

19th Century Signs in the Online Spanish Sign Language Library: the Historical Dictionary Project

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Abstract

This paper will illustrate the work made in the Sign Language Virtual Library (<http://www.cervantesvirtual.com/portal/signos>), a project aimed at people interested in Spanish Sign Language; and specially, at its main users, Deaf people. It is organised into six different sections: Literature, Linguistics, researchers forum, Deaf culture and community, bilingual-bicultural education and didactic materials. Each section contains different publications related to the above mentioned areas. Moreover, in this web you will also find an innovation, since every publication includes a summary in Spanish sign language. Two sections will be described: The Historical Dictionary published by Francisco Fernandez Villabrille and the Alphabetical Writing Lessons. Our intention is showing a full functional version of the applications described on the paper.

1. Introduction

All languages are natural phenomena for the people who constantly use them to communicate. This is also the case of deaf people and Sign Languages. For different reasons, these languages have lacked the consideration enjoyed by oral languages. In fact, certain misconceptions – that sign languages were artificially created, that they are universal expressions, that they are merely mimetic or that they were created to replace oral languages – still exist, although not as much in the field of linguistics as in the rest of society.

Several psycholinguistic studies (Bellugi, Klima & Siple, 1975) have indicated the natural acquisition of these languages, as well as the various stages or phases of development that deaf children must go through when learning to sign; these stages are similar to those established for hearing children who learn an oral language and may even occur earlier during the process. (Folven & Bonvillian, 1991; Juncos et al., 1997).

Using gestures to communicate is inherent to human beings; in this case, we could say that it is a universal tendency. However, the codes applied by users of sign languages relate to different cultural and linguistic patterns, in their phonetics, morphology, syntax... It must be emphasized as far as possible that Sign is a language like any other, because – although it may seem otherwise – most hearing people have never had contact with deaf people and are totally unaware of their reality.

We will dwell here on a very important issue concerning the study of any language: how has it been modified through time?

Observing these changes, not only throughout time, but in accordance with the universal tendency of evolution of languages, it is now possible to speak of the linguistic evolution of Spanish Sign Language as the normal historical evolution of a language.

Publications available in Spain (Hervás, 1795; Bonet, 1620; Ballesteros, 1845), among others, show that, thanks to the efforts of Brother Ponce de León, the education of Deaf people started a long time ago in Spain. At the time, Deaf people were taught to acquire an oral language: Spanish or Latin, and education was a privilege

available only to a few, mainly children of the nobility, who, in exchange, favoured the clergy financially. However, the following facts must be taken into account:

- until then it was commonly believed that Deaf people had no understanding or language, this way of thinking changed thanks mainly to Ponce de León.

- Ponce de León invented the manual alphabet and this is one of the first proofs of the visual-gestural characteristics of the language of Deaf people and their means of communication.

Thanks to these publications, now included in our website: Biblioteca de Signos, The Online Spanish Sign Language Library, we know of the existence of a tradition of deaf education in Spain, begun by Pedro Ponce de León and Juan Pablo Martínez Carrión. This tendency was known in Europe as ‘The Spanish School’ or ‘The School of the Art of Teaching The Mute To Talk’.

The word ‘mute’ appears in almost every one of these books; the first to mention the difference between ‘deaf-mute’ and ‘deaf’ is Lorenzo Hervás, in 1795. The Spanish School was very important until the end of the 18th century.

Two of these very important books deserve particular mention: *La Escuela Española de Sordomudos o Arte para enseñarles a escribir y hablar el idioma español* (The Spanish School of Deaf-Mutes or The Art of Teaching Them To Write and Speak Spanish) written by the linguist Lorenzo Hervás, an important expert in linguistic typology, and the *Diccionario usual de mimica y dactilología* (Dictionary of Usage of Miming and Dactylology), by Professor Francisco Fernández Villabrille, which is the starting point for the *Diccionario Histórico de la LSE* project (The Historical Dictionary of Spanish Sign Language).

2. The Historical Dictionary Project

More than a century has passed since the first Spanish Sign Language dictionary was published by Francisco Fernández Villabrille in 1851. His work gives us a date for the formation and consolidation of this language.

