

Documentation in Science & Technology: accessibility to diverse audiences

Emanuela Sousa Ribeiro¹

This communication aims to present theoretical and methodological reflections about documentation work of science and technology (S&T) university collections, which we have been developing at the university field at Recife, capital of Pernambuco state, in Brazil, as part of the research *Project Valuing Brazilian's Science and Technology Heritage*, coordinated by the Museum of Astronomy and Related Sciences, which we are institutional partners.

For this communication's purposes, we confine our analysis to our own experiences in field research, conducted at the Federal University of Pernambuco, the largest public institution of higher education in the north and northeast of Brazil and at the Catholic University of Pernambuco, largest and oldest private institution of higher education from the same regions.

In order to *perform a field search that produces a survey which allows the visualization of a panorama comprehending objects sets which would be candidates for constituting a possible national inventory of the S&T assets in Brazil* (GRANATO, CAMARA and MAIA, 2010), we have visited museums and collections already systematized, as well as, laboratories, warehouses and department offices in the areas of hard sciences, sciences of earth and engineering sciences, particularly at the universities mentioned above.

In this first stage of the study, our visits did not predict the unitary identification of the objects, but only a recognition of the already existing collections in the surveyed areas, as a collection belonging to this or that institution. Roughly speaking, we can describe this kind of visiting and identification of collections with the following actions:

1) The contact with the institutional responsible for the administrative unit that adds laboratories is made; an official document presenting the project and the form to be filled are issued, the objectives of the project are explained, trying to sensitize the manager so that he can make the contact to the collection's direct responsible easier, emphasizing the situation of imminent loss of the acquired science and technology collections in the country.

¹ Professor, Department of Anthropology and Museology, Federal University of Pernambuco (Recife - PE - Brazil). E-mail: emanuela.ribeiro@ufpe.br , emanuelasousaribeiro@yahoo.com.br

2) The contact with the direct responsible for the laboratories in question is made and again the sensitizing argumentation is made. As a result of this step, either the responsible schedules a visit to a later date or transfer the responsibility to an older researcher in the university, who “enjoys these old stuff more”.

3) A visit in the concerned laboratories is conducted, and there a large range of equipment and instruments are presented, dispersed in different environments, conservation degrees and conditions of use. Invariably the responsible remembers that many other pieces, which might be of interest to this research, have been delivered to the sectors of the warehouse, because they are useless. At each visit, the person responsible for the collection’s registration discusses the points of the form to be filled with the head of the laboratory, takes notes, makes photographs and leaves.

4) The final form is filled in another time, and then a copy of it is issued to the institutional responsible, or even to the collection’s direct responsible.

On future, an inventory of the collections individually identified will be needed, however, the human and material resources - and especially the political will - to do so, don’t exist yet.

This routine, repeated with greater or lesser difficulty of access to laboratories to be surveyed, summarizes the practical activity of identifying science and technology collections existing in university laboratories. Knowing this *modus operandi*, we now discuss the subjective of these S & T collections’ identification, held by the responsible for the registration of the collection, coming from the language and values translating, both exposed by the researchers responsible for the laboratories.

Through the empirical observation we have been conducting we can say that in most cases, the visited laboratories do not realize their S & T objects as objects with cultural value and certainly not as objects which are in collections, so that these need to be identified through the interaction between the researchers responsible for the labs and the researchers responsible for filling out the identification form, which we call, from this point forward, the documentalists. And is in this dialogue that you can realize the elements valued by these two agents in the formation of the collection are different.

Also by empirical observation we can say that those responsible for the laboratories tend to show the objects individually, choosing them from among the various laboratory equipment for two main reasons: either because they are *old* or mainly because they are

interesting - to use the terms most commonly used during the research that we have been conducting.

The choice of the older objects seems to be made to fulfill the request of the research, since the character of chronological seniority is unambiguous and easily understood by both parts, considering that it is an objective criterion identified the object by dating, although approximate - this criteria, at this stage of the Heritage Enhancement Project for Scientific and Technological Brazilian, sets the possibility of cataloging object / collection.

This choice directs the researcher and the documentalists for a value raise of the object's time, which goes from present to past; the object which has value because it has survived and continues to exist. This sense attributed to the pieces chosen by the criterion of chronological seniority brings us to the concept of artifact, as explained by Prown, for the study of material culture:

An artifact is something that happened in the past, but, unlike other historical events, it continues to exist in our time. Artifacts constitute the only class of historical events that occurred in the past but survives into the present. They can be re-experienced; they are authentic, primary historical material available for firsthand study. Artifacts are historical evidence. (PROWN, 1993, p. 2-3)

We emphasize that this value of historical evidence assigned to the S & T objects - as an artifact - is shared between those responsible for laboratories and documentalists. But the sharing of meanings and values ends there.

The selection of *interesting* S&T objects which are presented for the cataloging is operated, by researchers, from scientific functionality, not from functionality as an artifact. It is not just about an ancient object, but rather an object which, whether old, still has a feature as an object / equipment / machine capable of denoting scientific principles, rules of operation of physical-chemical relationships, and other scientific theories. These rules, the principles and theory, are supposed ahistorical, i.e., they may exist at any time and any space. Thus, the object is valued for its ability to represent this ahistorical feature, for what it is perennial - the experiment which is capable of playing, as it is able to specify, the scientific phenomenon it produces. One can identify a movement of time valuation of the object that "makes it present" forever, from its scientific value.

