

## **Educational Role of the Science Museum in the Scientific Translation Classroom**

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### **ABSTRACT**

*The present paper is an example of the role that plays now the Science Museum in the translation classroom. We will explain some aspects of an Innovative Project develop in the Science Museum of Granada as a new space for translation and accessibility studies. Our goal was the creation of a prototype of multilingual guide in order to make accessible the objects exhibited in the “Pavilion of the Human Body” at the Science Museum of Granada. We study two sections of the Pavilion: the one on the nervous system and the one on the reproductive system. The methodology was based on the new socio-constructivist theories that help our students in the translation process. And the conclusion is that the museum is conceived of not as an educational institution in the same way as schools or the university, but as a medium or instrument for the ongoing education of the citizenry.*

**Keywords:** Didactics, Translation, Accessibility, Audio description, Museum.

### **1. INTRODUCTION**

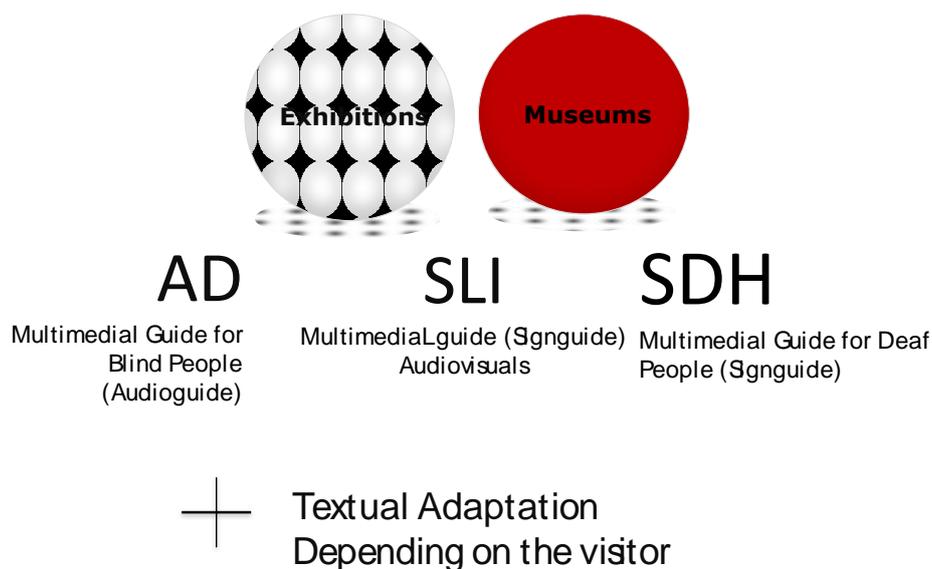
This paper presents some results obtained by the Innovation Project *Translation and Accessibility: Science Accessible Popularization. Science for All*. This project is based on preliminary works already done at the Research Group TRACCE, and focus on studying aspects such as translation and accessibility, audiovisual accessibility translation, multimodality, access to knowledge and translators' training.

In the last four years, TRACCE has created a huge database on audio described films for blind people, in order to examine some characteristics on the Audio description (AD), using techniques and methods based on the Multimodal Corpus Linguistic. The results obtained with the didactic application of that Project will make people able to create proper audio descriptions. From that experience we could see that the exploration of the concept “multimodal” was useful in order to teach the students the main aspect of the translation process in a natural way. The step from multimodality to museum accessibility was easy because we could coordinate in the same place the museum and different modalities of accessibility (Audio Description, Sign Language Interpreting and Subtitle). This experience was developed in the *Pavilion of the Human Body* at the *Science Museum of Granada*.

One of the main goals of the present Project was to use different modalities in museum accessibility and translation in order to give the students new learning tools in the

translation process. The *Pavilion of the Human Body* was considered as the ideal context for the student, as a new translation classroom. The students determined a global translation assignment: the creation of an accessible multimedia guide, as a final product, focused on the users with disabilities.

TRACCE worked with a multidisciplinary team formed by: teachers, students from many Departments of the University of Granada, the *Science Museum of Granada*, Accessibility Agencies (Gizerbitek S.L and Aristia Productions); Mediation Delta Team, Sign Language Interpreting students, etc. This Project also has a multidisciplinary approach: Museum Studies, Disability Theories, Multimodality, Socio-constructivism Theories, etc.



