

Sociological analysis of museum didactics: educational subjects and the dynamics of constitution of exhibition discourse

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Abstract

This article aims to study the educational phenomenon of museums from the sociological analysis of museum didactics. Based on Basil Bernstein's theory of pedagogic discourse, and, in particular, on the author's concepts of recontextualization and recontextualizing field, the study addresses the process of production of exhibition discourse of five science museums. The study assumed exhibition discourse as a pedagogic discourse modality and sought not only to bring to light the process of recontextualization of various discourses in the production of the exhibition, but also to characterize the pedagogical subjects that comprise the pedagogic recontextualizing field of the museums studied. By revealing the agents and instances responsible for the recontextualization and the dynamics between them, evidence was found of the power relations between subjects and fields of knowledge involved in the production of exhibition discourse. The analysis – focusing on the sociological dimension of museum didactics – provides key elements for understanding the dynamics of selection and distribution of power in the development of educational activities of museums, contributing to the education of professionals who work in these places and, therefore, to qualifying the educational activities designed by them.

Keywords

Museum education – Museum didactics – Recontextualization – Basil Bernstein.

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Análise sociológica da didática museal: os sujeitos pedagógicos e a dinâmica de constituição do discurso expositivo

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Resumo

Este artigo busca estudar o fenômeno educacional dos museus a partir da análise sociológica da didática museal. Tomando por base a Teoria do Discurso Pedagógico de Basil Bernstein e, em especial, os conceitos de recontextualização e campo recontextualizador desse autor, o processo de produção do discurso expositivo de cinco museus de ciências foi estudado. Assumiu-se o discurso expositivo como uma modalidade de discurso pedagógico e buscou-se evidenciar o processo de recontextualização de vários discursos na produção da exposição, além de caracterizar os sujeitos pedagógicos que compõem o campo recontextualizador pedagógico dos museus estudados. Ao revelar os agentes e instâncias responsáveis pela recontextualização e a dinâmica existente entre eles, evidenciou-se as relações de poder entre sujeitos e campos de conhecimento envolvidos na produção do discurso expositivo. A análise, com foco na dimensão sociológica da didática museal, fornece elementos-chave para a compreensão das dinâmicas de seleção e de distribuição do poder na elaboração das ações educativas dos museus, colaborando na formação dos profissionais que atuam nesses locais e, por conseguinte, qualificando as atividades educativas por eles elaboradas.

Palavras-chave

Educação em museus – Didática museal – Recontextualização – Basil Bernstein.

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Introduction

Museum education has become an important study subject at both the national and international levels (HOOPER-GRENHILL, 1994; CAZELLI et al., 1997). Various aspects of educational research use the education developed in and by museums as the object of interest, focusing on the teaching and learning aspects carried out in those places (SIMONNEUX; JACOBI, 1997; ALLEN, 2002; ASH, 2002; BIZERRA, 2009; MORTENSEN, 2010).

These investigations highlight the existence of the educational phenomenon in museums, and to explore its educational aspects this paper will construct a viewpoint that can locate the specificities and thus characterize some of the elements that form the museum didactics. To this end, we chose to explore one of the analytical dimensions of education in museums, a sociological dimension, which seeks to understand how the social role of museums is constituted as an educational institution (MARANDINO, 2012).

The historical trajectory of museums shows they were constituted based on the functions related to the preservation of artistic and cultural heritage (collection, protection, conservation and scientific research) and to extraversion (communication and education); therefore, presently education is one of the other functions of this institution. As museums have various social functions, it can be stated that education in these places is not simply granted; it is about a construction that gained prominence during the nineteenth and twentieth centuries and which has been carried out by the professionals who perform the daily work of the institutions and by those who study the subject (MARTINS, 2011). Understanding how this construction is carried out is a study object of education and for that reason investigations that analyze the sociological dimension of education in museums are very important, emphasizing

the power relations from the influences of political, economic, cultural and social fields to define the educational activities within these institutions. We consider this dimension as a constituent part of museum didactics.

In this paper, we will explore the sociological analysis of education in museums and more specifically, the museum didactics based on Basil Bernstein's Theory of Pedagogic Discourse. Data will be presented from a study that investigated the actors and groups involved in the production of five museum exhibitions of Brazilian science, discussing how the production of the expositive discourse was carried out in these venues.

But how is the production of pedagogic discourse carried out in museums? Who produces it? How do the power relations between the players of this production take place? These questions will be addressed in this work in order to analyze the production of the expositive discourse understood as a pedagogical discourse according to Bernstein's perspective. The objective of this analysis is to highlight the recontextualization processes, the power relations and control over the production of the discourse for the public at the exhibits.