The project introduced here began when we were given the opportunity of offering this text, with its translation into Sign Language, on the Internet, through the *Biblioteca Virtual Miguel de Cervantes* (Miguel de Cervantes Virtual Library), an ambitious project for the digital publication of Hispanic culture, with over twelve thousand digitalised books, in their respective sections. In one of these sections, The Sign Language Library, we translated all these texts into Sign Language, using video combined with other elements, as we will explain in detail below. Our intention goes beyond leaving a testimony of the signs used by the Deaf in the 19th century and, accordingly, when we finished presenting the book and the signs in LSE, we wanted to round off our work with later dictionaries and current signs.

During this revision we pondered, for instance, whether the signs given in the document are still in use or whether they have disappeared; we also analysed whether or not the signs are mimetic representations. Some signs that used to be mimetic ('agile' - AGIL, 'to fall' - CAER...) no longer are; others were originally arbitrary ('cat' - GATO, 'to make' - HACER). No language is systematically mimetic. For example, let's take old sign for 'to fall' - CAER, described in the dictionary as an imitation with the body representing the movement of the action. This representation cannot be considered linguistic. Deaf people are conscious of whether they are miming or using a linguistic sign, but this matter is somewhat more complex for researchers, as the difference is not always sufficiently clear.

Once we had finished this analysis and agreed on the signed production of each sign (taking into account that our information was occasionally insufficient and, accordingly, could not be recorded), the next step was to record the almost 1400 signs in a professional video

We will now explain the technical matters relating to this project.

Some time ago, the people working on the Online Spanish Sign Language Library project expressed a wish to create an online version of the Historical Dictionary published by Francisco Fernandez Villabrille in 1851.

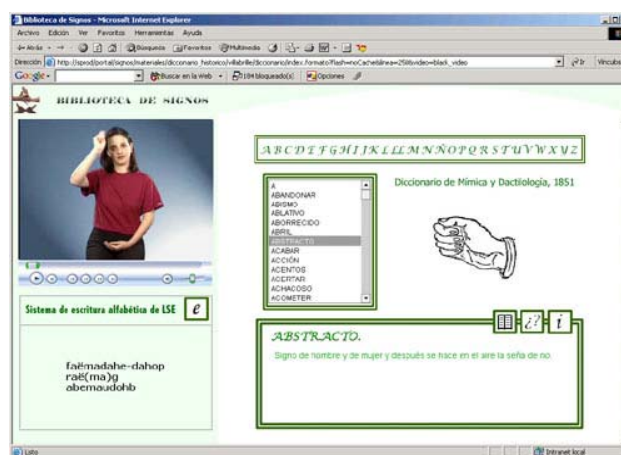


Figure 1: Historical Dictionary design.

Until then, we had a clear series of concepts regarding the integration of different technologies, such as the exchange of “messages” between a flash file embedded in a Web document, the document itself and a video file. However, although these concepts were clear, we still needed to solve the biggest problem: the local management of simple data bases; after all, we were talking about a dictionary. The solution was provided by Macromedia and the capacity of Flash to manage XML documents. We had now solved the database problem in local mode, thus avoiding unnecessary host requests. All the words, definitions and associated extra information would be generated using XML rules.

The application consists of 4 frames, one static and housing an image, the rest being dynamic, at least as regards their content. In other words, the contents of the frame would change without having to refresh. Let's take a look:

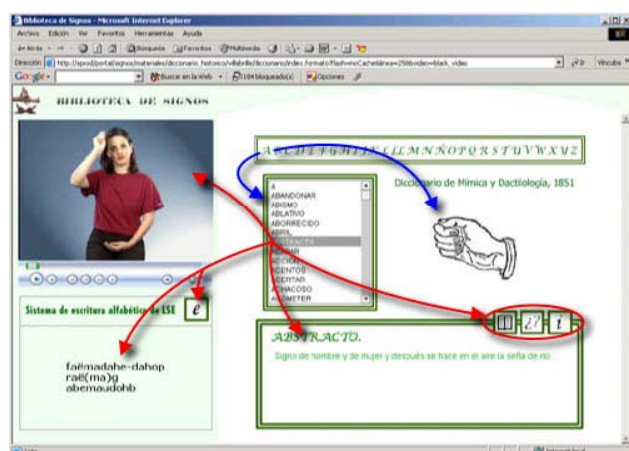


Figure 2: Arrows representing the exchange of messages

The core of the application would be located in the flash frame and would consist of a flash application embedded in the corresponding HTML document, plus all the JavaScript code included in the frame. This code manages all the messages sent by and to the flash file. We could say that it is the heart of the application, as it supports much of the graphic interface, manages and processes the data, and creates the messages arising from the preceding interpretation. These messages modify the contents of the video frame and the SEA frame. The changes that affect the flash application are, obviously, self-managed and require no messages.

Thanks to the design capacities of Macromedia Flash MX, it was relatively simple to transfer what we had devised on paper onto the screen (the interface).

The internal process could be summarized as follows:

1. A letter is selected.
2. The XML document associated with that letter is loaded in the application and an image is shown with the corresponding sign.
3. A word is selected.
4. The data accompanying the selected word is processed and, depending on the content, the following processes will be triggered:
 - a. The video with the signed representation of the word may start.
 - b. The written representation of the sign is shown in the Alphabetic Writing System (Sistema de Escritura Alfabética – SEA).
 - c. The definition of the word is shown.
 - d. The informative icons corresponding to the selected word are activated.

Processes a and b create a message that is interpreted by a JavaScript function (included in the HTML document where the flash application is embedded), which also modifies the video frame contents and the SEA frame contents. Processes c and d are internal to the flash application.

Looking at the current panorama, there are a number of web pages with online LS dictionaries out there: *Silent Thunder Animations*, *the ASL Browser*, *ASL University*, *A Basic Guide to ASL*, *Handspeak*, *Signhear ASL Dictionary*. However, in our opinion, these attempts do not give image the importance and the presence that it must have within the languages of signs. Our intention was to take full advantage of the capacity of image, using the latest video reproduction technologies used on the Internet (video streaming). By reinforcing the power of image using such a powerful tool as Flash, not only did we not turn our back on the possibility of using image on the Internet, but, rather, we increased its effects.

However, we wouldn't wish to give the impression that this is the entire scope of the project: we hope to make the dictionary a point of reference and therefore, we will continue to develop new versions of the application capable of supporting advanced term searching, a choice of different dictionaries, etc...

An essential part of our work is processing signed videos. The videos arrive at the laboratory in miniDV format, and they are captured and produced using Adobe Premiere (video editing software). After these stages, we now have a high quality version of the video, which must now be coded in order to adapt it to the size restrictions imposed by the Internet. The technology used at this stage is Windows Media Encoder, for the reason that commands can be included in the videos themselves (hypervideo). We are aware that we are working with proprietary software that may not be available to all users, but we considered that it was what best fit the needs of our portal. We do not reject the possibility of standardizing access to the portal, as far as possible, and it is our intention to approach these questions as soon as possible.

We will now complete the description of our work on the Online Spanish Sign Language Library through a practical example: the writing lessons.

4. Writing Lessons

In this case, the people working on the Online Spanish Sign Language Library project decided to include an online version of the writing lessons in the portal.

Applying concepts previously used in the Online Spanish Sign Language Library, we arrived at the following design:

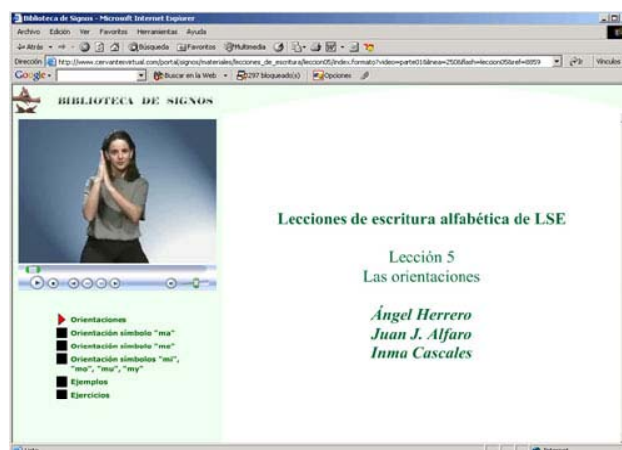


Figure 3: Writing Lessons design.