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Fig. 1. Cultural spaces and materials which are part of the Innovative Project

### 1.1. A global vision of the new museum

To address the above issues, we begin with a brief historical sketch of museum institutions from the beginning of the 20<sup>th</sup> century, surveying the main landmarks in the development of the concept of the museum. Until the 20<sup>th</sup> century, the only function of museums was to preserve a collection of objects, usually decontextualized—that is, with no relation to their original context. These institutions acquired and preserved pieces, but without any pedagogical concern. Classical museums were only an

exhibition space for stored objects, and the only elements that characterized these museums were the pieces and the space. In the case of art collections, the traditional museum model was “a wall, a nail, and a picture hung on the nail” (Hernández Cardona 2007: 40). This concept of museum persisted into the middle of the 20<sup>th</sup> century.

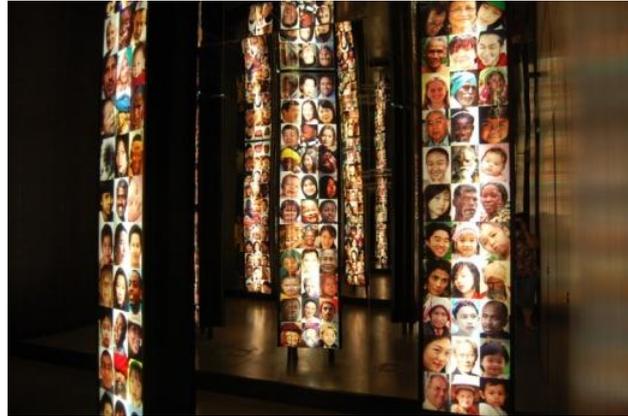


Fig 2. Human Diversity at the *Science Museum of Granada*

New interest in studying the functions and the objectives of museums emerged thanks above all to the creation in 1926 of the International Office of Museums, which was the basis for the publication of the journal entitled *Museion*. However, only after World War II, and more precisely after 1946, the year that the Museums International Council of Museums (ICOM) was founded, did the purpose of museums begin to be examined, establishing the definition and function by which museums are known today:

*A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment.*

*(ICOM Statutes. Article 3, para.1)*

This definition, undoubtedly a milestone in the evolution of the concept of the museum, opens a new vision of this institution and of its social role. As a consequence, three new functions were added to the two mentioned above. The result is a set of five functions representing the basic requisites of any museum: to know, preserve, acquire, exhibit, perform research, and educate. In the 1950s, the concept of the museum took a major developmental step with the birth of two complementary disciplines, Museology and Museography, related to the theoretic and practical aspects, respectively, of the institution. From then onwards, the traditional museum became steadily more antiquated and, above all, inadequate for the new demands, given that its dense concentration of objects corresponded to an absence of didactic resources. The aesthetic concern alone came to be viewed as insufficient and the need arose for a communicative component to predominate, i.e. to conceive of the exposition as an “area for communication and transmission of knowledge” (Santacana; Serrat 2005: 52).

In Spain, since the end of the 1970s and 1980s, certain emerging groups of professors exploring new teaching methods that contrasted sharply with the classical ones began to treat the different disciplines as didactic material. The final two decades of the 20<sup>th</sup> century saw a fundamental conceptual shift: the protagonist of the museum was not solely the object on display but now included the observer of that object.

Thus, to the fundamental aim of conserving the pieces, a priority of equal importance was added: attention to the potential users of the exhibition. These users make up the so-called visitor horizon, a term that encompasses all types of public, with different expectations and needs that must be taken into account in designing and fitting the programme offered by any museum.

In other words, as soon as the public turns its attention to the museum, this institution has the obligation to find the ways of turning its attention to the public. Hernández Cardona used the term “anti-dialogue” to define the type of museographic approach used up till then in most institutions. According to this anti-dialogue, until very recently, the museum had not taken into account the needs, interests, or comprehension capacity of the visitor (Hernández Cardona: 2005). On the other hand, the decision of establishing a dialogue between the user and the museum has led to the development of didactic and interactive approaches that motivate the visitor to draw closer to the objects on exhibition.

## **2. OBJECTIVES**

As mentioned above, in contrast to the idea of the museum as a temple of the arts, the idea of a museum that has a truly educational mission began to develop. In this sense, we should note that Didactics has always been influenced by the dominant currents of thought in each historical period. Thus its study object has varied depending on space and time, cultural implications, and economic and social changes—in short, depending on the zeitgeist.

Today, Didactics can be conceived of as the systematization of everything related to teaching and its organization: objectives, scope, methodology, and evaluation. In this sense, didactics applied to the museum would mean that the holdings should be displayed to all types of public in a “quick, lively, and effective manner” (Cameron 1968: 109).