To situate the sociological dimension of museum didactics, we begin by citing aspects of interest of Bernstein's theory for this study, especially the concepts of recontextualization and the recontextualizing field, which are fundamental to understand the selection and control of the production of the expositive discourse.

We then present the data obtained, based on interviews that explored the production process of five science brazilian museums exhibitions, to point out some of the players and groups that make up the pedagogic recontextualizing field of museums, also showing its operation. Finally, we will take into account the importance of sociological analysis to characterize the educational phenomenon of museums.

Museum education in the sociological dimension of education: presenting Basil Bernstein's ideas

Basil Bernstein's work has been widely used in educational research focused on school curricula (GALLIAN, 2008), especially in the studies of sociology of education (FORQUIN, 1993). Furthermore, it has influenced some of the research carried out in museums (MARANDINO, 2001; BOTELHO; MORAIS, 2004; MARTINS, 2011).

In this work, Bernstein's perspective on school and the selection processes of the culture and symbolic contents within it was assumed and transposed to look into how the selection processes, structuring and legitimation of culture and symbolic content within the educational activities undertaken by museums are conducted.

Basil Bernstein's recontextualization dynamics

Bernstein (1996) was a sociologist of education who analyzed the social structuring of pedagogic discourse and its transmission and acquisition, and in particular the relationship between class-structures – with social inequalities – and the language of education. The work of this author, as pointed out in Leite (2007, p. 24), emphasizes that the “school pedagogical relationships assert that its conceptual language can describe any pedagogical relationship”.

In his work, Bernstein (1996) shows the fundamental relationships of an educational communication theory and analyzes the conditions to establish the pedagogical text. The pedagogical dispositive, according to this author, has an internal classification that determines the conditions for the production, reproduction and transformation of culture, processes that are controlled by the actors and groups that participate in the power structure in a given society. To Bernstein, it is necessary

to understand the social basis of power distribution and control principles that are part of the production strategy.

According to Bernstein, the pedagogic dispositive is formed by the rules that will generate the pedagogical discourse. They are the distributive rules, recontextualizing rules and evaluation rules, and these three rules are hierarchically related. The distributive rules regulate who has access to the place of power and control of discourse, but do so immersed in contradictions. They execute the selection of the actors who have been legitimately pedagogized and thus determine and distribute who can transmit what to whom and under what conditions. Consequently, within the production of pedagogical discourse, the pedagogical subjects are also created, promoting the stratification of groups that determine what and how to teach. Thus, the distributive rules “create a specialized field of discourse production, with specialized access rules and specialized power control” (BERNSTEIN, 1996, p. 254).

Regarding the production of museum exhibitions, the distributive rules also define who has access to the place of power, controlling the expositive discourse –considered here as a type of pedagogical discourse. The study on the production of this expositive discourse leads us to understand who are the pedagogical subjects that define what and how to exhibit, who in turn may be shaped by different groups that take different positions on defining the control rules and legitimization of the final discourse. These aspects will be explored in the data analyzed.

On the other hand, the recontextualizing rules, as stated by Leite (2007, p. 32), are at the heart of the pedagogical discourse, which operates from the appropriation of other discourses, with the specific purpose of fulfilling the transmission process and the acquisition of knowledge. Bernstein (1996) believes that the pedagogical discourse can be defined as the rules for embedding and relating two discourses and in that relation process, the discourse of instructional competence –

scientific and knowledge content, for example – is embedded into the regulative discourse of social order – related to the pedagogical fields. In the production of pedagogical discourse, the discourses in this relationship are relocated from their practices and contexts, they are transformed. The recontextualizing principle of pedagogical discourse acts selectively, appropriating, refocusing and relating other discourses from their own classification, changing it into another discourse and producing a new one.

In the production of the expositive discourse in museums, professionals from different fields of knowledge, with their own discourses, participate in determining what will be selected as ultimate knowledge to be presented to the public. In the process, the actors involved also determine how such knowledge will be exposed, and thus the discourses of different areas establish relationships with each other in order to render this knowledge understandable by the public. The actors and knowledge areas that participate in the production of the expositive discourse will be analyzed in this work.

