions from experiences narrated, linked to systematised analytical movements that enable us to assign meanings to the narratives and interpret them -, we reflect and present the analytical moments within three works, and highlight some possibilities.

Oral History and Narratives

In an investigative process, the lack of predetermined paths generates hard-to-manage anxiety. However, free choices establish a creative process in developing research that produces a researcher who lets the object investigated contaminate him/her in fluid communication between the one that questions and the one that is being questioned.

We are researchers immersed in a specific context, intersected by space and time. We cast our gaze into the past, a time and place we have not been to, but that we build all the time. We questioned the footprints, memories, traces, the silences about experiences, and how they could have happened; which mechanisms allowed their permanence, and which motivated or forced changes in a given scenario.

We do not make a history of already given, preexisting subjects and objects. As researchers, we produce them; we bring them into being. Objects and subjects are not merely available in the world, and it is up to the researcher to get as close to them as possible. We produce them as we question them, and these creations are fundamentally historical. By elaborating the historiography, we produce new images, new worlds, narratives that can allow us to think of a different future. We want to show, from this past, that we invented, i.e., how different we once were and how different we can be (ALBUQUERQUE Jr., 2007, p. 139).

It is a matter of looking at a movement, a time, a practice in its various forms of being manifested and personalised. In assuming oral history procedures, we question methods that are a mere enunciation of

steps and guidelines to be followed. We value an ongoing methodology that exposes something else and exposes itself to criticism, considering that there are no ready, closed, and definitive procedures: methodology is defined and gains contours as we go. We trace the path as we walk.

The research methodology is always an exercise, a doing in trajectory and not a simple linearised application that allows us to go through stages in mechanically implemented procedures. The references that support the choice of procedures that support the initial access to the field that the research intends to explore, and support the analyses do not split apart: they complement and enhance each other. (MARTINS-SALANDIM, 2012, p. 51)

The studies that use the oral history methodology produce oral and written sources considering their different natures, without assigning valuation or classification degrees between them. We choose not to rank them. The researcher ensures no judgments of value; he/she uses different sources as long as they provide understandings, interpretations, and creations about the object of study.

The Oral History and Mathematics Education Group (GHOEM) have been developing works with narratives using oral history as a research methodology for some years. The researcher usually searches for characters and documents that provide stories on a chosen theme. The stories, produced during interviews, are taken as narratives, initially elaborated from oral statements that are then passed to paper, which are reworked to resemble a written text. The documents, in turn, taken as sources, can also be understood as narratives, since they tell a story to those who interpret them.

We take knowledge, history, and narratives not as mirrors and faithful images of this world, but as keys that doors opened to possible worlds. We have mobilised the narratives in our research, understanding them both as forms of expression and as a method of exploration to produce meanings. With the narratives, we intend to explore several perspectives on

historical situations and, from them, expand their meanings (CURY; SOUZA; SILVA, 2014). Garnica (2015b, p.183) states that the narrative is “discourse, an original form linked to the possibility of being, and its manifestation is a tangle of sensations and utterances in which characters circulate amid scenarios permeated by some temporality.”

Thus, the narratives produced during the interview - which some understand as versions of a story and others as stories elaborated during an investigation by several actors - make up the body of work discussed here, and enable those who read to develop differently what the researcher had fixed during the analysis. Among different views of what a narrative would be, there seems to be a consensus about the non-existence of hierarchies between sources; thus, when producing research, everything that can help us tell a story is called to be part of it.

The narratives produced in given moments of the interviews are a way of articulating experiences in the form of a report in writing or verbally, addressing someone, in order of events (BRUNER, 1991). The production of narratives in historical research usually occurs procedurally to the extent that meanings are produced together with the sources we have access. At every new reading, another narrative is created. Those forms to understand the narratives determine how to read the world, i.e., a way to understand how people give meaning to their lives: telling and retelling their stories.

We draw attention to the fact that the moment of experience is fleeting and, as such, under no circumstances can it be recovered. Even the narrative produced concomitantly with the event cannot do it. It is also an interpretation of what is happening, loaded with feelings, theories, and conceptions about the world. Describing what one feels is very different from feeling it, therefore the classification of sources based on who narrates. In other words, it seems unnecessary to say that there are narratives produced by those who lived the experience and by those who heard about it, i.e., they are both loaded with subjectivity.