If the learning process starts with objects, the student knowledge should begin and end with the study of real objects. In this sense, the instructor should bring the objects of knowledge as well as their most relevant aspects close to the student who wishes to learn. When museums communicate to a society the meanings implicit in their collections, not merely through the exhibitions without any other means (courses, conferences, didactic activities, catalogues, guides, etc.), it should be taken into account to whom those collections are directed and how, as well as the interests and expectations of the users: to teach thinking skills and methodologies to the students to enable them to develop their own concepts of history, science, culture, etc.

Hence, we consider that for an effective prosecution of the objectives explain in our experiment and a proper application of a working methodology during the student’s

visit to the museum, it is recommendable that the student be previously prepared to some degree and that the methodology be previously applied in the classroom using objects that are familiar to the student. Furthermore, the student will have a number of skills such as observing, describing, comparing, classifying, synthesising, recapitulating, and relating elements, as well as formulating hypotheses. For this, the museum should inform the teacher as to the prior knowledge needed by the student before the visit, in order to adapt the expositive message to the particular didactic needs of each situation.

Our didactical proposal is based on constructivism theories. As a reaction of the traditional translation teaching, which only consisted on reading and translating from a source language to a target one, the constructivism approach started to consider learning and knowledge in a different way. According to Kiraly, in a social constructivist perspective, the individual is never alone. We learn to communicate by sharing and contrasting perspectives with other members of the communities to which we belong to (Kiraly 2000: 34). Currently, constructivist theories, -in our opinion-, offer intriguing possibilities for building on not only scientific discourse but also the expositive element. Fundamentally, this implies an epistemological stance that supports the explicitation of the scientific processes followed in the interpretations and do not accept that the conclusions constitute absolute truths. This enables the visitor to interact better, since the exhibition can be conceived in such a way that the users can construct their own discourse, although, as opposed to the post-modern approaches, the visitor will be helped to do so.

In the translation classroom, students have a central role in the learning process, as they construct their own knowledge. We have proved that the creation of discussing groups help students to work on translation problems and discover new solutions. In this case, the reason why we develop our experiment as a didactic workshop is based in the fact that the didactic workshops involve greater participation of visitors. The person going to the museum (our students) is treated not as a visitor but as a user, as a person who will interact with the exhibition centre and with the objects on display.

Three reasons can be enumerated for undertaking our didactic workshops:

- a) Planning and development: the need to create open settings for the user to witness the research method itself of each discipline in relation to the collection. It is meant for our students to apply their own knowledge and abilities with respect to the displays.
- b) Capacity of expression by the users. The museum visit can help stimulate their creativity and imagination of our students.
- c) Playful component, games, where the indispensable element above all with respect to the young, to make the museum visit a novel experience for our students.

According to these reasons the objectives pursued by our didactic workshop were:

1. Introduce the processes of research in reference disciplines: Scientific Translations, Translation Process, Rules for Scientific Translation, Strategies of Translations, etc.

2. Involve users and strengthen their participation. Our students could visit *in situ* the plastinated specimens they have to study later on.
3. Motivate physical and mental activity by the students.
4. Reinforce learning by action. The process of translation was based on studying but also on visiting the new space
5. Transfer learning to similar situations.

Also, our workshops had mediators, we as teachers, who have appropriate didactic museum materials at their disposal: texts, graphs, multimedia, etc.



Fig. 5. Workshop inside the museum

The didactic materials used in a workshop combine resources used to undertake certain didactic activities inside or outside the museum, directed therefore at a more specific public.

Traditionally, the didactic materials used were paper and written texts. Gradually, however, new technologies have been introduced. Today, there is a need to prepare good didactic material, with attention to: significance (closeness to the reality of the user), transferability (possibility of occurring in other contexts), curiosity (challenge for the user), suitability (matching the cognitive level of the user to facilitate learning), and diversity (varied contents, i.e. conceptual, procedural, attitudinal). In fact, all the didactic material should undergo a preparation procedure, from the technical sheet to the evaluation, including the type of user, the objectives, the programme, methodology, etc.

Thus, our workshops and didactic activities related to exhibition can constitute an especially useful medium to offer specific explanations concerning how to visualize the abstract ideas materialized by the display objects and the relations among them. Our explanations furthermore fulfil a specific objective: to stir curiosity about the past, using authentic objects and original documents, which act as a talisman for experts.

### **3. METHODOLOGY**

At this point, to demonstrate empirically the innovative role that museums can play in the didactic sphere, below we present our proposal, the key aim of which is to use the museum space, concretely, the *Science Museum of Granada* (Spain), as an extension of the translation classroom. This didactic experiment was applied to two courses offered at the Translation and Interpreting Faculty of the University of Granada (Spain): Scientific Translation 4 (English) and Scientific Translation 5 (Italian). Our choice to use the museum as a didactic resource and object of research outside the classroom was especially fitting, as it enabled the discovery of another approach to the learning of science. Moreover, the museum visit induced the students of both courses to acquire in-depth scientific knowledge that helped them consolidate their cultural baggage necessary to approach the subsequent translation of scientific texts using an innovative outlook.

