SPATIAL ASYMMETRIES ACROSS LANGUAGES: A TYPOLOGICAL APPROACH

1. Context, positioning and objectives

1.1. Objectives and scientific hypotheses

The aim of this project is to investigate the conceptual domain of motion in space, with a focus on structural and functional asymmetries in the expression of path of motion, especially asymmetries linked to dynamic deixis, boundary-crossing and verticality, through comparative studies of more than 30 typologically and genealogically varied languages (Table 2). We thus aim to:

(i) provide the first comprehensive corpus of spatial asymmetries taking into account not only language structure but also language use,
(ii) assess the role of general tendencies and language-specific patterns in spatial asymmetries and build a typology of spatial asymmetries,
(iii) gain insights into the factors that determine and constrain spatial asymmetries in language.

In order to achieve this goal, we will build a crosslinguistic database of spoken and written data, bringing together a wealth of existing data that members of the project have collected during their fieldwork in the past 10 to 25 years, and complementary data that will be collected within the framework of the project, yielding a balanced compilation of elicited and spontaneous data, coming from visual elicitation, spontaneous speech and corpora. The corpus will be glossed and annotated by experts of individual languages and made available to the research community, thereby contributing to open-access and reproducible science related to linguistic and cultural diversity. Another important aspect of the project is to deal with a set of languages manifesting considerable genealogical and typological variation. Considering the diversity of languages in use in the world, we are still very far from having a representative sample of languages on which to build a typology of spatial asymmetries (which exists only for interrogatives and demonstratives, see Stolz et al. 2017). To the extent that the association between the morphosyntactic resources and the conceptual system of language is an important research goal, an extensive and fine-grained cross-linguistic investigation is a prerequisite for the development of such a typology. The present project represents a timely collaborative effort. Its unique contribution is the fact that it investigates languages that have not benefited until now from intra- and inter-linguistic inquiries into spatial asymmetries and that it examines spatial asymmetries in both language structure and language use, avoiding the usual focus on European languages.

The goal of this project is thus to understand spatial asymmetries in language, by investigating crosslinguistic variation in the types of lexical, grammatical and constructional resources used in individual languages to convey different components of Path of motion (i.e. a course followed by a moving entity (Figure) with respect to a reference entity (Ground), see Talmy 1985, 1991, Fortis & Vittrant 2016). We will examine language structure and evaluate the degree to which spatial features of Path – e.g. horizontality vs verticality, presence vs absence of boundary-crossing – and the Deictic perspective – e.g. itive (or andative, e.g. go-verbs) vs ventive (or venitive, e.g. come-verbs) – taken upon the events are asymmetrical. By examining language use, we aim to assess general tendencies and language-specific patterns in the selection and distribution of spatial information, investigate factors (linguistic, pragmatic, cognitive, ecological) underlying spatial asymmetries in language and build a typology of spatial asymmetries.

1.2. Originality and relevance in relation to the state of the art

The main question addressed in this project is the way language systems invite or constrain speakers to express dynamic spatial relations.
In linguistics, the expression of spatial relations has been widely investigated in the last forty years. This constitutes a vast and diverse body of literature, the focus of which has shifted from localism in the 19th and 20th centuries to spatial deixis, frames of reference, “topological” relations and, more recently, motion event descriptions. The importance of space in language has been at the heart of localist theories (Michelsen 1843, Hjelmslev 1935-7), with important works such as those of Anderson (1971) and Lyons (1977). Cognitive linguists have defended the importance of space for language, linked to the way human beings conceive of and perceive the world (Lakoff & Johnson 1999): we talk about time in terms of spatial concepts because we use spatial relations to understand time (Jackendoff 1983, Casasanto & Boroditsky 2008). Furthermore, psycholinguists have shown that space has a special role in language acquisition, children acquiring spatial concepts quite early as compared to other conceptual domains (Bowerman 1996, Slobin 1996, Hickmann 2010).

In the last decades, influential scholars in the domain have addressed this issue from different angles. Thus, the MPI-based investigations by Bowerman & Levinson (2001) and the empirical approach adopted by Slobin (2003) focus on language use and include possibilities of variation, which can also be found in the functional stance taken by Vandeloise (1986), while the theoretical approach adopted by Talmy (2000) brings forward general tendencies across languages, and tends to leave aside variation in use within individual languages.

One domain in particular has received a great deal of attention lately, namely spatial asymmetries in language and cognition, with a specific focus on the cognitive and linguistic bias toward the Goal of motion, as opposed to the Source. The most striking spatial asymmetries are Source-Goal Asymmetry and Dynamic Deixis, i.e. the encoding of motion with speaker or hearer as a reference point. Asymmetries in the subdomain of verticality, an important dimension in human cognition, seem to be intricately linked to these two phenomena. Asymmetries in linguistic descriptions of space were first suggested to be a language universal (Ikegami 1987), with a consistent bias across speakers and languages to express goals rather than sources (Bourdin 1997:190). More specifically, it has been observed that there is a tendency for goals to be expressed (i) more frequently (Kopecka 2012; Lakusta et al. 2006; Miyajima 1986), (ii) more precisely (with finer semantic distinctions, Fillmore 1992) and/or (iii) more lightly (with morphologically simpler forms, Stolz et al. 2014). For instance, in (1), only the Source can be easily omitted: even if the goal is not expressed, it remains implicit, and the default reading of He walked from the train station would be he came here (to the Deictic Center), on foot, all the way from the train station; in (2), Goal adpositions make a distinction between support and containment but this distinction is neutralized in the expression of Source; and in (3), the Source adposition is morphologically more complex than the Goal adposition on which the latter is built:

(1) (English)  
He walked (from the train station)_{SOURCE} to the library_{GOAL}.

