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A Tool for Sign Language Grammaticography: The SignGram Blueprint

JOSEP QUER[1] & CARLO CECCHETTO[2]

ICREA-Universitat Pompeu Fabra[1] & Università di Milano-Bicocca[2]

1. INTRODUCTION

Sign languages have traditionally been deprived of recognition as natural languages not only because of lack of knowledge about them, but also because of the stigma associated with deafness, which resulted in linguistic, cultural and social discrimination against signing communities. Although this situation has partly improved as a consequence of the emancipatory movements of Deaf communities and the scientific acknowledgement of sign languages as full-fledged languages, mainstream society still resists to viewing them as part of its own linguistic and cultural heritage. By being denied full linguistic rights, signers usually cannot exercise full citizenship mostly because of barriers in communication and partial access to information.

At the same time, sign languages have become part of the empirical object of research for Linguistics only in the past few decades. Our knowledge of languages in the visual-gestural modality is growing steadily, but it is still limited when compared to the existing body of research on spoken languages, which remain the basis for the advancement of the field. However, if the challenge to characterize the human faculty of language and the variation it allows is taken seriously, both spoken and sign languages should constitute the object of study for linguistics and adjacent fields in order for them to rely on a proper empirical characterization.

For these different reasons, documentation, description and analysis of sign languages is of paramount importance. Apart from the fact that we only have reliable information about a very reduced number of sign languages in the world, for those which have been documented to a certain extent, the information gathered is only fragmentary (very often limited to the lexicon), not always compliant with standards of linguistic research and not easily accessible beyond the immediate environment where it has been produced. Thus, typological and theoretical linguists face serious difficulties when trying to incorporate sign language data into their work. At the same time, applied outcomes of linguistic research, such as teaching materials for Deaf children or interpreting trainees, or language assessment tools in education or in clinical practice, lack the linguistic basis that is required, with all the consequences thereof for the quality of the related materials and services provided. This makes it particularly difficult for policy makers to operate, especially in crucial domains such as public education, health or information.

2. THE SIGNGRAM COST ACTION (IS1006)

In order to try to address this challenge, a group of linguists from across Europe decided to submit a proposal for a COST Action, which is a funding framework of the European Commission and the European Science Foundation. It provides financial resources for establishing research collaborations in science in the form of a network for a duration of 4 years. The project (IS1006, *"Unraveling the grammars of European sign languages: pathways to full citizenship of deaf signers and to the protection of their linguistic heritage")* was awarded for the period 2011-2015 and it is referred to with the acronym *SignGram*. It features teams from 13 COST-countries (i.e. countries participating in the COST framework) and participation from two non-COST countries (Argentina and Australia).

The concrete objectives of the SignGram COST Action can be summarized in the following way:

(a) Provide solid scientific standards for the development of sign language reference grammars with the following tools:
   – Blueprint for the development of sign language grammars which is descriptively thorough and theoretically grounded.
   – Methodological guidelines incorporated in the Blueprint.
   – Elicitation materials accompanying the Blueprint, made available through an open access online repository.
(b) Enhance cooperation of European teams working in the formal study of particular aspects of sign languages by:
   – Integrating diverse expertise and facilitating cross-fertilization.
   – Overcoming the scale problem of small groups.
   – Training young researchers, especially Deaf researchers working on their own native language.
   – Promoting visibility of sign language research.

As more general aims, we set ourselves the goals of consolidating scientific standards in the linguistic study of sign language grammars in Europe and beyond, as well as making the results of sign language research accessible to theoretical, descriptive, typological and corpus linguistics.

3. THE *SIGNGRAM* BLUEPRINT

The main deliverable of the *SignGram* COST Action will be the Blueprint, a tool for the grammar developer[1] that intends to describe the grammar of a sign language (or parts of it). Its coverage is meant to be one that would allow production of a

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[1] The project has chosen to use the term "grammar developer" to refer to the person who will use the *SignGram* Blueprint to gather information in order to produce some sort of grammar. We avoided the term "grammar writer" to emphasize the likely multimedia character of the end product, as "writer" makes one still think of only-text grammars.

complete reference grammar of a specific language, but obviously the grammatical content gathered through the Blueprint can be used for rather diverse purposes (i.e. as a tool for learners or to assist the elicitation of grammatical properties in a certain domain for the purposes of linguistic analysis).

The SignGram Blueprint is conceived as an exhaustive checklist that takes inventory of all the linguistics features that a comprehensive grammatical description should contain. From this perspective, it is inspired by existing questionnaires such as the *Lingua Descriptive Studies Questionnaire* (Comrie and Smith 1977), but it intends to be a more sophisticated tool, providing background information to the developer, as well as elicitation materials where available. The Blueprint is based on current knowledge in the field of sign linguistics, but it also incorporates expertise in descriptive grammaticography and theoretical linguistics.