Official and pedagogic recontextualizing fields

The rules of the pedagogical discourse operate in three key contexts of the educational systems. The main context regards the production of discourse, which refers to the selective creation and modification process of new ideas, consisting of the “intellectual field” of the educational system (BERNSTEIN, 1996). The secondary context is the selective reproduction of educational discourse and consists of several levels: preschool/primary school, secondary and tertiary, agencies, positions and practices. The third is the recontextualizing context. Within it, the positions, the actors and practices are concerned with the movements of texts and the practices of the main context of discursive production that go to the second context, the discursive reproduction. The role of those in the

third context is to regulate the circulation of texts between the two other contexts:

[...] We can say that the pedagogical discourse is generated by a recontextualization discourse [...]. The recontextualizing principle creates recontextualization fields, creates actors with recontextualizing functions (BERNSTEIN, 1998, p. 63).

The recontextualizing field where the actors carry out the recontextualization can be subdivided into two fields: the official recontextualizing field (ORF) and the pedagogical recontextualizing field (PRF) (LEITE, 2007; BERNSTEIN, 1996, 1998). The ORF is created and dominated by the State and its actors, by the specialized departments and local educational authorities, with their research and inspection system. The PRF however, is composed of pedagogues and other educators and researchers from schools, universities and their education departments/faculties, with their research, but also by private foundations, the “specialized areas of education, weekly newspapers, magazines, etc. and the publishers, along with their assessors and consultants”. It can also be extended to the “non specialized fields of educational discourse”, but which have influence over the State (BERNSTEIN, 1996, p. 270).

The operating dynamics of the recontextualizing field is indicative of the processes and actors that perform the recontextualization and creation of the pedagogical discourse. Thus, there is a dynamics between positions, subjects and practices, in the three recontextualization contexts, which can occupy different contexts depending on the autonomy they have. As indicated by the author, the regulation form, the social composition of the different actors can vary from one historical situation to another. And when possible, in the pedagogical field, at the university level or equivalent institution, those

who produce the new knowledge can also be their own recontextualizers.

Bernstein states that his model allows for considerable internal dynamics in the production, distribution, reproduction and modification of the pedagogic discourse, since the dominant principles – expression of the relationship between the dominant groups and regulated by the distribution of power – refer to an arena of conflict, rather than symbolize a stable set of relationships (BERNSTEIN, 1996, p. 280).

Bernstein's ideas, as he points out, are not limited to understanding the production of pedagogical discourse confined to school settings. This viewpoint takes us to assume that the discourse produced in the educational activities of science museums such as exhibitions, is also regulated by the broader social structures. Its concepts help us understand the relationships between the principles of selection and organization that underlie the production of educational activities of museums and their institutional contexts, and the relationship between these principles and the broader social structure.

Methodological research aspects

In this work we investigate five museum exhibitions with themes related to biological sciences (Mu1; Mu2; Mu3; Mu4; Mu5), from interviews with its organizers and/or coordinators, document analysis and observation of the exhibits. This paper presents the data of the interviews, which enabled to characterize with greater emphasis the aspect highlighted in this article, that is, the groups and actors involved in the production of the expositive discourse. The objective was to characterize the dynamics of recontextualization and the recontextualizing pedagogical field of the expositive discourse.

The interviews with the coordinators and/or organizers, here identified with a number related to the museum studied –

for example in Mu5-2, Mu5 corresponds to Museum 5 and 2, to respondent 2 –, were based on a semi-structured guide that addressed the exhibition design, the forms of content selection, objects, texts, language and visual elements. The interviews were recorded, transcribed and analyzed in order to identify the subjects and groups producing the expositive discourse and the relationship between them. The institutions and subjects interviewed in this work are not identified to ensure their anonymity, as agreed on during the data collection.

Production of the expositive discourse in five science museum exhibits

Mu1, associated to a public university, began its collections in the 1890s, and its main thematic is zoology and biodiversity-related issues. In this exhibition one can observe the emphasis on the comprehensive presentation of zoological specimens in the display cases, arranged according to taxonomic groups and with information related to the zoological systematics. This perspective reflects the views on the biological research and the museography of the time when the exhibition was assembled, as indicated by the statement of one of its coordinators:

I think it's interesting to see the public exhibition as it is today, depicting the design of both museology and zoology as it was 100 years ago. I find it interesting because it is in fact a historical record (Mu1-2).

The expositive discourse of *Mu1* emphasizes aspects of the scientific field regarding a given design of hegemonic Natural History throughout the nineteenth and early twentieth centuries. In some instances, however, the presence of other discourses relating to other fields of knowledge, beyond scientific/biological knowledge, was noted.

In some of the declarations the negotiation process that was in force to carry out these experiences can be perceived:

There was help from a person that worked in an art museum [...] and he helped me, he had more ideas. In fact, he came up with the last themes of the temporary exhibitions, because I am a researcher with a very academic mind, as are all the other colleagues here. [...] In an exhibition, you have to do the whole thing, the visual assembly, the message. It's a museum communication thing. It's no use preparing a long text, because people do not read it, they don't have time. But the text should not complicate the object, the museum specimen. (Mu1-4).