In translation classes, one of the most important goals is for the student to acquire not only conceptual knowledge but also notions of procedures and attitudes. In this way, the student can develop certain tasks in an independent way (Soler et al. 2011: 319). In the present study, we propose a teaching model as an alternative to the traditional one, with some modifications, arguing that it can be more productive to use the socio-constructivist model, in which learning facets can be linked by discovery and by significant reception. In this way, we seek to innovate in the methodology of teaching translation. This new proposal, grounded in psychological theory, focuses on the development of intellectual faculties beginning as a system capable of storing, processing, and recovering information. The objectives include the processing of information and guidance in significant independent learning (Fedor de Diego, 2003).

Initially, we should start from the precept that didactic workshops should fulfil the aim of introducing the user to “research processes for the discipline represented by the museum collection” (Miles, 1998: 163); and that this proposal is appropriate in the search for meeting points between the user and the museum

As indicated above, the researchers in the area of Translation studies have been centring on the study of learning processes, social influences, and individual factors that determine academic success. The objective was to draw pertinent conclusions based on reality in order to learn the most useful strategies to deal with different phases of the translating process.

According to Risku translation “is a problem-solving process in which the translator learns by trial and error” (1998: 142). In this sense, multi-modal translation places great didactic value on learning the epistemology of translating, as the translation student should take into account the elements that comprise the translation task, and therefore it is vital to consider the specific needs of the receiver or group (visually impaired) in order to apprehend the inter-semiotic transfer of this process, and, finally, to prepare the final text (accessible audio-guide).

By the trial-and-error method, the student will acquire universal strategies of translation that could be extrapolated to other translation tasks. The relevance of translation work is, therefore, a key factor in the development of the translator. We contend that if the practice is undertaken in a real context, students will manage the task better, as they will be motivated and can apply the translation skills assimilated.

In an innovative way, multi-modal museum texts were used in this experiment so that the students learn to analyse and interpret the mechanisms of constructing the meaning in the original text, as the students must integrate and interpret the different semiotic resources present in the museum exhibition in order to gain access to the discourse to be transmitted. On the other hand, used as documentary resources, the multi-modal texts and events ease access to knowledge while buttressing learning processes (Thesen et al. 2004; Ghazanfar & Schroeder 2006; Stafford & Webb 2005).

All these theories have been applied in a methodology as follows. The following activities were undertaken:

- Outside the classroom: a visit to the *Science Museum*, specifically the *Pavilion of the Human Body*, where the students could appreciate *in situ* the nature of the different plastinated specimens. The teacher filmed a video of the scientific presentation in the museum on the plastination technique, in such a way that the thematic content was covered from the beginning.

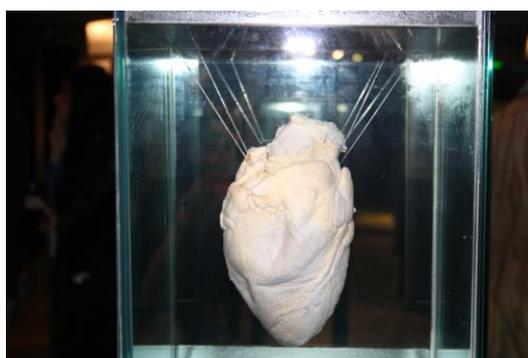


Fig. 6. Plastinated Heart

- For the students who had been unable to visit to the museum, the video aided in understanding the theme of the plastination event, but also served to document the texts that were to be translated later. Thus, the instrumental and thematic issues were largely resolved. The interest displayed by the students in the museum visit, with their continual questions on the theme as well as the debate sustained concerning bioethical problems, determined the psychophysical dimension.



Fig. 7. Activities outside the classroom

- Inside the classroom: The students were given the original texts to read in order to make an exhaustive analysis of them. Afterwards, the students searched for parallel texts in the corresponding languages to prepare a glossary according to the rules previously established, using the list of texts specified by the professor. It was recommended that they should expand this list using other sources in Spanish which treated the theme of plastination together with parallel texts in the work languages as well as online dictionaries. In addition, the translation of the scientific texts was initiated by the instructor's assignment to do a reliable translation. The assignment consisted of the translation of texts provided by the teacher which are part of our prototype accessible audioguide.

