Words and Signs Together: A Terminological Electronic Glossary for Interpreters of Italian Sign Language.

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Abstract
Italian Sign Language (*Lingua dei Segni Italiana* – LIS) is a language to all effects, but like other signed languages has no 'written' form as intended for the spoken word. The compilation of dictionaries in numerous signed languages throughout the world is an arduous task owing to the complex three-dimensional nature of signs accompanied by simultaneous gesture and facial expression. In Italy a number of general-purpose dictionaries of LIS have been published, however, interpreters who translate for the profoundly deaf or severely hearing-impaired from Italian (and sometimes from English or other languages) into LIS, in the classroom, at university or during conferences, obtain little assistance in the form of specialist dictionaries and glossaries of language for special purposes like that of medicine, chemistry, psychology or linguistics. This paper briefly describes the compilation of a trilingual glossary on CD-ROM in English, Italian and LIS in the field of linguistics.

1 Dictionaries and signed languages

Signed languages offer a particular challenge to lexicographers owing to their three dimensional, kinetic nature and a frequent lack of word-to-sign equivalence. Representing, transcribing or simply illustrating them 'on paper', is extremely difficult compared to the 'simpler' more immediate graphic representation of oral languages through conventional alphabets. Individual signs convey meaning predominantly through finger, hand and arm movements and are distinguished from one another by four universally recognized parameters: handshape, palm orientation, movement and location. However, all signs are accompanied by simultaneous non-manual features such as posture, eye movement, gaze, head, lip and shoulder movements and much varied facial expression, all of which convey meaning and thus have to be represented in the dictionary entries in some way.

Generally, traditional paper-based sign language dictionaries consist in generic entries composed of rudimentary sketches or photographs of a signer waist up as illustrated by the entry for **traffic** in Italian Sign Language (LIS) in figure 1. Arrows are used to indicate movement, and transcription graphics may be chosen from numerous notation systems that have been devised since the 1960s, hence confronting the untrained eye with an assemblage of indecipherable Roman letters, numbers and abstract symbols. A gloss of the meaning or

nearest equivalent in spoken language is added as well as additional information such as syntactic category, synonyms etc. (Angelini *et al.* 1991; Magarotto 1995; Radutzky 1992; Romeo 1991).

The average dimension of each static illustration is approximately 4x4 cm, which leads to limitations in the spatial representation of signs reflected in the often restricted number of entries offered. Further complications may arise in illustrating compounds (more than one sign used to represent a single referent or concept). Their graphic representation is rendered more complex because the four parameters of each of the signs used to compose the compound differ, leading to the duplication or triplication of sketched arm and hand positions in staggered stages (Radutzky 1992: 33). For example, in LIS the term **computer** is normally composed of the signs BRAIN+ELECTRONIC in quick succession as illustrated in figure 2. The note in Italian explains that the first sign BRAIN may be omitted but in this case the word 'computer' has to be mouthed while simultaneously signing ELECTRONIC.

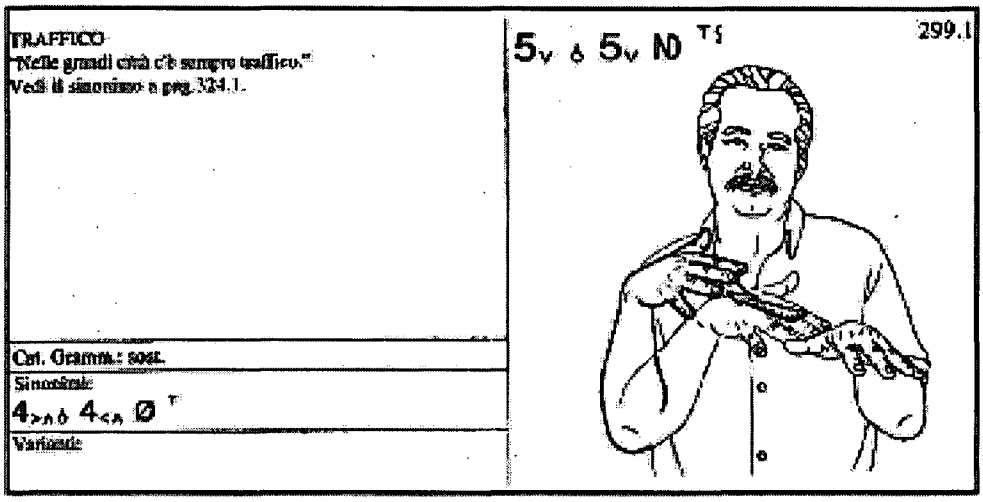

Figure 1. Example of an Italian Sign Language entry. (Source: Radutzky 1992, entry 299.1)