(2) (French)  
<table>
<thead>
<tr>
<th>SUPPORT</th>
<th>CONTACT</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>monter sur le toit</td>
<td>monter dans le grenier</td>
<td>descendre du toit</td>
</tr>
<tr>
<td>‘go.up on(to) the roof’</td>
<td>‘go.up in(to) the attic’</td>
<td>‘go.down from the roof’</td>
</tr>
<tr>
<td>descendre du grenier</td>
<td>descentre du grenier</td>
<td>‘go.down from the attic’</td>
</tr>
</tbody>
</table>

(3) (Pengo)  
<table>
<thead>
<tr>
<th>a.</th>
<th>il</th>
<th>bitre_{GOAL}</th>
<th>hōt-at</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>house</td>
<td>inside</td>
<td>go.in:PAST-3SG,F</td>
</tr>
<tr>
<td></td>
<td>‘She went into the house.’ (Bourdin 1997:196)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>il</td>
<td>bitre-tan_{SOURCE}</td>
<td>hō-tt-at</td>
</tr>
<tr>
<td></td>
<td>house</td>
<td>inside-ABL</td>
<td>go.out-PST-3SG,F</td>
</tr>
<tr>
<td></td>
<td>‘She went out of the house.’ (Bourdin 1997:197)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In cognitive research, this preference given to the Goal has been largely attributed to its cognitive and pragmatic salience, the Goal of human motion being more important than the Source and thus attracting
our perceptual attention (Ikegami 1987; Lakusta & Landau 2005; Regier & Zheng 2007; Papafragou 2010). The mention of the Source only results in an incomplete description of the motion event (Ikegami 1987), while the mention of the endpoint of a motion event produces a (grammatically) satisfactory description of the event, favoring a perceptual asymmetry that is found to be translated into language (ibid: 135). Although these studies have significantly contributed to our understanding of Sources and Goals, most of them are based on small samples of languages and data, despite a few interesting exceptions (Kopecka and Ishibashi 2011, Verkerk 2017). So far, the specific properties of individual languages in the expression of Sources and Goals have been understudied, and a systematic cross-linguistic account of this linguistic phenomenon is still needed to determine whether language-specific characteristics play a role in the ((a)symmetrical) expression of Source and Goal. The Source/Goal asymmetry has recently been examined cross-linguistically in the domain of (caused) placement events (e.g. putting vs taking), and it has been shown that, despite the cross-linguistic tendency to favor the expression of the Goal, there is also an important variation across languages in the way they represent Source and Goal (Kopecka & Narasimhan (eds) 2012).

The notion of goal bias (Ungerer & Schmid 1996, Dirven & Vespoor 1998, Aurnague 2015) will be of special importance in this project. What earlier studies have shown is that it is at least a clear tendency, with some counter-examples: asymmetric descriptions of space are crosslinguistically common, not universal, as in the case of caused motion (Stefanowitsch & Rohde 2004, Kopecka & Vuillermet (eds), to appear). Let us take a few examples from Mandarin Chinese, rarely discussed from the point of view of spatial asymmetry. In Beijing colloquial, Goal NPs are known to be able to follow directly the verb without the need of a preposition, whereas source NPs require the addition of a source preposition (Chirkova & Lamarre 2005). This supports the hypothesis of a greater formal simplicity for goals. A more fine-grained encoding of goal has been observed for Mandarin Chinese, with a clear-cut distinction between unbounded goals encoded in preverbal PPs, and bounded goal encoded in postverbal NPs, which also contribute to the telic reading of the clause. Source is only encoded in preverbal PPs (Lamarre 2007, 2013a). On the other hand, a survey of the inventories of path-marking adnominals in 15 languages (Papahagi 2011) showed that Medians were less likely to be encoded by distinct adnominals than either Goal or Source. Some languages of the sample used the same suffix to encode from and via (Tanimuca, spoken in Amazonia). This can be seen in Mandarin Chinese too: a same preposition công is used for both Source and Median.

Research on spatial asymmetries has reached the point where it seems possible not only to provide a global assessment with testable data ensuring replicability, but also to analyze its interplay with other factors. One factor we plan to take into account in this project is Dynamic Deixis.

Deixis (i.e. the hic and nunc perspective taken by the speaker onto an event) seems to be a good candidate to investigate these correlations: though it has not been systematically linked to the source-goal asymmetry, the known opposition between come-verbs (ventives) and go-verbs (itives) is only a special instance of this asymmetry: ego-as-goal vs ego-as-source. And there are, indeed, crosslinguistically widespread asymmetries between go-verbs and come-verbs, the former displaying a tendency to be less inherently deictic (Wilkins & Hill 1995, Koga 2017). By focusing on the way asymmetries arise in such phenomena, we aim to investigate their interplay in language use and examine how extensive and pervasive they are. Research has shown that there are strong crosslinguistic differences in the locus of Path (verb, serial verb, verbal prefix, adverb, Denny 1978) and its encoding (lexical vs grammatical, Ricca 1993). The languages we investigate show important variation in this respect, and will provide a chance to explore spatial asymmetry in the domain of dynamic deixis, for both motion verbs and grammaticalized sets of closed-class markers such as prefixed directional.

Other phenomena qualify for the investigation of their interactions with spatial asymmetry. For instance, directional or affixes may mark topographic features (uphill/downhill, upstream/downstream,
seaside/landslide in Oceanic languages, see Ozanne-Rivierre 2004, François 2015), deictic orientation (itive/ventive) and elevation (up/down, higher/lower). Elevation may be a deictic category when the reference point is the deictic center (e.g. ‘downwards from the deictic center’, see Forker 2019, Post 2019, Schapper 2017), and has attracted attention as another dimension that may show a correlation between the physical environment and the existence of sets of conventionalized forms in a language. Our project will contribute to the ongoing discussion on how these features are encoded in the domain of dynamic motion events, as existing studies focus on adnominal demonstratives (Gerner 2009).

In order to investigate these correlations, we will look at language structure and language use, working our way toward a typology of spatial asymmetries, understood in terms of locus, semantic distinctions and degree of grammaticalization of the markers. In the course of this investigation, we will contribute to debates questioning widely accepted views such as the tendency for goals to be less overtly marked than sources, the larger inventory of go- vs come-forms, the link between the lexicalization or grammaticalization of a concept and its frequency in language use (Haspelmath 2008, von Stutterheim et al. 2012), and the role of ecosystems in the type and diversity of semantic distinctions (Ozanne-Rivierre 2004, Bickel 2001, Aikhenvald 2015) – in this respect, understudied languages may provide a key to understanding language variation (Evans & Levinson 2009).

1.3. Organization in Work packages

We focus on asymmetries in the linguistic expression of spatial scenes. Asymmetries are pervasive, and located at various levels: source/goal, me/you, top/bottom, front/back, etc. Are they always ‘inscribed’ in language structure? We compare not only analyses of well-known languages (with ample data, including diachronic data and literature) but also of a wide typological and geographical spectrum of languages (Table 2), with the twin objective of (a) mapping the typological specificities of spatial semantics across languages and (b) contributing to the description of languages which have not yet been sufficiently described, by building a database allowing for comparisons and generalizations.