The tool that is currently being developed consists of two main components: the Table of Contents and the Manual. The *Table of Contents* (ToC)[2] is a detailed checklist of linguistic features that the grammar developer needs to go through in order to get a comprehensive view of the grammar of the language under study. The *Manual*, in turn, is a collection of guidelines and background information that accompanies the ToC and provides the necessary information about how to use it. It includes:

(a) Description and definition of the phenomenon/ feature/property/etc. at hand.
(b) Representative examples from actual sign languages.
(c) Tests that can be used to identify the phenomenon/feature.
(d) Existing elicitation materials that target the phenomenon/feature.
(e) Bibliographical pointers to passages/works that deal with the phenomenon/feature.

When the existing knowledge of sign languages allows it, there is a one-to-one mapping between an entry in the ToC and the corresponding entry in the *Manual*, so that the grammar developer is assisted step by step in his/her work.

The Blueprint is organized according to the main areas of grammar (phonology, morphology, syntax, and meaning), as well as a specific part on the lexicon. The working groups of the Action have been set up according to this partition of content to develop the corresponding ToC and Manual parts. There is an additional working group in charge of the coordination among the other groups, methodological issues, as well as the distribution of contents across grammar areas. Although sections of the Blueprint are being tested with specific sign languages of the participating teams to check its validity, the final deliverable of this COST Action will be a language-neutral instrument to compose grammatical descriptions of particular languages (or parts of their grammars).

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[2] As explained in the text, the Table of Contents is a structured checklist of potential grammatical features, phenomena or constructions to be dealt with by the grammar developer. In a sense, it *is* the table of contents of the Manual, which contains the detailed information to go through the checklist.

The envisioned result is an electronic open access publication. This format will allow for the interconnection of content across different parts of the Blueprint through hyperlinking, thus avoiding having to deal with a grammatical phenomenon in a single part, as is often the case in paper format grammars. In addition, video examples can be inserted, which constitutes the most ideal way to illustrate sentences in languages in the visual-gestural modality (written glosses constitute a rather reductionist way of representing sign language data).

4. RESULTS

While the COST Action is now in its third year, the results obtained so far can be summarized as follows:

(a) The Table of Contents for all parts of the Blueprint has been developed and a number of sections of the Manual have been produced. In the process, the core grammatical topics to be addressed were identified in each of the areas assigned to the different working groups. The topics and subtopics were ranked and structured into the Table of Contents for the corresponding parts of the Blueprint. For each topic or phenomenon the relevant literature and, when possible, existing elicitation materials have been identified, inventoried and evaluated.
Given the purpose of publishing a repository of elicitation materials related to the content of the Blueprint, a survey on sign language elicitation tools has been distributed among linguists worldwide, aiming at localizing them and eventually incorporating them as part of the accompanying tools.

(b) Determination of global issues of grammar design, such as distribution of contents, or the nature of the part on meaning and its relation to the other grammar parts.

(c) Dissemination of the Action objectives. So far the main activity in this domain has been the design and setup of the website of the Action, which explains the goals and activities of the Action both in written text and in International Sign. Dissemination seminars in some of the participating countries, as well as a popularizing article on the Action meant for Deaf Community journals are being prepared. This is a way to inform communities of users about the tool being developed and the possible impact on the documentation and description of their languages.

5. CHALLENGES

Although the SignGram Blueprint initiative can rely on existing work in spoken language grammaticography, it is also true that some specificities of languages in the visual-gestural modality pose a serious challenge. Some properties of sign languages that are unique to the visual-gestural modality (e.g. phonology, agreement, classifier predicates, or spatial constructions, just to name a few representative cases) need to be addressed from scratch from the perspective of descriptive grammars. A clear example of this can be observed in Fig. 1, which shows a representative sample of a section of the Table of Contents of the Phonology part. Knowledge about the phonological structure of particular sign languages exists, as well as theoretical models that try to account for them from a theoretical point of view, but converting that knowledge into a theory-neutral and language-neutral checklist is not a trivial task.