There will always be a distance between the situation we experienced and the one we narrated. Producing a narrative is nothing more than an intentional elaboration of what was lived. The event itself is what we call in fact, and this changes from the perspective of those who narrate. “Narrative knowledge, in parallel with other social sciences, presupposes that language is not limited to representing reality, but builds how humans give meaning to their lives and the world” (BOLÍVAR; DOMINGOS; FERNANDÉZ, 2001, p. 07, our translation). Narrative structures are, therefore, the milestone by which human beings give meaning to their world. According to these authors, the narrative has two main functions: to provide both forms of interpretation and guidance for action. Narratives are related to the circumstances. “It does not follow from this that things do not exist, but that things only make sense when interwoven together by a narrative. Thus, the narrative is a constituent discourse and not merely a form of communication of preexisting realities” (GARNICA, 2015 p. 182).

Therefore, it is in this way that we see the connection between history, narratives, and oral history. But how to study the nuances of the other’s discourse, how to elaborate understandings with what we miss? A first decision to be made when working with narratives is to respect the way they will be analysed, or even the possible analyses based on narrative data. Therefore, this text aims to discuss narratives from three analytical exercises.

Analysis

For Garnica (2014, p.52-53) and us, the research developed from the perspective discussed in the previous item assume narratives as

[...] raw materials par excellence of the entire hermeneutic process [...] vehicles for the expression of subjectivities,

resources for the manifestation of memories (past and present) and vectors to understand the experience lived.

And for this reason, the analysis of those narratives is produced at each moment and each (re)elaboration; at each reading, it is explained and, in general, at the end of the research work they take the form of a text. From this same perspective, from experience on a given theme, we can say that:

The narratives, then, offer in themselves the possibility of analysis, if we conceive analysis as a process of production of meanings from feedback that would start when the listener/reader/lover of a text appropriates this text, somehow weaving meanings that are theirs, even if produced in a shared way, and builds a narrative plot of their own that will be heard/read/seen by a third party that returns to the beginning of the process. (CURY, 2011, p. 160)

Since the beginning of the research, the analysis occurs at all times by questioning, looking for sources, and finding collaborators. But there are times when analytical movements become more evident, either in the narrative materialised through textualisation, or in the constitution of interpretations through a text about the entire investigation. Seen in this way, the analytical moments are intended to articulate understandings about what we want to understand.

Three surveys and three analysis movements

This topic aims to discuss and reflect on the possibilities of narrative analysis built on the theoretical soil of oral history. As motivation, we will present three works that aimed to contribute to a larger project to understand the movement of education and performance of teachers who teach/taught mathematics in Brazil.

In one of the research movements addressed in this article, we sought to study the vocational middle schools (*ginásios vocacionais*): a so-considered differentiated public educational experience in São Paulo.

In this research, nine textualisations were produced based on interviews with characters who experienced this situation or were somehow linked to this unique period of education in São Paulo in a given historical, political, social, and economic context - the 1960s.

Nakamura (2017) presents a historical narrative about the emergence, implementation, and extinction of six school units closed abruptly after only nine years of existence. The author analyses their structural and pedagogical aspects - focusing on mathematics teaching and learning – of the vocational schools, and the likely influences of the dictatorial context in force in the country then.

Of the stories narrated in this research, Nakamura (2017) opens analytical possibilities by interpreting and producing new stories elaborated in partnership with the respondents during the interviews. With this, Nakamura (2017) seeks to exercise a practice analogous to that of philosophers in their philosophy craft, by accepting that “the creation of concepts is necessarily an intervention in the world, it is the very creation of a world” (GALLO, 2000, p.52). In this process, it seeks to relearn how to see the world, re-signify it, reinvent it since it understands it, along with its references, as “eternal creation and eternal mutation” (GARNICA, 2014, p. 44).