<table>
<thead>
<tr>
<th>Continent/Family</th>
<th>Language Name</th>
<th>Project members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indo-European</td>
<td>Romance</td>
<td>Aurnague, Bourdin, Sarda, Stosic, Voirin</td>
</tr>
<tr>
<td></td>
<td>Slavic</td>
<td>Fagard, Kopecka, Stosic, Voirin</td>
</tr>
<tr>
<td></td>
<td>Germanic</td>
<td>Fagard, König, Voirin</td>
</tr>
<tr>
<td>Finno-Ugric</td>
<td>Finnish</td>
<td>König</td>
</tr>
<tr>
<td>other</td>
<td>French Signed Language</td>
<td>Risler</td>
</tr>
<tr>
<td>Africa</td>
<td>Niger-Congo, Atlantic</td>
<td>Voisin</td>
</tr>
<tr>
<td></td>
<td>Somali</td>
<td>Bourdin</td>
</tr>
<tr>
<td>Asia</td>
<td>Austroasiatic</td>
<td>Dao, Do-Hurinville</td>
</tr>
<tr>
<td></td>
<td>Thai</td>
<td>Fagard, Dao, Bunkham</td>
</tr>
<tr>
<td></td>
<td>Hmong-Mien</td>
<td>Vittrant</td>
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<tr>
<td></td>
<td>Sino-Tibetan</td>
<td>Lamarre, Song, Tan</td>
</tr>
<tr>
<td></td>
<td>Sinitic languages</td>
<td>Lamarre, Song, Tan</td>
</tr>
<tr>
<td></td>
<td>Tibeto-Burman</td>
<td>Vittrant</td>
</tr>
<tr>
<td>other</td>
<td>Korean, Japanese</td>
<td>Lamarre, König, Rhee, Matsumoto</td>
</tr>
<tr>
<td>Australasia</td>
<td></td>
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<tr>
<td></td>
<td>Kanak</td>
<td>Moyse-Faurie</td>
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<td></td>
<td>Polynesian</td>
<td>Moyse-Faurie</td>
</tr>
<tr>
<td>America</td>
<td>Mayan</td>
<td>Grinevald</td>
</tr>
</tbody>
</table>

4
In order to meet these objectives, our project is structured in three workpackages, with specific but interrelated goals:

- **WP1: Language structure**: a typological survey of spatial asymmetries in languages, with varying depth and width, with an emphasis on non-Indo-European languages
- **WP2: Asymmetries in Language Use**: an empirical assessment of the effect of these asymmetries on language use, on the basis of tests run on a subset of languages. This is possible only with data, and the data collection must be strictly supervised:
- **WP3: Methodology and data**: visual elicitation tool ensuring replicability, procedure for spontaneous data collection, cross-linguistic database.

*Figure 1: Overview of the scientific program*

The specific tasks addressed in the three Work Packages are further described below.

**Work package 1: Language Structure – a typological survey of spatial asymmetries**

Work package 1 will provide a typological survey of spatial asymmetries in language: How asymmetric are linguistic descriptions of space? To what extent is this the result of asymmetries in language structure? Are perceptual asymmetries (Clarke 1973) reflected in language structure, or are linguistic asymmetries reflected in language use, with possible effects on our general cognitive abilities? Languages appear to encode or reproduce cognitive asymmetries, at various levels. Focusing on such asymmetries, namely source/goal, deictic motion or orientation (itive/ventive), and asymmetries related to the marking of verticality and elevation (up/down), we will endeavor to gauge their pervasiveness. A systematic cross-linguistic survey on a large dataset will help us evaluate the degree of asymmetry in individual languages and build a typology of spatial asymmetries.

These asymmetries are to be taken in terms of both locus and semantic distinctions. In terms of locus, two main features will be taken into account:

(a) part of speech (POS: verb, serial verb, verbal affix, adverb, preposition, noun) and
(b) degree of entrenchment, i.e. grammaticalization or lexicalization.

We will thus account for the formal aspects of spatial asymmetry, and analyze various types of morphosyntactic encoding. In terms of semantic distinctions, one question will be to see whether dynamic deictic markers present the same complexity as static ones, which have been extensively studied, in terms of e.g.

(a) degree of granularity, i.e. binary vs ternary systems of reference;
We will look into the inventories of closed-class categories related to space, across languages. One important question is how comparable these patterns are across languages and word class — including both closed classes (e.g. German deictic satellites hin/here and grammaticalized come/go particles in Chinese) and open classes (deictic motion verbs). In other words, do itives display more fine-grained semantic distinctions than ventives, independently of language and word class? Issues that will be given special attention include the importance of three-way distinctions, as described for itive directionals in a non-standard Mandarin dialect (Lamarre 2013b), the prominence of itives over ventives in the evolution of such systems (as in German directional demonstratives), the general tendency for itive verbs to be less markedly deictic than ventive verbs and the question whether vertical motion is indeed less likely to mark deictic orientation (Vandeloise 1986, Lamarre 2008, Xu 2008).

The data gathered and analyzed within this project will allow for further discussion on issues such as the claim that closed-class items tap into – and reveal – a limited, recurrent set of semantic distinctions, while open-class items may be more culture-specific (Heine & Kuteva 2002, Hopper & Traugott 2003), and the opposite claim, i.e. that relational vocabulary (as in adpositions) is much more abstract, and thus prone to cultural patterning, whereas open-class items (like nouns) are grounded in concrete reality, and thus less cross-linguistically variable (Gentner & Boroditsky 2001). On the other hand, Bickel (1999) noted about the pervasiveness of verticality in Belhara (Himalaya), that both cultural formalism and language may in some cases rely on a common cognitive world, which in turn “is closely linked to the daily physical experience” of the speakers. Ozanne-Rivierre (2004) also emphasizes that the deictic system of Laai (a Melanesian spoken in New Caledonia) is closely related to the natural environment. Directional deixis also plays a key role in signed languages: path verbs are oriented, not only with respect to Source and Goal, but also to absolute orientation (up vs down) and to the Deictic Center (Risler 2013). It might well be the case that both ends of the spectrum are cross-linguistically variable (Evans & Levinson 2009); our project will provide elements of discussion on this topic.