The aforementioned statement shows that the museologist's knowledge was needed to prepare an exhibition that took into consideration the public's understanding of the content that was being presented. This discourse showed the selection and simplification processes as part of the organizing approach of the exhibition, and the selection criteria guided by the role given to the message and to the public, and hence the communication process.

Regarding *Mu2*, a public university museum devoted to the theme of veterinary anatomy, the importance of other forms of knowledge and other specialists was also perceived, beyond the scientific field, involved in the exhibition preparation. The technicians, who are part of the museum's staff, are fundamental to prepare and expose the anatomical objects in the museum. The importance of these professionals' expertise was highlighted by the director:

And we have two technicians [...] Have you seen a skeleton being assembled? After it's all split up, it turns into a puzzle, right? And especially when you are assembling back a mouse skeleton, a bird skeleton, a

seahorse skeleton, as we have there. So it really is a puzzle, a very delicate thing, and the technician has a way to do that, he has patience. It's perfect. (Mu2-1).

The interaction between scientific areas and museology is also regarded as a positive and rich element by the directorship of *Mu2*, with important results for the exhibition itself and for the museum in general. However, as follows, the different perspectives from other areas are not always peacefully negotiated in the production process. The statement of one of the experts reveals the underlying conflicts in the power play between different fields of knowledge throughout the production process:

At the beginning, the staff had a reaction like this, because it's funny, isn't it, I guess, that's an atavistic thing in us, even as this museum was born spontaneously and everything. So that is in the anatomy, from the teachers of anatomy. Suddenly, you give it all to another person to manage, you have to recognize that this person specializes in organizing museums. So you have to give way. That was something the staff had a hard time at the beginning. [...]. But anyway, this entire thing of exhibiting to the public, the dynamics of the museum, has to have a specialized person. (Mu2-2).

Therefore, the changes implemented in the history of *Mu2*, especially with a museologist coming into the team, resulted in making it easier for the public to understand the topics presented:

So, we're receiving a larger audience from first and secondary schools, and so we turned to that side too. I think it was also after that we began to put instructions, clarify things. There's still a lot in the museum that is not clear. (Mu2-1).

It can be said, from the data presented on Mu2, that the public discourse, especially the school discourse, is also at play in the organization process of the expositive discourse. On the other hand, the role of the museologist was instrumental in the reorganization of the exhibition over the years, which also sets in this scheme the discourse of museology. Furthermore, technical knowledge of the professionals who prepare the pieces for the exhibition was instrumental in setting up the final expositive discourse.

In Mu3, another museum belonging to a public university, the collection and the audience played a fundamental role at the conception and preparation of the exhibition. The biologists who were there since the beginning of the assembling of the exhibition of this museum underscore the following aspects:

After many visits, we realized that many things were constant in the minds of children, adults [...]. So, we tried to insert a little more of that which we saw was consistent with the public. (Mu3-3).

The exhibition of *Mu3* was designed by a team with a science background, but also with experience in education, in customer service and in the production of school material. Initially, one of the challenges was to find an expositive language that was understood by a non-specialized public, while not disappointing to the university visitor, where the museum is at. However, the school public became larger and more present among the visitors, which ultimately influenced the choices made about the exhibition, which led to incorporating into the discourse the common elements and content to the school environment:

Partly because we, including in our educational activities, we try to traverse some of the themes taught in the classrooms. (Mu3-2).

The organization process of the exhibit of Mu3 was strongly influenced by the existing collection. With little money, the museum was set up with team effort, using only the basic material belonging to its researchers, provided by the institute which it is associated to.

The museum never had its own budget, much less a high budget. There was always very little money, so we were never able to exhibit what we proposed. The carpentry staff gave all they had, everything was recycled from existing material, and none of what you see here was purchased. Only the aquariums and maintenance equipment, pumps, filters, the feeding part, all of that was bought, because inside there was nothing. (Mu3-3).

In every museum exhibit, different factors ultimately influence the process of setting up the exhibits. Undoubtedly, the visiting public, the collection and resource management were key elements in the design of the exhibit of *Mu3*, which acted as the modulators or effectively as other discourses in the strategy of producing the dispositive discourse.

Mu4 is a science center belonging to a public university, consisting of interactive devices from the fields of physics, mathematics, chemistry, biology, astronomy, history, and others. However, it was designed to work as a museum and that decision was also related to the team responsible for preparing its proposal, basically consisting of museologists. These professionals decided that a science center is a museum and thus incorporated in the production process of this exhibition space, the work dynamics that is a characteristic of museum culture.