In this case, the user of the portal, having chosen a writing lesson, would be looking at a page similar in design to figure 3. The flash frame would show the title of the lesson and, immediately afterwards, the video would start up in the video frame. Based on the contents of the explanation, the flash application embedded in the flash frame will show different multimedia contents to reinforce the video explanation, thereby improving understanding of the lesson. It would also be necessary to include a menu indicating what part of the lesson the user is in and making it possible to select different sections from the selected lesson.

We simply had to apply the technology integration concepts mentioned in the Historical Dictionary project to give life to the proposed application.

As in the previous case, the application consists of 4 frames, one static and housing an image, the rest being dynamic, at least as regards their content. In other words, the contents of the frame would change without having to refresh. Let's take a look:

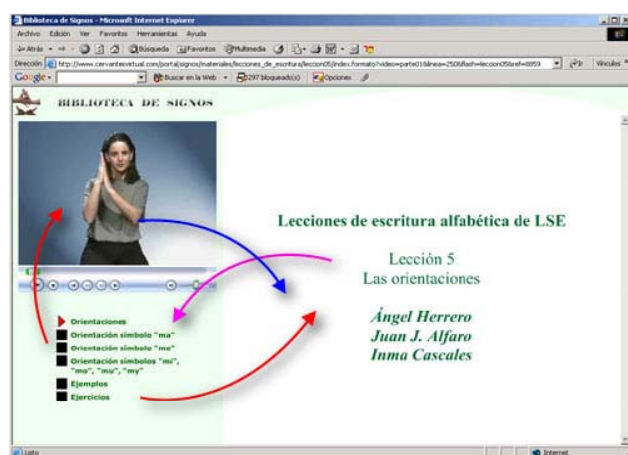


Figure 4: Arrows representing the exchange of messages

In this case, we used one of the special characteristics of clips encoded with Windows Media Encoder (the capacity to insert commands within the video itself). Once this is clear, it works as follows: we first take note of the exact moments at which the video clip must give way to a certain animations in flash frame. Next, the appropriate commands are inserted at those moments. Using the JavaScript functions included in the different frames, the desired effect was obtained. It is therefore obvious that the main body of the application is situated in the video (in Windows Media Video format) embedded in the video frame. However, it must not be forgotten that the dynamic frames can communicate with each other, and this is what provides the necessary flexibility to be able to design and adapt another flash application: the menu, from which the user can enter the lesson and select a section.

Looking at these cases, we can see the flexibility provided by the integration of several technologies in the process of developing multimedia applications. Each of the technologies can work alone, but they also provide the capacity to modify the state of the other technologies coexisting in the same surroundings. If we add the fact that these technologies are all specifically designed to

work in Internet, we can calculate the diffusion possibilities of a web page of these characteristics.

5. Conclusions

Our main challenge, comparing this analysis with the analysis of most oral languages, is that research on this language is more recent and, furthermore, is presented here in new form: image. The acoustic form of oral languages as opposed to the image form of SL establishes not only linguistic differences, but also different ways of digital treatment.

Over time we have advanced in the linguistic knowledge of SSL and its digital treatment. It is therefore possible to achieve the main target of this Sign Library: to create a broad documental supply, essential for a language which has no accepted written register. This is why it is so important to offer a formal and standardised register, as the Sign Library offers in the videos in the other sections. This work, developed over the past three years, includes literary registers in its literature section and academic texts in the linguistic section on sign language, among others.

We know that this project, unique in Spain, is particularly followed by the deaf community, eager to discover how their ancestors signed or the origin of many of the signs they use today. This is all possible through the Internet, the ideal framework for persons who do not need to hear or to be heard in order to communicate.

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