Work on WP1 will be conducted with the help of two PhDs focusing on under-described languages of regions of the world known for their important linguistic diversity (e.g. Southeast Asia or South America), and a Post-doc who will centralize all data gathered within the project and pilot the typological survey. It will include a wide array of languages from various parts of the world: Europe, Africa, Asia, Austronesia and the Americas, chosen for their geographical and typological characteristics (Table 2).

These objectives will be achieved through the following means.

**WP1.1: Language structure & the locus of asymmetry**

We will look into spatial asymmetry in terms of morphosyntactic encoding of the various semantic components of a motion event. We will therefore gather and analyze data on:

a) Asymmetries in the nominal domain (Prepositions and PPs, NPs, Relational Nouns...)
b) Asymmetries in the verbal domain (verbs), including asymmetry displayed by inventories of closed-class forms (directionals, Associated motion markers...) and Signed Languages

The main goal of WP1.1 will be to provide data (in the form of a typological survey) to establish the extent of structural asymmetries in spatial grams. The data gathered within WP1.1 will be further analyzed in a diachronic perspective, in order to confirm or challenge previous hypotheses on the emergence of spatial asymmetries (WP1.2).

**WP1.2: Diachrony and grammaticalization paths**

For those languages which allow it, i.e. wherever historical documents are available, we will look into the origin and evolution of spatial asymmetries. For instance, it is quite clear that the overabundance of ablative markers (case and adpositions alike) is linked to the systematic bleaching of their ablative
meaning, witnessed in Classical Languages (Iacobini et al. 2017), Celtic (Rottet, in press) and other languages. Only one of the two deictic motion verbs has given birth to an imperative marker in Vietnamese (Do-Hurinville & Dao 2017): is this tendency confirmed in other languages where imperative markers are regularly related to deictic motion markers such as Sinitic? This has never been the focus of a systematic contrastive and diachronic survey. WP1.2 will remedy this with an investigation into spatial asymmetries in diachrony, taking into account Romance, Slavic, Germanic languages, Burmese, Vietnamese, Korean and Chinese.

Work package 2: Spatial asymmetries in language use

Work package 2 will investigate spatial asymmetries in language use: we will look into the factors triggering spatial asymmetries, focus on semantic distinctions and go beyond standard language descriptions, comparing language structures and language use. In order to achieve this goal, we will rely on several types of data collected through distinct methods.

WP2.1: Semantic distinctions

WP2 will deal with the question of semantic distinctions, taking into account interactions with person deixis (Bourdin 2005) and directional demonstratives, as well as interactions with social deixis and with the cultural background. For instance, we will check whether some cases of asymmetries related to come and go could be accounted for by notions such as subjectivity, which would explain why some specific uses of ventive markers are not attested for their itive counterparts (e.g. the Japanese so-called ‘inverse’ construction involving –kuru ‘come’, see Koga & Ohori 2008). What could explain the asymmetry in associated motion markers observed in some varieties of Burmese, where only the ventive type is attested (Vittrant 2013), and the opposite asymmetry attested in some North Atlantic languages where only the itive marker is attested (Voisin 2013)? We will further explore the concept of home base and home (as in go home) and its relevance in a study of asymmetry in the spatial domain (see Fillmore 1997 on the difference between Japanese kaeru and English return). Is the claim that ventive and itive markers play a key role as person markers (Mithun 1996) supported by our sample of languages?

WP2.2: Fieldwork

A large portion of our data will come from fieldwork in various areas of the world (see list of languages, Table 2, and the budget set aside for field trips). Besides, some contrastive studies will be produced on languages which have never or barely been compared (e.g. Sinitic-Thai-Vietnamese), with the help of parallel corpora wherever available, as was done for instance by Dan Slobin in seminal studies such as “Two ways to travel: Verbs of Motion in English and Spanish” (Slobin 2003). For languages with available written corpora, we will check whether the tendencies observed in language structure are supported by those obtained in WP2 with various types of stimuli (see Lamarre 2013c for a discussion of the seemingly contradictory results obtained through different sets of data). The data will be made available online to fellow researchers, within WP3.

The languages we selected are a fairly balanced set, comprising well-known languages, for which ample data are available, and under-studied languages, enabling the twin objective of mapping the typological specificities of spatial semantics across languages and contributing to the description of languages which have not yet been sufficiently described, by building corpora and databases allowing for both individual language descriptions and crosslinguistic comparisons and generalizations. These languages constitute a wide array of languages from various parts of the world, including Satellite-framed, Verb-framed and serializing languages (which have sometimes been classified as “equipollent-framed”) – as well as languages whose classification along Talmy’s typology is yet unexplored.
Work package 3: Methodology and data

The main purpose of this WP is to provide us with a measure of frequencies of the different patterns identified in languages within WP2, and the parameters, both shared and language-specific, which play a role in spatial asymmetries across and within individual languages. The description of language use will take shape by setting up a large crosslinguistic database, built on the basis of language elicitation, with the help of new and adapted elicitation tools in the spirit of the Max Planck stimuli (e.g. Cut & Break, Put & Take), of Yo Matsumoto’s work within the MEDAL project (Motion Event Descriptions across Languages, Ninja, Japan, see Matsumoto et al. 2017), with a strong experimental component, and of the Trajectoire videos (Ishibashi et al. 2006). Another important feature of this WP is the emphasis on language preservation: the database will also include ‘natural’ language data for endangered or under-described languages, and will be made public, with special attention devoted to the problems of language preservation. These elements are described in further detail below.

WP 3.1: Designing a visual elicitation tool for crosslinguistic data collection

Rather than rely solely on standard language descriptions, we will compare language structures and language use. In order to achieve this goal, we will rely on a series of elicitation tools, including existing ones which have been extensively tested and can be adapted and improved to meet our needs, for instance the Trajectoire videos, and new ones which will be specifically designed to study spatial asymmetry. Previous research has shown that elicitation is invaluable, in so far as it facilitates cross-linguistic investigations and comparisons, and makes it possible to go well beyond standard typologies relying solely on existing language descriptions (i.e. typically carried out by a linguist who compiles data and analyses pertaining to one specific linguistic feature from the grammars of several dozens – or hundreds – of grammars). However, elicited data are not always perfectly natural: accordingly, for languages that have not been described in sufficient depth, we need to gather ‘natural’ data with which to compare our elicitations. Such data, already available for well-described languages, need to be collected for under-described languages. Importantly, they also have the potential to be useful for purposes of language documentation and preservation. All gathered data will be uploaded to a database, which will be made available both to researchers and to the public, with under-described and/or endangered languages receiving special attention. Work on WP3 will be conducted with the help of an engineer, a dedicated Post-doc and several master students (hired as research assistants).