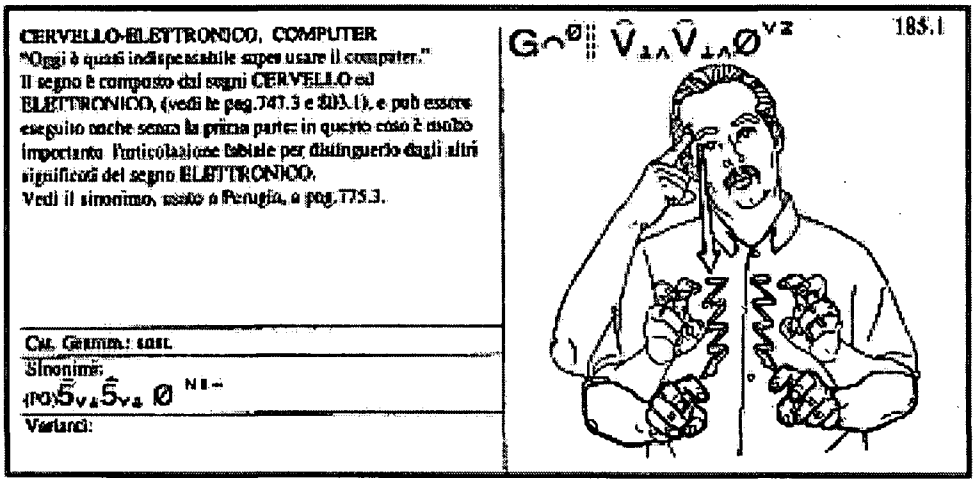

Figure 2. Graphic representation of **computer** in LIS. (Source: Radutzky 1992, entry 185.1)

Little attention has hitherto been given to specialist dictionaries and glossaries in LIS because technical language is not much used by the profoundly Deaf in their homes, clubs or associations where the majority of Deaf people 'converse' together in sign language. In the hearing world, Deaf people are obliged to communicate through speech and lip-reading and although they may have access to specialized terminology, they rarely use it when signing outside the workplace. Therefore, signed neologisms evolve very slowly within the Deaf community. With the advent of sign language interpretation on televised Italian news bulletins it is expected that sign language will evolve and adapt linguistically to encompass the fast growing range of socio-political, economic and scientific terms used in spoken language. Interpreters often have to struggle to rapidly find an adequate solution to express an unfamiliar Italian (or English) technical term and may resort to joining together existing signs or inventing new ones on the spot. These will only catch on and be repeated in future if they are transparent enough to convey meaning to the Deaf and if picked up and frequently used by other interpreters and Deaf people themselves.

Today, with computer technology and the widespread adoption of alternative media such as CD-ROMs and DVDs the problems related to the graphic representation of signs and spatial restriction can be overcome. Dynamic images of signs together with superimposed written information or hypertextual links can easily be provided. Electronic dictionaries of this kind are making their appearance in Italy such as *Dizionario mimico gestuale* (Pignotti 1997) and *Dizionario Italiano/LIS* (Piccola Cooperativa Sociale "Alba" 2003).

2 Tri-lingual multimodal electronic glossary compilation

In 2004, a pilot project was developed within a University of Turin research unit (part of the Italian National MIUR COFIN project entitled *Intercultural Discourse in Domain-spe-*

cific English coordinated by Professor M. Gotti)[1] in collaboration with the University of Trieste Advanced School of Modern Languages for Interpreters and Translators (SSLMIT) to produce some form of didactic support for trainee interpreters of LIS to enhance their signing ability in the specialist field of linguistics, as well as to bridge the gap between English and LIS (see Kellett Bidoli 2004). Investigation evolved from initial analysis into how and to what extent the English language influences cultural and linguistic communication in contact with Italian, to scrutinizing contact between English and the Italian Deaf community (see Kellett Bidoli forthcoming b). A survey revealed several genres encountered by professional LIS interpreters with an active knowledge of English (see Kellett Bidoli 2005b), the most common of which were not within the context of community interpreting as expected, but within conference interpreting where a number of specific specialist fields were identified: in particular the field of sign language linguistics.