Another task of this team was to transpose the scientific discourse of the expert consultants in the disciplines (researchers from the universities involved in the initial project) to the discourse presented in the exhibit:

We had to accommodate and transpose it to the physical space. [...] So, everything that was “museum objects” was created, planned and executed under our supervision. The structure of the expositive discourse was entirely created by us [...]. But there was an entire work project with the researchers. (Mu4-3).

The relationship established between the museologist team and scientists from the different areas of physics, biology, mathematics, astronomy, and other areas, that is, the dialogue between the different discourses used in the construction of the expositive discourse was as follows:

There were general meetings with all of them, more than twenty researchers from all areas. Of those twenty, some always had a greater participation, development and contact and from these general meetings, Ana coordinated the unit. [...] And there were multiple contacts, several telephone meetings, to understand what she was talking about and how we could ‘museum’ it, turn that idea into an exhibition. (Mu4-3).

The statement above, from one of the museologists involved in designing and implementing this exhibition provides the extent of the mediation work between the scientific discourse and that of museology, which the professionals in this area had to deal with. It also presents a good example of the stages needed to prepare the expositive discourse, in experiments in which the central discourse is museology and not scientific. At these stages, the role of the museologist is to understand the scientific discourse, its contents and its structure, to transpose it into an exhibition, thus creating a “new discourse”. This is illustrated by the attempt to organize the exhibition around broad themes and not by subject matters of scientific knowledge.

However, although the museologist often has control over the expositive discourse, certain areas and subjects ended up determining what and how to expose based on the knowledge structure of his/her disciplinary field:

The consultants were the researchers [...]. So we then had a rather broad dynamics. They talked, we thought, they called a professional, we presented the proposal to the researcher for his/her opinion. [...]. In the case of physics, when the proposal is almost ready and finalized, it is generally hermetic, very difficult for us to access their proposal and restructure it because it can't be changed: you either use it or not. (Mu4-3).

According to this statement, it is perceived that the proposals of the advisers from the physics area were often already completed and any mediation between the discourse of these professionals and that of the museum was sometimes difficult. This example shows the tension among the different exhibit conceptions and, as stated by Bernstein (1996), the internal dynamics of production, distribution, reproduction and change of the pedagogic discourse is an arena of conflict, not a stable and peaceful relationship. To this author, conflicts represent the forms of resistance and inertia between the recontextualization actors, either official or pedagogic, and they generate the negotiations that will ultimately define what is selected and what is left behind in the final discourse. In *Mu4*, the negotiation space extended among the team members – here, the pedagogical subjects of this exhibition – according to their areas of expertise, since they had more or less structured proposals about the expositive discourse.

The discourses of science, museology and scientific dissemination were present in the exhibition preparation of *Mu4*. However, besides the restraints imposed by the physical space and the museum design that inspired this

exhibition – an interactive science center –, other factors imposed restrictions:

We also had policy issues, time issues, budget, procurements, inflation... We had inflation that affected all wages, we never knew what we would receive next month because of the high inflation. (Mu4-3).

This illustrates that factors such as budget, available funding, resource management and also the economic situation of the country at that time influenced the choices of how and what to exhibit.

In addition to disciplinary science knowledge, scientific dissemination and museology, other forms of knowledge permeated the dialogue about the exhibition production of Mu4, for example, visual communication and knowledge of technical areas. However, quite often these were subjected to the principles of the discourse of museology:

We worked with the outsourced service of a visual programmer, who performed all of the visual programming. There are several things that show the touch of this programmer. Then there were several other carpentry services. But the furniture design was performed according to our guidelines, we designed it. (Mu4-3).

In the conceptual framework of the exhibition of this museum, the public was a key element. Inspired by the theories of the communication field, the discourse of the museologist interviewed illustrates the education and communication perspective used in museums, which was used here, and shows that mediation was the key element:

The exhibition is not only designed from the scientific area or simply from the point of view of the organizers, but somehow we have to understand the audience, know who it is, how it relates to that theme, positively or negatively, intellectually or emotionally, what pre-established concepts it has with that theme, what prejudices and information it has with respect to that theme. (Mu4-3).

Given that the public is a key element of the work performed in a museum, the expositive discourse imposes its own selective principles in order to make it intelligible, and its role is to mediate the other discourses from its principles and objectives. That is the main challenge of the exhibitions currently, in the museologist's opinion: change from the logic of emission or transmission to the logic of reception.