This project relies in part on a long tradition of ‘experimental’ linguistics, from Berlin & Kay (1969) to Bowerman (1996), Slobin (1996), Levinson (2003) and others. The scientific coordinators of this project have had experience not only with the set-up and implementation, but also with the use of various elicitation tools, on a large number of languages (e.g. Slobin, Ibarretxe-Antuñano, Kopecka & Majid 2014; Kopecka et al. submitted; Fagard et al. 2013, 2017). Based on this large experience, we are aware of both advantages and limits of this approach, and, more importantly, we know how to optimize these tools.

The set-up of the visual stimuli in the form of video-clips designed to elicit language data on spatial asymmetries will be as follows:

a series of short elicitation tools (3 series of 20 short videos), rather than one long series of videos. Rationale: (i) short stimuli require less fillers, even with the same ratio (Trajectoire stimuli: 52/24 ratio); (ii) they are more flexible, and can be designed to test specific hypotheses, one at a time; (iii) this flexibility is also to be understood in terms of production: it will take less time to set up the first stimuli, and thus to launch the elicitation phase; finally, (iv) they require less cognitive effort from participants who tend to resent being subjected to long stimuli.

the stimuli will be organized according to specific grouping principles in order to test the role of different factors that might play a role in spatial asymmetries, e.g. (i) different types of events: caused motion (e.g. putting/taking, receiving/giving), change of posture (standing/sitting/lying); (ii) different
parameters: orientation (horizontal/vertical), boundary-crossing (with/without), intentionality (intentional/non-intentional), deixis (itive/ventive); (iii) exploratory parameters, such as animate/non-animate, which have been shown to be crucial for the source-goal asymmetry.

Given the fact that the elicitation material will be used in different filed sites and different cultures, we will pay special attention to its ecological value (natural settings with limited culture-specific cues) and ethical appropriateness (event type, scenery, clothing). The main goal is to collect data for systematic cross-linguistic comparisons, thus enabling us to analyze how speakers of different languages conceptualize and describe the same visual scenarios, and to examine the use and frequency of different linguistic patterns. Since the technical quality of the elicitation tool is quintessential to work with speakers in different cultural settings and to collect valid and reliable data, the realization of the material will be made with the help of a 6-month engineer, dedicated to this task.

Experience shows the importance of clear and systematic elicitation procedures. Thus, the procedures will be detailed in a Field manual providing specific guidelines for eliciting data, as has been done in previous projects such as Trajectoire or Put & Take and EoSS (MPI-Nijmegen, with members of the consortium). These will be made available to the members of the consortium, and to a larger audience, once the database is ready. Additionally, for under-described languages, we will elicit natural language data with which it will be possible to compare the elicited data and verify their reliability.

**WP 3.2 Data transcription, annotation and coding in view of comparative analyses**

All data will be audio- and/or video-recorded, transcribed, annotated and coded. Given our experience in language description and typological linguistics, we know how complicated it is to agree on a common semantic or even morphosyntactic coding for languages with different typological features. It is indeed a difficult and problematic task. The data gathered will therefore be minimally enriched, with lemma, gloss and part-of-speech (POS) tags, as has been done in various ANR projects in which the Lattice took part, for various languages (e.g. Old French, notoriously problematic for POS tagging).

The data collected with the visual stimuli will be analyzed following a unified theoretical approach, bridging the traditionally separate analytical/qualitative and experimental/quantitative studies. The qualitative approach will offer a fine-grained analysis of spatial asymmetries and the underlying parameters (at both morphosyntactic and semantic levels); the quantitative approach will reveal crosslinguistic and language-internal variations, and allow us to assess the frequency of use of individual patterns. The analysis of frequencies is indeed an important goal of the project, since frequently used patterns have cognitive implications. As shown by numerous studies in cognitive linguistics, the way speakers use language directly shape language structure, i.e. high-frequency patterns are stronger, functionally preferred, and thus have greater accessibility in mental representations. Hence, assessing frequencies will constitute a reliable source for providing cognitive insights into linguistic typology and the relation between language and cognition.

This unified approach combining qualitative and quantitative methods aims to better assess language-specific vs shared patterns of spatial asymmetries, and enable the development of sensible guidelines for further experimental investigations of language-specific and universal constraints on linguistic and cognitive representations.

**WP 3.3 Building a cross-linguistic database**

All data gathered within WP1, WP2 and WP3 will be included in a large crosslinguistic database. We will rely on the expertise and experience of the consortium in Natural Language Processing (NLP) tools and database set-up to reach this specific goal, which is by no means an easy task. It is not entirely new, since there are examples of public, available databases with linguistic features of many different languages, such as the WALS database or, in lexical typology, the DECOLAR or DatSemShifts (Zalizniak et al. 2012) databases. Some contain raw language data, in a contrastive perspective, such as the CHILDES database.
What we propose to do here is to combine the two—not just by adding them but by putting both in mutual perspective. Each perspective is necessary to limit the biases brought along by the other approach. Specifically, for any given linguistic feature, the database will provide a qualified answer including (i) the presence (or absence) of the feature in the system, (ii) its morphosyntactic behavior in the language, and (iii) its frequency of use (including the actual occurrences) in the data sample under investigation. This database will rely on existing solutions for data storage, such as CoCoON, a platform for scientists in human and social research fields dedicated to oral data.

1.4. Main deliverables (dates are estimates calculated from month 0)

There will be interactions between work packages (WPs 1.1 through 3.3), as described above. Most of them will produce continuous output, and make parallel progress.

Deliverables (D): **WP1**: Typological survey (M18), Diachronic survey (M33), Semantic study (M39); **WP2**: Typology of semantic distinctions (M21), Language descriptions (M36), Conference (M45); **WP3**: Elicitation tool (M18), Database (beta version M18, for project members M36, online M42), Documentary (M48).