A multimodal corpus representative of the field was compiled in the form of four authentic video recordings of oral speeches in English (115 minutes) on linguistics related topics, delivered by American native speakers[2] at two international conferences for the Deaf (in Caselli & Corazza 1997 and Gran & Kellett Bidoli 2000). A complex combination of multimodal, parallel, visual, oral/aural and gestural elements emerged from the small video-recorded insets of the speakers and a wide screen view of simultaneous LIS interpretation. The oral and gestural discourses were transcribed and glossed to analyse intercultural and interlinguistic features of interest (Kellett Bidoli 2005c, forthcoming a). The English transcription contained 12,616 tokens composed of 3,075 types compared to 6,643 tokens and 1,819 types in the LIS corpus (sign language glosses). The latter was checked by both a professional LIS interpreter and a deaf teacher of LIS who discovered several instances of ambiguous signing, substitution and even omission of technical lexical items related to linguistics. This finding led to the idea that a multimodal terminological data bank or glossary on linguistics for LIS trainee interpreters would be a useful didactic tool in the classroom. Hence, word counts, word frequencies and concordances were run of both the English and LIS (glosses) using *Wordsmith Tools* to initially select around 300 lemmata related to the field in question. This led to the compilation of a pilot glossary version of a trilingual terminological glossary of linguistics in English, Italian and LIS on CD-ROM to be tested on students at the SSLMIT where a course in LIS has been offered since 1998 (see Kellett Bidoli 2005 a).

The great advantage of a glossary of this kind is the possibility of adding dynamic illustration of sign language terminology and its visual exemplification in context, as opposed to static representation in paper-based dictionaries. Also the speed of instant access to translation equivalents and related terms through hyperlinks, enables bilingual, trilingual or multi-

[1] See: http://dinamico.unibg.it/cerlis/page.aspx?p=82

[2] W.C. Stokoe, a paper on the evolution of sign language "Hands, Eyes and Language"; W.P. Isham, "Research on Interpreting with Signed Languages"; C.J. Patrie, "Sequencing Instructional Materials in Interpreter Education"; B. Moser-Mercer, "The Acquisition of Interpreting Skills".

lingual extensions. Unlimited space allows the provision of sentential definition of headwords to conceptually describe individual denotational meaning illustrated by examples selected from the concordances together with linguistic comments. Definitions, examples and linguistic information are more restricted or totally lacking in multilingual paper-based specialized dictionaries. The electronic wizardry offered by computer technology, renders electronic dictionaries more appealing and informative, through a rich selection of graphics, colour, images, insets and numerous other creative visual as well as acoustic devices.