So we ask ourselves: what is the ultimate “ideal” way of presenting this story? How to sew in a single plot all the narratives that made it possible? We assume that the story created would total “its components by constituting itself, but [would] always be a fragmented whole, such as a kaleidoscope where multiplicity generates new provisional totalities with each stroke of hand” (GALLO, 2000, p. 55).

Metaphorically, it is a matter of elaborating a patchwork quilt that, when seen, is a complete and static piece, but whose components, if closely observed, have its beauty in the chaos, contribute in the movement to that (apparently) so uniform collection. With this in mind, Nakamura (2017) exposed and materialised this production, confident that many elements would escape, that an experience can only be communicated in fragments.

The endeavour to create a whole that had already been designed in the researcher's mind but still needed to take physical consistency, exposed in a document marked by words, letterhead on paper.

Nakamura (2017) enunciated what she called "Time Stress⁶," problematising it. She draws the reader's attention when she considers the proposal to be dangerous - as it can evoke a conception of a progressive, continuous story, without gaps -, while powerful - by pointing out a usual practice in the vocational schools and by clarifying conflicts it arose. Such conflicts are rooted in the need to make linear something obviously chaotic, made up of comings and goings, without impairing the flow that pulses between the lines of the entire narrative.

Those conflicts - whether conceptual, related to the notions of historiography she defends; or technical, which address the need to master the language to allow the text to imply creation and problematisation - guided this seemingly simple procedure, but whose execution was not trivial: making use of the temporality of the clock, the static chronology, taking advantage of it, without, however, surrendering to it.

Times and voices could not be merely hierarchised. Definitely, the collaborators' times, the times of and in the narratives, the ways of narrating are not based on the *Chronos*⁷ dimension, in the time privileged by modern science, governed by formal logic. The times of memory, whose roots are embedded in the narratives, are chaotic, composed of flashes, gaps, inconsistencies, discontinuities. (NAKAMURA, 2017).

⁶ The expression "Time Stress" appeared in the testimony of Cecilia Guaraná and Lygia Tibiriçá. They tell how, in the vocational middle school in the city of Americana, in the state of São Paulo, they used this didactic strategy to study history and geography: a panel, a line, in which teachers and students entered the dates and events in chronological order, was made and displayed on the wall of the social studies classroom, and as they deepened into a given theme, they added details and information to the permanently exposed panel. Time Stress was one of several didactic resources used in vocational schools. In summary, it is a way to linearise time, recording, in a continuous line, events deemed significant (NAKAMURA, 2017).

⁷*Chronos* is time as most commonly conceived: a linear time, a succession of events in a row. Our understandings, with the development of this research, occurred discontinuously, advanced, had problems, setbacks, voids. Even aware that we are in a movement dictated by a time *kairos* - that of the memory of our deponents, "that of the perception of experience, of experimentation, of the discontinuous, sensual, dizzying time of memory" -, we chose to obey, here, at a time *Chronos*, "pre-established by the civilisation of the clock" (GARNICA, 2015b, p. 182-3).

Nakamura also points out new questions: how to deal with this theoretical ambiguity? How to invent a story, following the chronological order, without erasing the uncertain traces of memory time, some ways of saying? How to restage and re-enchant “the multiple, heterogeneous, contradictory history, such as garrets and wide beams where the creatures shelter and hide, remaining, however, in the open of the streets ...or who knows, to be able to stay on the streets...”? (BOSI, 1994, p.30).

Some premises already stated in this article founded this analytical attempt: we do not choose the things of the world as preexisting; they only exist as we question them, wishing to know them. In the search for answers, we build interpretations and understandings, we establish realities. Space and time are inherent to experience, are intertwined despite being commonly treated and defined as distinct and separate entities. It is “necessary to found them to understand life, at the same time as life gives elements so that space and time are founded and re-founded” (GARNICA, 2015a, p.17).

By mediating temporalities, we search for singularities and convergences between and in textualisations and documents, assuming our feet rooted in the present, and eyes and attention focused on the past.

In this immersion, several elements were considered relevant either by the researcher or by others who have already studied the subject and chosen and highlighted it in some way. Particular relevance was not the discourses that prevail by the insistence with which they are repeated, but those whose meaning made it possible to denaturalise crystallised, fabricated narratives, constructed by collective memory over time.