Figure 1
Sample of the SignGram Blueprint part on Phonology

2. PHONOLOGY
   2.1. Sublexical structure
      2.1.1. Active articulators
         2.1.1.1. Selected fingers
         2.1.1.2. Finger position
         2.1.1.3. Phonemic handshapes
         2.1.1.4. The manual alphabet & number signs
         2.1.1.5. Other active articulators
      2.1.2. Location
      2.1.3. Movement
         2.1.3.1. Path movements
         2.1.3.2. Secondary movements
      2.1.4. Non-manuals
         2.1.4.1. Mouth gestures
         2.1.4.2. Mouthings
         2.1.4.3. Other non-manuals
      2.1.5. Two-handed signs
         2.1.5.1. Symmetrical signs
         2.1.5.2. Asymmetrical signs

A challenge of a different nature that the Blueprint faces is establishing terminology and grammatical categorization that can be shared by the community of sign linguists, but also by non-sign linguists and scientists from adjacent fields like Psycholinguistics. Within the field of sign linguistics there are controversies

about basic grammatical aspects such as the nature of agreement or person marking that have to do with opposing views in very basic analytical positions (e.g. role of communicative gesture in grammar). In trying to strike a difficult balance between keeping terminology and categorization transparent for grammarians in general and remaining faithful to the peculiarities of the visual-gestural modalities, the Blueprint has adopted the strategy of guiding the grammar developer through all the possible distinctions and categories that have been attested, irrespective of the analytical use that one can make beyond the description produced.

One interesting aspect deriving from the gaps in the description of sign languages arises with categories that are well attested in spoken languages, but have not been sufficiently explored or even addressed at all in sign languages. Examples might include important categories like passives, nominalizations or non-finite clauses. In this respect, where there is motivation for doing so, such categories are included: in this case, the Blueprint should function as a heuristic tool that allows us to discover grammar facts that have not been recorded or paid attention to so far. We should not underestimate the fact that most of the sign languages documented and analyzed so far are Western, urban sign languages, and variation is expected when extensive research exists on sign languages departing from this type (take for instance, rural or village sign languages, which have already been shown to display particular characteristics in some particular aspects).

A challenge of a more global nature has arisen as a result of the decision to have a distinct part on meaning (semantics, discourse), which typically is absent in descriptive or reference grammars in general. Semantic and pragmatic information is often incorporated in the description of particular morphological or syntactic phenomena, for instance, and the question was raised repeatedly whether we shouldn't follow this tradition. This is also an underdeveloped area in sign linguistics which has only started to be tackled recently. However, by opting for a distinct meaning part, we want to promote research in this particular domain. In many cases, the information contained in the meaning part will be purely definitional, and linked to the phenomena described in other parts. So, for example the category 'focus' is defined in semantics, its possible phonology realizations are discussed in the phonology part and its effects on word order in the syntax part. The use of hyperlinks is intended to facilitate the transition between the parts of the Blueprint concerned with the same category. In some other cases, though, the description in the part on meaning clearly belongs there by nature (e.g. quantification; discourse phenomena) and ideally it will trigger research on domains that are virtually untouched.

Probably one of the most innovative features of the Blueprint is the fact that all grammatical notions that have an important semantic and/or pragmatic dimension (say, aspect, conditional, focus etc.) are independently defined in the semantic/pragmatic part of the Blueprint, although the form that they can take in a language is described in the corresponding part of the Blueprint.

The distribution of content across different parts of the Blueprint, though, is not a trivial one. A case in point is the treatment of the structure known as *role shift*. It is the strategy that sign languages typically use to report speech or attitudes more

generally (for some recent treatments, see Quer 2011, Herrmann & Steinbach 2012 or Lillo-Martin 2012). Formally, it is marked by an array of non-manual markers (eyegaze break with the interlocutor, body shift towards the location associated with the reported illocutionary agent, change in head position, facial expression associated with the reported agent). From the point of view of interpretation, it involves displacement of the referential loci associated with referents in signing space, as well as of indexical elements. Role shift has been shown to display properties of both direct and indirect speech reports. The answer to the question where to "place" role shift in the Blueprint is not obvious. It is not clear whether the non-manuals characterizing it (very often this is the only overt marking) are properly seen as morphological marking or as special or marked prosody, which normally accompanies direct quotations in spoken languages as well. Moreover, it is unclear whether it is more naturally placed in the syntactic section on subordination (is it a regular embedding or a quote?) or it is rather a discourse phenomenon that should go into the meaning part. An additional complication comes from the fact that role shift not only features reports, but also what is known as constructed action: a gestural enactment of co-occurring actions that characteristically appears intertwined with the linguistic report. Although there is already quite some research on the phenomenon, this brief discussion shows the recurring tension we face between partial existing knowledge of a phenomenon and the need to provide guidelines to obtain such knowledge, which needs to be comprehensive.

6. CONCLUSIONS

Despite all the challenges mentioned, we are confident that the decisions made so far will help produce a comprehensive and innovative tool for the field of sign language research and for Linguistics in general. Ideally, it should make a significant difference in documenting and describing sign languages around the globe, both qualitatively and quantitatively.

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