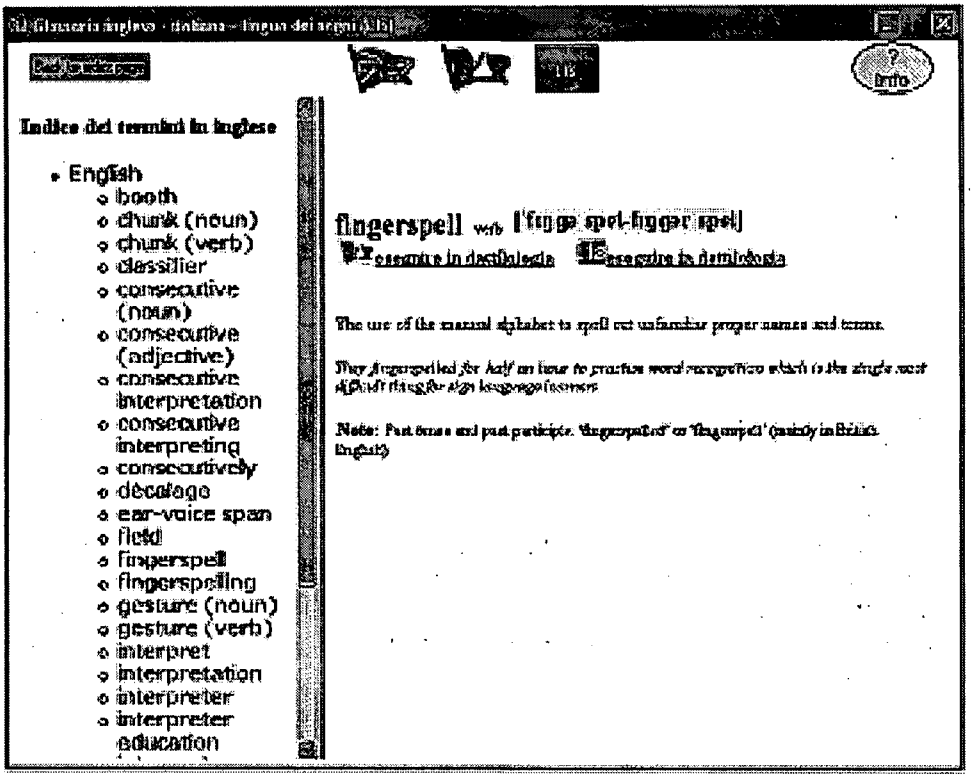

Figure 3. Example of an English electronic entry.

An application in HTML was chosen for the pilot version to provide a 'cross-browser' approach permitting access to the glossary through a wide choice of browsers and operative systems. A hypertextual document was produced by splitting single entries for each language into separate HTML pages. A semasiological, alphabetical ordering into three separate indices was adopted. The glossary is tri-directional, in that starting from an index or an entry article in any of the three color-coded languages one can access information in the other two. Initially 10 lexical items were selected for the pilot version which produced over 60 entries (including synonyms and cross-references) across the three languages, each accompanied by

phonetic transcription for the English entries, a definition, examples of usage in context selected from the concordances, linguistic information and easily accessible dynamic images of signs illustrated singly or in signed sentences in context. Phonetic data was provided for the English lemmata in British English followed, where applicable, by American variants. It is intended to insert sound clips of the correctly pronounced English lexical items in the completed glossary. In figure 3 an example of the entry for **fingerspell** from the English section is illustrated in black and white.

A dictionary of this kind requires particular care in the preparation of film clips with a digital camera. Two film clips signed by a deaf person were inserted next to each LIS entry (next to headwords and examples). During filming, care had to be taken with lighting, and contrast of the signer's clothing with the background was essential to render the single signs and examples as clear as possible. Each clip (headwords and examples) had to be carefully numbered using a rudimentary clapper board (small blackboard and chalk) to enable the spliced segments to be correctly coupled with their corresponding written headword in Italian on the LIS pages. Numbering was essential as several takes were often necessary caused by 'stage fright', false starts and loss of memory while signing the longer more complex examples. Occasionally retakes were needed as signs exited the film frame or the signer's gaze was diverted from the camera to peek at the written examples held up in the 'wings', as mnemonic capacity became stretched to the limit.

3 Closing remarks

Interpreters and translators of both spoken and signed languages alike need both general and terminological dictionaries (specialist glossaries) to expand their multilingual lexical abilities and build up their 'world knowledge' in order to keep abreast of the exponential addition of new socio-political, economic and technological terminology in all languages.

The technical drawbacks of two-dimensional, paper-based, sign language dictionaries are being overcome through the application of sophisticated computer technology which has paved the way to a revolutionary means of processing and representing multimodal data. The buzz word in language teaching circles is at present 'e-learning'. Much energy is being channelled into the development of innovative, audio-visual teaching or support materials for students. Electronic word banks or dictionaries are invaluable for anyone involved in spoken or signed language interpreter training. In Italy this is indeed true, not only from Italian to LIS, the common interpreting directionality, but also from English to LIS in view of the unceasing spread of English as an international language of communication. Electronic dictionaries provide trainee interpreters with stimulating material based on the real language of native speakers and signers in any language combination.

Corpus analysis of interpreted discourse in the field of linguistics is only one of many areas to be explored. It is hoped that this research will lead to the compilation of glossaries in other specialist subject fields of use to trainee and future interpreters of sign language.

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