We must recognise that many of our memories, or even our ideas, are not original: they were inspired by conversations with others. Over time, they have a history within us, accompany our lives and are enriched by experiences and clashes. (BOSI, 1994, p.407)

By turning her attention to her respondents' memories, to the written and iconographic sources, Nakamura (2017) also integrates some artistic expressions from the 1960s into her narrative.

In an intentional movement through centres and margins, avoiding prejudices, it seeks to constitute a plausible historical record about the vocational middle schools and also exercise "a sensitivity that has been absent in our research environment" (GARNICA, 2015a, p.12).

In this field, in the final records of the analyses, the author structures the text in three narrative axes: a history of the vocational schools from their idealisation to their extinction; some questions about mathematics teaching and learning in those spaces; and aspects related to the military dictatorship and its influences on the vocational schools.

The second work discussed here is the thesis of Silva's thesis (2015). Based on a theme, a goal, and a way of seeing the world, she outlined the possible paths to study the history of the mathematics teaching degree courses in southern Mato Grosso Uno. Since the 1960s, there have been indications of undergraduate courses to qualify teachers in the territory today known as Mato Grosso do Sul. The author chose to understand the movements of creation of the first courses of the state.

The investigative process is far from being linear, and thus Silva (2015) developed her work. The data were mostly narratives and, as early as the first interview, there were some ways of narrating that seemed to dictate the tone with which the interview was conducted and could be analysed. With each interview, a reading was produced, and several aspects drew the author's attention, emphasising the unity and uniqueness of each interview. Those characteristics increasingly led to the possibility of engendering a paradigmatic analysis of the set of data available. To write a paradigmatic analysis would be to create categories (albeit emerging) and look for excerpts that illustrate each of them, which to the author did not seem consistent with the commitment established between respondent and interviewer.

The focus on narrative analysis was based on the affections produced during the interviews, the relationship built between the researcher and her peers, and the fact that the author felt part of that story to the point of intending to elaborate another narrative among the nine already produced. Powerful, it told the story not only of teacher education in Mato Grosso do Sul around the 1970s, but also of the entire research process.

As in a first explicit analytical exercise, Silva (2015) produced a self-interview constructed with the same script used with the other respondents. In this way of understanding the story-telling, the narrative analysis Silva (2015) constructed was more similar to the interviews conducted than to the characters' experience in that story. Pinto (2015) has already told us that living and telling are very different things epistemologically. Living is fleeting, and telling is elaborating. Although all interviews were elaborations, the uncertainties of the foundations of the self-interview caused another analytical movement.

Based on this self-interview, the author produced what she called an anthropophagic movement of analysis. The narrative analysis was not only there to tell the story of teacher education in that midwestern state of Brazil, but also to report the entire trajectory of the research. The analytical narrative would, therefore, have a different epistemological status. It was a production that had other intentions and directions. Moreover, Silva (2015) argues in the thesis that the construction of the narrative analysis had many aspects that concerned the narrator's life as a night-school teaching degree student and as a mathematics teacher in a teaching degree in Mato Grosso do Sul. Or the student who left her hometown aiming to become a higher education professor, just like most of her respondents. However, this could not be different because narrating means narrating oneself. We are the fruit of what we live and feed on these stories to develop other stories.

The analysis of the narratives produced was carried out by devouring the other. Through this movement, the stories were

assimilated and became part of the narrator. From the moment the author began to tell the story, she held accountable for what was said. When listening to the narrative analysis, the respondent's voice was no longer heard, but rather the speech of a woman, a teacher, qualified in a course with characteristics very close to those described in the research. The narrative analysis as an anthropophagic movement requires reading the sources exhaustively until one is embroiled in the "whole thing," until the respondents are part of the investigator. At this point, memories mix so that whoever spoke or how they spoke is unclear. The stories told there are again elaborated and cease to be the story of a group of teachers, and become the story of the one who tells, when, then, soaked in data, the researcher fixes the narrative constructed on paper.