At this point, documentalists – who have the responsibility to indicate the collection, in the collection's documentation form - lack the know-how to value these objects regardless

of their nature and artifact and more than that, do not have the technical capacity to document this type of scientifically supported phenomenon and different temporality valuation ².

This discussion could be closed with a simple recommendation to the documentalists to study physics, chemistry, thermodynamics, optics, and even the Stirling Cycle! However, it is not only to know the scientific principles that are being presented through the artifacts. Besides the practical impracticability of this recommendation (it is not viable to study everything about everything!), the paradox that underlies this case, is the clash - already in the process of documentation of collections - between two distinct ways to understand the achievements of science and technology.

On one hand, documentalists are those who are doing the provocation for the formation of these collections - more than once during our visits to the laboratories we hear comments like: *I need to gather it all in one place!* - and formally, in this case, documentalists are performing themselves the musealization process, which can be defined as:

set of actions characterized by the separation / displacement of the original context and deprivation of use of the some objects, which would then perform the function of documents. Used in this study, the term 'object musealized' to emphasize the process character in practices that involve musealization. (LOUREIRO, 2007, p. 8).

It is understood that the documentalists privilege, in the work of documentation, the characterization of objects as artifacts. Thus, the documentation also *emphasizes the act of selection and favors the documentary function of the object* (Menezes *apud* Loureiro, 2007, p. 09).

On the other hand, for researchers, apart from this valuation of the object as artifact and document, is the valuation of the object as capable of reproducing the scientific phenomenon. This assignment of value refers to the Pomian's reflection, about the scientific instruments while “semióforos” emerged in the eighteenth century:

they come from a change in attitude with regard to the invisible that it tries to restrict the boundaries in nature, forging, to mention a new language: the mathematical theory, which, from what we see, must arrive at infallible conclusions about what you cannot see. (POMIAN, 1984, p. 78)

It is not, of course, to hierarchize the allocation of values, but mainly to be aware of the process musealization that is taking place, trying to avoid creating a dichotomy between ideas

² Highlight the entire work, but more especially at this point, the character of a case study of this short-communication. For the research team that i work, as well as regional museology environment, it is not customary that the documentalists (museologists or not) have training in hard sciences. However, it is possible that in other environments that reality is different, being inadequate to this analysis.

versus objects (*cf.* Menezes, 1992, apud Loureiro , 2007, p. 12), or between musealization historicized through objects versus ahistorical musealization through the phenomena.

This dichotomy that supposedly only appear on the tips of museological processes - where the public comes to access these objects through the exhibition - can be felt early in the process, at the time of establishment and documentation the collections, which could limit the accessibility to some of these values and content.

Indirectly, this is mainly to avoid - at the other end of the musealization process - the dichotomy between the approach than conventionally called *science centers/promotion of science versus* the approach of *science museums*.

It's now almost a consensus the perception that science centers *in the effort to approach the public began to adopt innovative strategies represented, often by replacing the historical objects by teaching apparatus for demonstrating scientific phenomena.* (VALENTE, 2005, p. 55), while the science museums make a closer approach to the history of science, and the chronological presentation - often linear - the scientific work.

Whereas, according to Loureiro, exposure as

principal means of communication between the museum and its public, the exhibits in science museums also reveal and express different views of science and scientific activity. Different ways to expose trends and respond (either explicitly or implicitly) to different positions and attitudes toward science, scientific and educational policies and demands of society. (LOUREIRO, 2007, p. 14).

It's realized the need to overcome this dichotomous approach not only when it comes to the exhibition and educational process (See: VALENTE, 2005), but mainly in the context of museum documentation. At this level, which collects the first - and in reality, unfortunately, often the only - information about the collection, the choice of approach will be made determines the exclusion or inclusion of a range of subjects related to the holdings of S & T, determining also the future access.

We believe that the documentation has major role in the communication process between public users and academic-scientific world, serving as a mediator between different concepts about objects and input that comes from a very specific professional culture and environment radically different from the regional museum: the culture of academia and the so-called "hard sciences."

Within the scope of the activity that we have been conducting, these reflections serve as preparation for the second level of documentation work, although one should not lose sight of

this question at this point, to at least highlight those institutions that need to be revisited in the future, in order to accomplish the systematic documentation of this second type of valuation.

However, at the macro level, we believe that, as in Portugal (*Cf.*: DELICADO, 2008), in the northern and northeastern Brazil, the S&T museums stop, gradually, to *have only the function of spreading scientific knowledge and generate a positive attitude to science*, to take a *direct interest in the scientific field* (DELICATE, 2008, p. 55). This implies the urgent need, that already institutionalized museums, or those responsible for the collections dispersed in laboratories, both assume joint responsibility for the technical and scientific training of documentalists, and assume, increasingly, the role of actors in the process preservation of S&T collections.

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