Finally, to complete the didactic unit, the evaluation phase proceeded with:

- The direct supervision of the students in the classroom, taking note of everything considered important (general features or particularities of each student, pertinence of the questions, problem-solving capacity, etc.).
- The analysis of the translations made by each work group.
- The assessment of the level of fulfilling the aims, taking into account other important aspects such as the degree of interest demonstrated in the activity performed.

#### 4. DISCUSSION

After reaching the above objective, the teacher, also called guide or consultant, should introduce and guide the student in a learning process by encouraging discovery, questions, debate, and discussion. The instructor intervenes actively until, progressively, the process reverses. The goal of this phase is to instil a critical sense, responsible decision making, and an open attitude in the student confronted with new experiences and situations.

For the application of an effective working methodology during the student visit to the museum, we recommend that the students previously be prepared for it by the instructor and that the method be applied beforehand in the classroom using objects with which they are familiarized. In this way, in our experiment, the students had texts on plastination a week prior to the visit and thus, by reading, they began to facilitate the comprehension of the event that they were to study.

With respect to the principles related to the circumstances outside the school, it bears mentioning that it is essential to know how to organize the different areas: in our case, the museum (*Science Museum* of Granada) and the classroom (University of Granada Translation Faculty class TI). Also, it is vital to know how to organize time: in our case, each activity or didactic workshop required two weeks of preparation and development. Finally, it should be pointed out that we more than fulfilled the ideal of our pedagogic goal, this being social outreach and cultural enrichment of the public, in this case future experts in scientific-technical society. Thanks to this workshop, we succeeded in

fomenting completely novel work habits among the students. All this resulted in better comprehension of the methodology prior to each translation process.

#### **4.1. Accessibility: a practical example**

Throughout our analysis, it has highlighted the need to use different modalities in museum accessibility and translation in order to bring up the students. As mentioned at the beginning of this study, the main objective of our project was to teach our students to translate considering the specific needs of the receiver (visually handicapped or hearing impaired visitor) in order to apprehend the inter-semiotic transfer of this process and to create an accessible multimedia guide, as a final product, focused on the users with disabilities.

Regarding the group of the public with visual impairment, the audio guide was created with the collaboration of professionals in the field of audio description, who revised the audio description guides developed by the students to be later recorded in a professional recording studio. For example, the museum visitors can choose one of the texts found in the audio guide about the nervous system according to their needs: the visitor can choose between the different languages mentioned before and they can also choose a written text for children or a version for adults. To achieve this result it was necessary to adapt the text for the receptors of the new multimodal text, as is shown in the following example:

##### **SPANISH AD**

En el centro hay una mesa redonda que contiene un experimento de destreza motora que emite sonidos. Si alguien estuviera realizando dicha actividad se podría oír dicho sonido. Esta mesa se describirá al final del recorrido.

##### **ENGLISH AD**

On the round table there is a motor skills experiment which produces sounds. If you were carrying out this experiment you would hear sounds. This table will be explained in more detail at the end of this video.

##### **ITALIAN AD**

La tavola rotonda del centro contiene un esperimento di abilità motrice che emette dei suoni. Se qualcuno stesse realizzando questa attività, potrebbe sentirne il suono. Questa tavola verrà descritta in modo particolareggiato alla fine del percorso.

In this case, our selection was focused on the audio description for blind and partially sighted people, in Spanish (source language), English and Italian (target languages). The audio description transformed/translated visual information to words, and gave visitors information on the content of the exhibit.

## **5. CONCLUSION**

The conclusion that the museum not only possesses a complementary role of education, but also should assume a role in the permanent edification of the society as a whole has given rise to the definition of the educational terms and cultural action of the museum in relation to the concepts of formal, informal, or non-formal education. The museum

complements formal schooling by offering educational activities while it facilitates ongoing learning in other public sectors through cultural activities in an informal educational context.

In this sense, it should be stressed that today the museum is conceived of as an area in which informal, formal, and non-formal educational processes take place, because its primary social mission is to provide citizens with physical and intellectual access to the objects on display and their meanings. This mediator role can be undertaken in diverse ways, some more academic and others more informal, some more intellectual, and others more emotional, in short, depending on the intentions and the needs of the different types of visitors.

We must begin to regard culture not as the privilege of only a few but rather as common social property to be taken over by the civilization of leisure. Thus, a greater number of objects to be preserved will lead to a greater number of museums, so that the cultural institutions feel the need to renew themselves and adapt to new requirements of today's society. From this new perspective, the museum is conceived of not as an educational institution in the same way as schools or the university, but as a medium or instrument for the ongoing education of the citizenry. It is also evident how it is necessary to adapt the different texts that are included in the museum's multimedia guide, so that they perform their function in the framework of multimodal museum discourse.

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