Producing a narrative analysis is an action of "devouring" the sources to the point of feeling that it belongs to us and that we could have lived that story ourselves. It is an anthropophagy of the interviews, of the texts we read, of the stories told. Unlike the others, the narrative constructed in the analysis was a solitary process, in which the narrator sought to recall what the intended story would tell. This anthropophagic movement, in which the analysis of narratives was produced, consists of a mixture of facts perceived not only in the course of the research, but throughout the narrator's life. Reality is produced by those who interpret it from culturally constructed aspects. We listen and say what we perceive, based on our experiences. The result of this is a narrative impregnated with characteristics of the narrator, even if he/she – or his/her circumstances - are not directly related to the narrated theme.

What we call here the anthropophagic movement are ways of "inventing understandings, which can be the most varied and even contradictory" (FERNANDES, 2014, p. 127). For Silva (2015), the greatest difficulty encountered in the exercise practised in the thesis was to perform an analysis that had the characteristic of an analytical work. We are descriptive beings, we use this characteristic of ours to transmit

information to others. But we don't do it just like that. This elaboration is always done with an intention and in the face of someone. The analysis of a study, however, should go beyond the description, should be intentional, seeking aspects that escape an unsuspecting look. Several authors advocate for educating the gaze (BUJES, 2007; GOLDENBERG, 2003), and part of this task is the way the researcher puts him/herself in the text, by observing "how" things happen. In neither case is it possible to merely observe the data production, since the choices of which aspects should be prioritised in an abstract remove the author from the audience. However, in the analysis movement, it is possible to discuss aspects deemed significant, and that the researcher can see as a result of some action or event reported by the interviewee. It is also possible to explain "how" each one narrates. Thus, in the exercise carried out in Silva (2015), it is worth noting in the narratives the use of verbal conjugations sometimes in the first, sometimes in the third person, understood as an attempt to emphasise the feeling of belonging or not to the action narrated; changes in perspective in the face of different situations (when the story referred to the students' difficulties, it was brought in one way; when it referred to the narrator's difficulties, it was brought in another way, especially when these difficulties were related to mathematics). Answering the question "What can be produced with this?", addressed to yourself, can be a path to analysis. In that process of thinking about how something is narrated, we can notice, for example, in the very analytical text, many repetitions of themes and the resumption of previous statements, which seems to have as function and intention the need to emphasise a particular idea and make yourself understood.

The third example of analytical movement within the group is Gonzales's (2017) work, whose main issue was to understand actions and the development of the partitioned teaching degrees in Mato Grosso do Sul. In this work, the author reflected on the approximations between the

methodologies worked in the group, oral history (OH), and depth hermeneutics (DH). In this way, she observed that although such methodologies dialogue, in the exercises prior to this research the methodologies were worked and applied separately. There was, then, a first attempt to combine those two perspectives, and the research on the partitioned teaching degrees was developed according to that interpretation.

Following the provisions of oral history, the research on the partitioned teaching degrees started with 14 interviews⁸ with administrators, coordinators, teachers, idealisers, and former students of this modality of qualification in the states of Mato Grosso and Mato Grosso do Sul.

In her text, Gonzales (2017) argued that a theoretical-methodological perspective that turns to the interpretation of symbolic forms is the depth hermeneutics. Symbolic forms are intentional human elaborations, present in specific spaces and times and whose productions and propagations create and allow to function asymmetrical relations of power. Thus, the author mentioned that the goal of the DH - proposed by John Thompson, an English sociologist - is to understand the ideologies that involve symbolic forms and that, according to Bicudo (1993), hermeneutics involves the understanding of the meaning of things produced by man or even of human work (sculptures, poetry, literary, and/or scientific texts, among other things), whose meanings are deeply consolidated in existence. Because of this, we must be “attentive to the historical encounter that appeals to personal experience, to the social forces and tradition present in the public saying” (BICUDO, 1993, p.64). The author reinforces that the symbols that manifest language are loaded with intentionality and that, in

⁸ The interviews were conducted with professors Carlos Henrique Patusco, Masao Uetanabaro, Sérgio Delvízio Freire, Luiz Carlos Pais, José Luiz Magalhães de Freitas, Sidnei Azevedo de Souza, Edmir Ribeiro Terra and Celso Correia de Souza, with the coordinator Antônio Lino Rodrigues de Sá, with the secretary Maria Luiza da Silva Correa and with the former student Antônio Enes Nonato. The creators of the proposals of the partitioned teaching degrees, Gilberto Luiz Alves and Antônio Carlos do Nascimento Osório, also collaborated in this research.

seeking to unveil such intentions through a hermeneutics, we can understand some of the possible meanings.