1.5. Methodology and risk management

This project represents the first crosslinguistic study systematically investigating typological variation in the expression of spatial asymmetries, based on a large sample of languages and on crosslinguistic data allowing for systematic comparisons and generalizations. Its originality resides in a rigorous methodological framework meant to overcome the empirical limitations of previous research. It will yield a more refined and better-grounded conceptualization of motion, a domain whose central place in human cognition hardly needs to be underscored. The theoretical value of the project lies in the fundamental knowledge it will bring to light regarding the extent of crosslinguistic variation and the principles underlying the structuring of path and deixis, especially that of asymmetry.

In order to carry out this project, we adopt an approach called triangulation (Fagard 2015), combining different methodologies in order to present different perspectives on the same object, in order to look for converging evidence. Thus, in this project, we combine a typological survey (WP1) with both language elicitation and corpus data (WP2), with the added feature of database setup (WP3). For each avenue of research, we rely on specialists, with labs specialized precisely in these domains: DDL and CRLAO for typological survey and language elicitation, Lattice for database set-up.

Having already worked on several crosslinguistic projects, the coordinators of the consortium have a long experience of project leadership, which often involves the combination of different approaches and methodologies. Furthermore, a majority of project members have a long experience of working together in research projects—more specifically within the Trajectoire and Dynamic Deixis projects (French Federation of Typology and Linguistic Universals, 2006-2008, 2009-2011, 2015-2018). This long time-span appears quite clearly in the large number of coauthored papers with two, three... and up to eleven members of the consortium (Lamarre et al., submitted). These past collaborations will be very important in the SALTA project, given the number of participants and languages involved. We see this diversity of approaches as an asset, insofar as the theoretical background of all participants is consistent: we are first and foremost descriptivists working in the tradition of functional and typological linguistics, with a strong inclination towards cognitive linguistics.

Despite the large number of participants, we built the project with 1) a very clear theoretical focus on understanding spatial asymmetries, 2) a realistic program in terms of database and corpus building, and 3) a fair degree of convergence between work packages. We thus aim to prevent a possible lack of coordination. Each work package has a clear goal. If WP1 fails to provide an operational and, more importantly, testable typological survey, which can be compared with language use and variation in WP2,
investigations in WP2 can go on independently, though, of course, they would be much more interesting with the input from WP1. WP1 is less dependent on WP2, which is intended rather as a way of testing the results from this first WP.

There are also some risks related to the fieldwork on less-described and endangered languages. First, in several countries, an official permission from both local authorities and the community is required in order to proceed with fieldwork and data collection. Such permissions may require time in order for administrative instances to deliver the permission, and, in some cases, to qualify a translator accompanying the scientist in the field. However, all colleagues involved in the project will do fieldwork in the field sites they have been working in for many years and that they know well, and no new field site or unknown community will be investigated or contacted, apart from those explored by the PhD candidates. Hence, we are confident that the data collection will be carried out successfully on all languages included in the project. Working with language consultants we know will also allow us to use other channels than direct survey, in case we have to cancel some field trips on account of a Covid-19 type pandemic.

Fieldwork also raises ethical issues. Working with speakers, especially in a field situation on under-described and endangered languages where they might feel linguistic insecurity, requires an ethical approach and consideration based on respect, trust, and mutual agreement, including, among many others, the use of appropriate methods for data elicitation, data preservation and, whenever possible, a return of the research outcome to the community (Grinevald 1993; Rice 2001). Members of the consortium are well-experienced and qualified to conduct the project within communities with whom they have been working for a long time. This will reinforce our methodological approach and procedures related to the collection of both natural and stimuli-based data.

2. Presentation of the Partners

2.1. Scientific coordinator and consortium

Scientific coordinator

The PI, an expert in Romance languages, contrastive linguistics and spatial semantics, has collaborated with most other members of the consortium within various research projects, in a typological perspective, over the past fifteen years (e.g. Trajectoire 2006-2008, 2008-2011; EoSS 2011-2013; Deixis Dynamique 2015-2018, among others). He has a solid background in historical linguistics, after Classical Studies in Latin and Greek at the Sorbonne, and a PhD with a renowned specialist in diachronic linguistics (Christiane Marchello-Nizia, ENS-LSH). He also has a strong background in Romance linguistics: his PhD was co-supervised by a renowned specialist in this field (Simone Raffaele, Roma 3), and this was followed by a period as visiting researcher with another renowned specialist in Romance linguistics (Peter Koch, Tübingen). He had the opportunity to train in stats and experimental research during another stay as visiting researcher, in Belgium, with psycholinguist Liesbeth Degand (UCL). Finally, he has experience working on a variety of languages, with a strong but not exclusive focus on Indo-European languages. His research includes case studies on all Romance languages (mainly French, Occitan, Italian, Piedmontese, Portuguese, Romanian and Spanish; both Modern and Medieval varieties), Germanic languages (mainly German, Swedish, Dutch and English) and Slavic languages (mainly Polish, Russian and Serbian), but also on (Late) Latin, Hungarian, Albanian, Beserman (Permic) and Thai.

The PI has experience in project leadership, with six projects as PI, which demonstrates his ability to lead and coordinate this new project (see CV). His role in this project will be to coordinate the efforts of all participants, and contribute his expert knowledge on European languages, space in language, and grammaticalization. He has published widely on space in languages, typology and cognitive implications of language structure (Feltgen et al. 2017, Fagard 2016, in press, Stosic et al. 2015, Fagard et al. 2013).
The focus on space and database construction makes the Lattice laboratory (the PI’s affiliation) the ideal place to coordinate this project. Researchers have specialized in spatial semantics for quite some time – including L. Sarda, M. Aurnague, B. Fagard and PhD students. Furthermore, the lab offers a tried and tested infrastructure dedicated to NLP tasks, with two engineers specialized in databases and NLP tools, and a third engineer dedicated to website construction.

**Consortium**

The typological focus of the project, familiar to the PI, also accounts for the importance of the research network. The participants in the project have very complementary fields of specialization, covering the main linguistic areas of the world. The DDL and CRLAO labs are well-recognized in typological research. On account of this complementarity, all senior participants are used to working together, as can be seen by their joint publications. Their publications show that they are highly qualified for this project (e.g. Slobin et al. 2014, Lamarre 2013, Fortis et al. 2011, Lamarre et al. submitted).