In *Mu4*, one can perceive the dialogue and conflicts in the construction process of the expositive discourse. In this particular case, in the history of preparing this space, there were not only the science discourses, but also discourses of communication of science, formal and non formal education, through advisors involved in the design of this museum. In addition, the public and communication discourse was taken into account in the preparation of the expositive discourse.

Mu5 is a museum belonging to a renowned public institution of Brazilian research, and since the beginning its goal has been to articulate in its conceptual proposal not only the scientific and historical dimensions of biological knowledge, but also the educational and communicative perspectives of science museums. Thus, the relationship between the different fields of knowledge was determined in its constitution. This can be evidenced in the negotiation between those who dominated the scientific ideas and the artists and *designers* who produced the expositive elements:

I followed all of the visual programming, I spent nearly two years, I did an intensive course in visual programming. I went there almost every day to look at the panel, and then I would say "Now you change it like that". When I got there I'd say "You removed the picture from here that matched the image over there". He'd say "But that's because it looks more beautiful here". I'd say "But it doesn't match the concept". [...] He may have an idea of creation, what to

place lower and all of that. You really have to follow the work step by step. (Mu5-5).

One can perceive by this statement, through the previous discourse, examples of negotiations taking place while the expositive resources were being prepared. Technicians from different areas of communication were hired to carry out the conceptual framework of the exhibition, and gradually the conflicts of perspectives, the different approaches of each area began to unfold in the clash to produce the final discourse.

The translation process of the initial design, usually prepared in a textual manner, during which the contents are itemized, the possible objects, different resources, the desirable strategies to be presented and verbally explained to the technician, experience specific challenges to be achieved, especially in the case of a spatial exhibit. In *Mu5*, the person responsible for following the work of the visual programmer relentlessly negotiated his conceptual goals with the technical and artistic work of this professional. The initial project was constrained due to the exhibition space, the target audience, the aesthetic, educational and communication demands and changed the production of the final expositive discourse.

The transposition of ideas and content initially proposed in the selection processes, which also relate to the support with which this information will be presented, hence requiring a joint effort between the professionals who designed the proposal and those who execute it. Therefore, the relationship between content and form of presentation should reach a common denominator, although this is not a peaceful negotiations setting:

We did everything from start to finish: we researched image, text, video, prepared a text, sent it to be reviewed, it comes back [...]. Then, we made many choices: the colors of every room, then we worked on the color of the panel, there are panels with

green, blue, red tones. It was all divided, a part came from the museum exhibition, a part from the visual programming, the part is a choice [...]. You have a task, a deadline and a cost. So the more you know about what you want and how you want it, when preparing the budget, helps you make better choices. (Mu5-5).

Even internally within the team, as shown by the statements, there were moments of conflict, either on what content to address, or what language to use. This aspect is evidenced by the statements of the biologists responsible for producing the texts and hypertexts of the exhibit, and which point to the challenges of translating the scientific knowledge to the public visiting the museum:

I never had that experience, which happens to everyone, I explained to the team the things I wanted to put on the hypertext and they said that the way I explained things was complicated. I have no experience with this, it was hard; sometimes I simplified too much and wound up changing the idea. [...] I had to consult books, many didactic books to make it simpler. I had to consult the textbook together with a more specific book to follow along. [...]. If this word is very complicated, can't you substitute it with another word? Then I tried changing it. (Mu5-6).

The preparation of the different resources used in the exhibit entailed different choices, either objects or the language of the texts. There were many criteria that guided these choices, but one can clearly see the importance given to the public in the process, especially the school public. The use of researched references in textbooks to help in the process of transposing the contents was mentioned, pointing to the presence of knowledge from the school culture in the museum space. Even if structuring the school discourse is not the main aspect in the

preparation of the exhibit, it appears as an important reference in the recontextualization process of scientific knowledge, especially if this public profile is the profile that most visits the museum.

The background of the team professionals shows that many are experienced in the construction of the expositive discourse of *Mu5*. Along the same perspective, other productions from science dissemination were also consulted to prepare the exhibition, as shown by the following statement:

And when you try to simplify a text or knowledge in an easier manner, you can make a conceptual mistake and we have a very critical reading. We read magazines and newspapers that included dissemination, mainly in genetics and discussed it. Because sometimes they wrote it in a simplified manner and made mistakes, misconceptions. So then we wrote a text and read it separately, and asked: "Is there something that was not understood?". (Mu5-5).