In defending Bicudo's ideas (1993), Gonzales (2017) cited that the work of interpreting always occurs within the existential/hermeneutical circle. Gonzales (2017) understands that interpretation is built on the experience lived by the subject who interprets his/her own experience and that the subject knows him/herself indirectly, through his/her actions that are socially and historically contextualised and are maintained and propagated by tradition. She emphasised that, at the same time as hermeneutics allows the subject, who is an interpreter, to understand the world in which he/she is inserted, he/she also begins to understand him/herself as part of that world he/she understands and, by understanding, he/she creates.

It is perfectly plausible the hypothesis that, if hermeneutics is a way of interpreting language and oral history is used in qualitative research, this implies that hermeneutics can be used to analyse testimonies. It is in this sense that the possibility of working DH and OH together arises. Narratives, created through the OH, are understood in this context as symbolic forms, as well as laws, works of art, books, etc. Thus, textualisations can be interpreted/analysed according to the principles of the DH.

Thompson (2011) presents us with three main phases of the DH that occur, according to the author, at the same time, being mutually interdependent and complementary, since they are intrinsic analytical dimensions of a complex interpretative movement: socio-historical analysis, formal analysis, and interpretation/reinterpretation⁹. Also, when taking something as a symbolic form, five aspects, according to Thompson (2011), must be observed: intentional aspect, conventional aspect, structural aspect, referential aspect, and contextual aspect. Indeed, the explanation of a given theme as a symbolic form is not a simple exercise,

⁹ Due to text limitation, some concepts are not deepened. To understand better about each of these phases or dimensions, we suggest the reading of Thompson (2011).

merely associating the characteristics suggested by John Thompson to the alleged form. It is exactly the hermeneutic examination that will clarify that the symbolic form is, effectively, a symbolic form.

Gonzales (2017) conducted 14 interviews and, consequently, 14 narratives were created. Viewed then as symbolic forms, the author would have to make a DH of each of them, thus rescuing particularities of the contextual aspect that involve singularities of the production context of each interview and the context and particularity of each time and space in which the respondents are and were part, as well as the themes they deal with in their testimonies. This is how Gonzales (2017) reinterpreted it: the symbolic form that she sought to understand, i.e., the partitioned teaching degrees in Mato Grosso do Sul. To understand this symbolic form, the author resorted to other symbolic forms: interviews, documentation, and relevant bibliographies.

In this context, two excerpts in the history of higher education in Mato Grosso do Sul were taken and established as a period of analysis: the moment of implementation and the moment of the development of this qualification model. It turns out that those courses were constituted at different times, one of them in the 1970s – before the dismemberment – and the other in the 1990s – after the dismemberment of the state of Mato Grosso. The author's concern, then, sought to understand how mathematics teachers were qualified in unconventional models, in a state on the verge of division and, at another time, in a “new” state.

The fourteen interviews conducted by Gonzales (2017) took place from mid-2013 to 2015. Besides the interviews, several respondents contributed by providing other documents, such as photographs, projects, books, school transcripts, and several notes of the formation time. In this bias, from the textualisations and other sources, Gonzales (2017) sought to identify elements of the experiences of her collaborators that were related to some DH movement, either on the socio-historical context or on the formal part of the partitioned teaching degrees. In fact,

as the author explains, this identification occurred naturally in the several visits and revisits to each of the textualisations, when pens of different colours were used to highlight elements in the respondents' statements, which allowed us to tell about the context of constitution and development, and the course structure, dynamics, students, teachers and coordinators, material resources, etc. Gonzales (2017) called them "triggers" and were judged as fundamental in the constitution of the narrative plot for directing a discussion, an understanding, and a reinterpretation of the various movements that make up the partitioned teaching degrees in Mato Grosso do Sul.