In the course of these (and other) projects, the participants in the present project have built a tool for the elicitation of motion-event descriptions (Trajectoire), and proposed various adjustments to existing linguistic typologies of motion-event descriptions, showing their limitations. This work has led to publications in a number of relevant high-quality journals (e.g. *BLS, STUF, Cognitive Linguistics*).

The scientific coordinators are highly qualified for this project. On the topic of space in language, they have led a number of research projects, supervised PhDs, co-organized conferences and workshops, and published widely, as can be seen in their CVs. Their expertise on specific languages will help meet the challenge of a fine-grained analysis of language use, in order to complete the necessary inventory of language structures dedicated to the phenomena related to asymmetry in the spatial domain.

The consortium brings together researchers with similar theoretical backgrounds, but different specializations. While all students and researchers involved share an interest in the variable linguistic expression of spatial relations, they investigate it from different perspectives, and with different approaches. Since one important limit of the state of the art is the over-representation of European languages, descriptive linguists focusing on languages outside of Europe are well-represented in our consortium, which includes specialists of languages which have, for many of them, not been the focus of numerous works on space – or at least, which are generally not included in spatial typologies: C. Moyse, A. Risler, C. Grinevald, A. Vittrant, S. Voisin, L. Dao, T. Do-Hurinville, C. Lamarre. This explains why we are confident that this project will not be Eurocentric and will cover an array of genetically and areally varied languages. Participants in the project thus include (a) typologists with experience in typological surveys and interest in spatial relations (P. Bourdin, C. Grinevald, C. Iacobini, E. König, Y. Matsumoto), (b) linguists with experience in experimental studies, field methods, written corpora and language elicitation (N. Bunkham, L. Dao, T. Do-Hurinville A. Kopecka, Y. Matsumoto, C. Moyse, C. Lamarre, S. Rhee, A. Risler, J. Song, A. Tan, A. Vittrant, S. Voisin), (c) linguists with theoretical expertise in spatial semantics (M. Aurnague, B. Fagard, A. Kopecka, T. Rainsford, L. Sarda, D. Stosic, C. Voirin), (d) linguists and engineers with know-how in database set-up (A. Vittrant (Architebir-Coocon, Pangloss), S. Voisin (Senelangues (ALFFA)), F. Becquet, F. Garrido, and C. Planca).

The typological, descriptive, and empirical skills and expertise of the PI, of the scientific coordinators and of all members of the consortium ensure that the project will be successfully implemented and will provide a significant contribution to the field of language description and typology. The researchers affiliated with foreign labs work on their own funding.

### 3. **Expected impact: strategies to valorize, protect and exploit the project results**

Based on a systematic methodological approach, investigating spatial asymmetries in a variety of languages, and assessing factors that trigger such asymmetries, this project provides key insights both for
the field of language sciences in language typology (morphosyntactic and semantic), and for the field of cognitive science, both with an interest in the search for linguistic invariants and universals, and for a more refined and better grounded conceptualization of Motion. At a wider interdisciplinary level, the project also has a potential impact for research in applied linguistics and psycholinguistics, including the study of first and second language acquisition, as well as bilingualism, all concerned with crosslinguistic variation and its effects on language acquisition and multilingual processing.

The theoretical value of the project lies in the fundamental knowledge it will bring forth regarding the extent of crosslinguistic variation and the principles underlying the structuring of the domain of Motion. Specifically, the results of the project will allow us to build a fine-grained typology of spatial asymmetries informed by some 30 languages. By doing so, it will provide better insights into language structures and language use. Furthermore, empirical methods for data elicitation, coding, annotating and analysis, on the one hand, and the typology built on the basis of data from genetically varied languages on the other hand, will contribute both to developing better fieldwork practices and, crucially, to the description of under-studied languages and, importantly, a cross-linguistic annotated database available to a larger audience. Namely, by providing methodological and conceptual tools to scholars working on grammatical descriptions of under-studied languages to cover the domain of space, the project will foster more comprehensive and detailed descriptions of spatial asymmetries and, more broadly, to the description of space in general.

We submit this project to the ANR Program Culture, création, patrimoine (within the domain “Human and Social Sciences”). The main objective of this challenge is, among others, to stimulate research on the cultural diversity of human societies. The project meets this objective, in that it addresses the issue of language diversity by investigating the (question of) unity and variation in human language. Because language plays a fundamental role in human culture and cognition, languages have long been a main concern in debates on human diversity and human cognitive capacities. While there is a universal genetic basis for language acquisition, we know that languages vary tremendously across cultures in time and space, with some 7,000 languages showing variation at all levels of their formal and conceptual structure. This raises important questions, concerning e.g. the degree of variation, the existence of cognitive and/or functional constraints on variation and the possibility that some (culture-specific) conceptual domains are more likely to show variation than others.

To address these questions and to uncover constraints on crosslinguistic variation, describing and comparing large samples of languages is a prerequisite. In other words, we need to investigate languages belonging to different genetic groups, languages spoken in different geographic areas and within different cultures. Although much effort has been made in the past twenty years to describe under-described and endangered languages, many languages have not yet been thoroughly described. While some languages have benefited from grammatical descriptions – including languages with a long written and descriptive tradition such as Chinese, Germanic, Romance and Slavic, to quote just a few – there are many conceptual domains, such as space or more specifically the domain of spatial asymmetries which this project proposes to examine, that have not yet been studied rigorously and thoroughly. The aim of this project is to contribute to and broaden the body of studies in this field of research. By doing so, the project will contribute to the advancement of research on language diversity and will provide an empirical foundation for future crosslinguistic studies in this domain. Given the cognitive importance of space and its experiential universality on the one hand, and language variation in this domain of expression on the other hand, fundamental research on language structures and their use, and language and cognition interface are essential ingredients for a better understanding of unity and diversity in human language.
3.1. Publications

Our plans for disseminating the results through publications are varied. The results of the project, including the typology of spatial asymmetries, will form the basis of papers which we plan to submit to international journals including *Linguistic Typology*, *Cognitive Linguistics*, *Studies in Language*. The descriptive work pertaining to individual languages will be presented in a collective volume which we intend to put together for a submission to *John Benjamins (Typological Studies in Language Series)*. Furthermore, based on our efforts to develop appropriate data elicitation methods for investigating asymmetries across languages and to design a fieldwork manual for users accompanying these methods, we will also publish a methodological paper reporting on the design and use of innovative methods for cross-linguistic data elicitation, with a specific focus on linguistic asymmetries in endangered and under-described languages. In order to reach scholars working on language diversity and less-described languages, we aim at a submission to *Language Documentation & Conservation*. These publications will appeal to a wide readership in language diversity, description and language typology interested in morphosyntax, semantics, and language use, as well as to cognitive researchers.