This exhibition also shows another particular factor. Because it was not prepared by scientists from the biological field, but by biology teachers, psychologists and historians of science, these professionals also had to interact with the researchers of the biological area of the institution the museum belongs to. The discourses of education and dissemination, represented by the professionals in the museum's coordination team, established a relationship with the discourse of science, which in this case was not the main one and was subjected to the principles of the first ones:

This relationship [with scientists] has some odd things. On the one hand, it is sometimes tense and that is endless. Scientists want everyone to like their discovery and its specific contribution and that everyone understands it. The

problem is that sometimes that is not the case. We have to render a beautiful translation of his work and what he is trying to show. It is a tense relationship, but it works. Another complicated issue for us is the efficiency of rigor. Of course rigor is necessary, but sometimes it limits things too much. [...] And after some time you will see that the first rigor complicates the matter of aesthetics. So you have many difficulties to resolve in this regard. (Mu5-2).

Another important aspect seen in the negotiation of discourses to prepare the exhibition of this museum regards to the impositions made to its architectural design, regarding the protection of the national heritage site. Restrictions to changes in the building's architecture, the obligation to maintain the historical aspects in the construction of the space, among others, determined the profile of the exhibit. There were negotiations done to reach a consensus on what could be or not modified, and the construction of the exhibit had to take into account the physical structure of the venue.

Oftentimes the solution was to incorporate these architectural elements to the narrative of the exhibit, highlighting them or using them as part of the expositive structure. Thus, the limits imposed by the physical space were crucial to prepare the final discourse.

The examples presented above have highlighted the negotiations, the actors, the discourses and the fields involved in the discourse production of five science museum exhibitions. These data lead us to think about the production process of the expositive discourse, and more specifically about the working dynamics of the pedagogical recontextualizing field of museums, characterizing the actors and institutions involved and the relationships between them.

The recontextualization and the workings of the pedagogical recontextualizing field to structure the expositive discourse

The workings of the pedagogical recontextualizing field were analyzed based on the concept of pedagogical discourse and recontextualizing principle that characterizes this discourse (BERNSTEIN, 1996). We first emphasize that the data obtained reveal the existence of different discourses that are part of and are re-contextualized in the structuring of the expositive discourse. The following are some of the discourses we identified:

- the science discourse – represented by the contents of biology, the health area and history of science;
- the museum discourse – which covers the museum chain that goes from acquisition to conservation, documentation, preservation and extroversión of the collection and includes issues relating to the historical and interactive objects exhibited;
- the educational discourse – related to the purpose of helping the public to understand the scientific information offered at the exhibitions, highlighting the teaching and learning aspects that occur in these spaces;
- the communication discourse – centered in the information transmission process through strategies in the areas of visual programming, the visual arts and *design* areas.

In the recontextualization process, these discourses are related and produce a new one, the *expositive discourse*. This is similar to the pedagogical discourse, from the recontextualization rule, transforming the discourses in order to insert the instructional discourse (referring to the areas of scientific knowledge) in the regulative discourse (referring to the areas of museological, educational and communicational knowledge), producing its own discourse.

But who participates and has power over the definitions of this new discourse? Who are the actors and how does this relationship take place? How is the pedagogic recontextualizing field characterized in the expositive discourse?

As indicated by Bernstein (1996) the official recontextualizing field (ORF) is created and dominated by the State and its stakeholders, including the local education authorities, along with their research and inspection systems. Thus, in the case of museums, the ORF can contemplate the official institutions that maintain direct relations with the museums and those that are indirectly associated to it (MARTINS, 2011). We will not linger on the characterization of that field in this text, but to illustrate this, we point out that the *ORFmuseums* can be composed of state agencies – ministries and departments of science and technology, of municipal, state or federal education and culture – which determine that discourse through funding and public policies. Moreover, universities and research centers may be involved in *ORFmuseums*, depending on the participation and influence they have in shaping the final expositive discourse.

With regard to the pedagogic recontextualizing field/*PRFmuseums*, our data show interesting aspects that help to characterize it. According to Bernstein (1996), the PRF is composed of professionals responsible for the recontextualization of the pedagogic discourse at the educational institution level or those that directly influence it. With regards to the five exhibits studied, it is seen that several actors have power and participate in this process by different means, such as adapting the scientific discourse to make it more accessible to the public. These individuals in turn re-arrange the contents, adapting them to the spatial specificities of an exhibition, giving new meaning to texts, objects and images, making them attractive and comprehensible to the public visiting the museum.

Depending on the historical and political context and on how the work is divided at each

institution, stakeholders such as the directors and members of different divisions and departments in the museums, such as coordinators of sectors and curators, may have more or less control over the expositive discourse.