Based on Thompson's (2011) statement that the DH is not constituted by rigid and linear analysis phases, Gonzales (2017) explained her choices. She then chose to start with the socio-historical analysis, because, as she stated, the previous (re)reading, from the first textualisation, sharpened the desire to know aspects of the context to understand what led to the implementation of this model of qualification in that state. Following, she felt the need to focus on her collaborators' discourses to know, in general, the internal structure of the courses, thus constituting the formal or the discursive analysis. However, she emphasised that, although presented separately, these movements were elaborated simultaneously in the several comings and goings necessary for her to draw an analysis on the partitioned teaching degree that enabled teachers to teach mathematics in Mato Grosso do Sul. The interpretation and reinterpretations that, in general, also happened concomitantly with the readings and (re)readings of the textualisations and the most diverse sources mobilised for the understanding of the object under study, were presented after the first two analyses of the two periods, in an attempt to bring some understandings and perceptions of the author of this research on elements that she felt she needed to re-present or emphasise.

After all the considerations that Gonzales (2017) made about the DH as a theoretical-methodological approach to help her analyses, which the DH performs, as the author herself observed, without specific or unprecedented advantages, the same role as other forms of analysis, more often mobilised and already legitimised by the group - such as narrative analysis (of narratives) and analysis by convergences and singularities -, have played in Ghom's research. Thus, it would be only one more possibility among so many existing, another way of doing analysis when working with the OH. However, it is a way of combining two forms of analysis: the DH and those already exercised by the group. From this perspective, it would be another possible way to forward analyses, which makes relevant this effort to substantiate this possibility. The author also justified herself, arguing that, because the DH is a systematised methodology, she could collaborate, based on statements, with a more systematised analysis.

Gonzales (2017) pointed out that, by reinterpreting the initiative, she also accepts Bloch's (2001, p. 121) claim that we should not be mesmerised by our own choices "to the point of no longer conceiving that another one, once, would have been possible."

Conclusion

The studies that make up this text, with more theoretical approaches to analysis, allow us to realise that the transformations in society, in the tireless search for development, made possible, from the political-social relations, the emergence of educational proposals, which created a new space in which modes of formation flourished.

The three studies mentioned in this work were exhaustively dedicated to the history of mathematics teacher education in Brazil, and took as reference, albeit from different points of view, analytical exercises conducted through and/or from narratives.

They intend a symbiosis between theory and practice, in which the methodological aspects enunciated overlap and mix in the process and not in a moment of their own, watertight from others, in which all the steps and procedures are enunciated and, soon after, are often forgotten and discarded. From this perspective, in those three theorisation movements, we can sometimes notice the discourse changing, and even oscillating, since different discourses cross us, and in these crossings, we constitute ourselves. An analysis is not a definitive version of a theme, but rather a “reasoned understanding that we managed to weave into this plot of an attentive listening to what was said to us” (GARNICA, 2007, p. 61), together with documents.

Some analytical paths are interpreted as safer, as ways of saying, bound to specific theoretical and methodological frameworks of those who use them. However, here, and in our group, those paths have another status: they are bound to the specific needs of every study and the subject who produces it.

Just like the analyses we carry out, there are several possible routes to be followed, so it is up to the researcher not only to know the theoretical foundations and procedures, but also the analysis exercises carried out by other research. It is essential that the researcher allows him/herself to know and follow other analytical paths. However, we recognise that, in the researcher’s education, the first exercises require tutelage and will continue for a long time demanding belonging, which will be regulated by peers from their areas in their academic communities. Initially, the researcher has in hand the instruments that will help him/her to construct his/her analytical interpretations; however, as in a workshop in which the exhaustive practice is significant so that he/she can open him/herself to new possibilities, the researcher is constituted by knowing, appropriating, and risking each practice on the object of research he/she chooses.

In short, visiting and recognising other adventured paths in other research groups of the same line, with other theoretical and analytical

references and the exposition of the works to reviewers, matter to expand the possibilities and to help find answers and, mainly, to increase the very process of construction and theorisation within the research groups, in our case, the Ghoem.

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