3.2. Conferences and Workshops

Aside from publications, different aspects of the project will be presented at major national and international conferences, such as the *International Conference of Linguistic Typology*, the *International Cognitive Linguistics Conference*, or the Conference of the *Societas Linguistica Europaea* on the one hand, and on particular themed conferences and/or workshops relating to the areas under study. We aim at participating in three to five conferences or workshops per year, with regular *research seminars* to strengthen close working contacts between project members and associates, and an *international conference* which will bring together scholars working in this domain of research, allowing them to exchange theoretical and methodological expertise as well as experiences gleaned from working on different linguistic field sites (mid-project).

3.3. Field Methods

In the context of this research project, we intend to design a series of methodological material for data elicitation in different linguistic and cultural field sites. This will include both traditional methods such as questionnaires and more innovative visual methods that can be used both for investigating language-specific characteristics and for cross-linguistic comparison. In order to facilitate the use of these methods, we will elaborate a field manual explaining the project and its aims, the method, and the procedure to collect the data. These materials will be made available (via the TULQuest database) to students and scholars interested in investigating space and language.

3.4. Database building and data archiving

One of the main goals of the project is to contribute new data and share both raw data and results with the academic community, both students and faculty. First, in order to share and make the best of our research efforts and results, our plan is to build a *linguistically enriched corpus* that includes glossed, annotated and formatted data collected in various languages in the context of this project. We intend to store the data in the CoCoON platform and deposit the database in the Huma-Num archives ([https://cocoon.huma-num.fr/exist/crdo/](https://cocoon.huma-num.fr/exist/crdo/)). The database will enable systematic and comprehensive exploration of cross-linguistic data and, importantly, will ensure the sustainability and the reproducibility of our research in line with the FAIR Data Management principles (*cf.* the European Commission Horizon 2020 Funding Scheme). This is quite feasible, given the strong tradition of NLP and database construction at the Lattice (esp. with engineers C. Planq and F. Becquet), and the experience of other members of the project outside the Lattice lab. Second, the research methods we plan to develop for collecting linguistic...
data will include a standardized set of visual stimuli designed to elicit data on spatial asymmetries, adapted to different linguistic and cultural field sites, which will be made available together with a fieldwork manual on TULQuest. Finally, in order to provide scholars with reliable bibliographical and interdisciplinary references about asymmetries in spatial language and spatial cognition, we intend to submit a commented and annotated bibliography to the Oxford Bibliographies.

Designing methodological materials such as elicitation methods, a field manual, and an annotated bibliography on the one hand, and a crosslinguistic FAIR database with new, comparable data on the other hand, will facilitate the investigation of spatial asymmetries across languages, and be an asset for the whole community. It is also intended to favor what we see as virtuous research practices, e.g. the sharing of data, with a view towards research reproducibility – not yet a wide-spread practice in language sciences (see Berez-Kroeker et al. 2018).

3.5. Educational seminars and training in research

The PhD candidates and Postdocs recruited in this project will get firsthand training and supervision in their research. Several events are planned during the implementation of the project, in order to extend its educational benefits to other postgraduate students and young researchers, including: (i) research seminars to strengthen close working contacts between project members and associates, open to some master students and to other PhD candidates working on related topics; (ii) graduate seminars for Ph.D. candidates at Inalco’s Doctoral School, Langues, littératures et cultures du monde to reinforce their theoretical background and skills in language description, and typology (also open to Master students at Inalco, Paris 3 and Lyon 2); (iii) training workshops to disseminate and transfer empirical and methodological savoir faire to students and colleagues.

3.6. Video resources and diffusion to broader public

In order to diffuse and share our expertise and knowledge gained through this project not only with academics but also with a broader public, we will produce an audio-video resource on language diversity and cross-linguistic research, broadcast via canal-u, and organize workshops at the Fête de la Science. By sharing our results and raw data, explaining our methodology and typological approach and providing training through seminars, we intend to bring novel perspectives to the methodological and theoretical debate that has enlivened the field in recent years and, importantly, to contribute to better field practices via the use of ecologically valid methods for the purpose of collecting sound and reliable linguistic data. In the long term, we hope to hold a summer school in language diversity, description and typology in order to ensure the transfer of knowledge to students working in different linguistic and cultural field sites. In order to structure and strengthen the research area in language description and typology, it is crucial indeed to educate new generations of young researchers. Yet, although language typology is widely considered as a research area in its own right, scientific chairs in linguistic departments are still rare – both in France, and more widely in Europe – and students receive little training in this domain of research. The expertise of its members of the project in typologically varied languages puts us in a position to provide a thorough training in language typology and introduce students to empirical methods and the state of the art in this discipline.

Another long-term objective is to lay the empirical and theoretical foundations for a wider interdisciplinary project (ERC or COST), based on a unified approach combining crosslinguistic and experimental research to the study of spatial asymmetries in language and cognition. Our experience in interdisciplinary research on an international level will significantly contribute to the establishment and the strengthening of international collaborations and scientific networks with leading scientists in the field. This, in turn, will promote further development of language description and typology, thereby ensuring the continued stronghold in the discipline.
3.7. Main outcomes

The main outcomes of the project will be:

1. Contributing to a better knowledge and comprehension of spatial asymmetries in language:
   (a) contributing new data and analyses to descriptive and typological research into some 30 languages and thereby to a better understanding of language structures and language use;
   (b) providing methodologically sound scientific results, with the added value of replicability, as all gathered data will be stored and made accessible;

2. Constituting new elicitation tools, and a database with crosslinguistically comparable data, both of which will be an asset for the whole community:
   (a) developing a standardized set of visual stimuli to elicit data adapted to different linguistic and cultural field sites;
   (b) building a crosslinguistic database with annotated data collected in various languages, permitting a systematic and comprehensive exploration of crosslinguistic data;
   (c) laying the foundations of a wider project (e.g. ERC or COST).

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