As mentioned earlier, the study about the production of expositive discourse guides us to understand who are the pedagogical stakeholders that define what and how to exhibit, and who take on various positions to determine the rules of control and legitimization of the final discourse. In *Mu5*, for example, some of those responsible for controlling the final expositive discourse were the sector coordinators of the institution with a scientific and historical background, and also an education and dissemination background. These coordinators closely followed the activities of the artists involved in the production of the display panels, controlling both the accuracy and the potential communication of the expositive discourse. Therefore, the goals of the museum and the exhibition and the team's professional background enforced the need to consider the public, especially the school public, to determine the level of complexity of the contents addressed. The role of the school public in the production of the exhibit was also evidenced in *Mu2* and *Mu4*, demonstrating not only the role of the school discourse in the recontextualization of the expositive discourses, but also the conceptual complexity levels assumed by the exhibits analyzed.

The data show the role of the background of the various professionals involved in the production of the exhibits in the museums under study. In addition to the experts in the scientific fields, the educators and museum experts who participated in the final definition of the expositive discourse of the exhibits studied, had greater or lesser power of decision according to the autonomy the institution granted them to carry out the task. The data showed that, in *Mu1*, *Mu2* and *Mu4*, for example, the professionals in the field of museology had a key role in the selection and

formatting of content and the manner in which science was presented in their exhibitions. In such cases, amid negotiations and tensions, museology was also perceived as an important discourse mediator and its professionals, actors who determined what actually appeared in the final proposal.

However, even with less autonomy and power, other professionals are within the pedagogic recontextualizing field of museums – PRF*museus* –, such as *designer* and artists, to the extent that, from negotiations, they bring forth their ideas, concepts and views about the knowledge being presented. This aspect can be seen especially in the exhibit of *Mu5*, as evidenced by the negotiations between the coordinators (*Mu5-5*) and the artist responsible for producing the panels at the exhibit.

In the other museums, the technicians in charge of preparing and assembling the animals and taxidermy, the carpentry technicians, electronics technicians, for example, are involved in preparing the exhibitions and can also be identified as subjects related to PRF*museums*. Their specialties often influence decisions and promote interventions in certain aspects of the expositive proposal, adapting it, and suggesting possibilities for the production restrictions and also for the operation and safety of the objects in the exhibits. This aspect can be seen, for example, in *Mu2* where the technicians responsible for preparing and assembling the animal skeletons exposed, defining the position of these assemblies and often influencing how these objects appeared in the exhibition.

We emphasize that the different actors that comprise the PRF*museums* have relative autonomy in the production of the expositive discourse and that this varies according to the institutional context. The decision to give voice or not to the other discourses beyond the scientific discourse is a policy and management decision of the institution and is influenced by the funding agencies, government culture and education policies and the control groups – that is, the ORF*museums*. These decisions

entail selecting the teams and professionals from different areas – with their different discourses (PRF*museums*) – to participate in the preparation and will participate in the recontextualization process during the production of the expositive discourse.

However, even giving voice to different actors, this space alone does not guarantee that they will effectively participate with the same weight in the decisions, choices and selections that will be undertaken during the recontextualization process. This universe of negotiations contains social, cultural, political and ideological factors that may regulate the relationship between the different discourses, giving voice to some and silencing others. The power groups in the production process of the expositive discourse can control this power distribution during the preparation of the exhibits.

Thus, determining what are the contexts of production and reproduction of the pedagogic discourse in museums will depend on the relative autonomy granted to the agencies at different levels of the production and reproduction system of knowledge in society, and the expositive discourse may include, as part of its recontextualizing practice, school discourses and technical knowledge, among others, in order to make its own discourse more effective. As pointed out by Bernstein (1996), the way to regulate and the social composition of the different actors can vary from one historical

situation to another, and in the pedagogical field those who produce new knowledge may be their own recontextualizers.

In the case of museums, as observed, depending on the historical context, the institutional policy and conceptual proposal of the exhibition, other actors can also be part of such recontextualizing field of the expositive discourse, such as the administrative, scientific staff and museum technicians, in addition to teachers and the general public that visit it. Thus, this paper postulates that the expositive discourse is a discourse on its own, because as it has specific objectives and replaces other discourses from its own characteristics, it becomes and behaves like the pedagogical discourse according to Bernstein's perspective.

Studies on museum education in its sociological dimension provide key elements to understand the dynamics of selection and power distribution during the preparation of the expositive discourse. By regarding that it is primarily through the exhibits that the public is involved in the teaching and learning processes in museums, which are research activities that explore the sociological perspective of the museum didactics, they can collaborate, hence revealing the production dynamics of these elements, contributing to prepare the professionals who work in these venues, therefore qualifying the educational activities they have developed.

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Received on April, 11th 2014

Approved on September, 2nd 2014

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